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AFSA/17 Mar. 1952

MEETING OF SPECIAL COMMUNICATIONS ADVISORY GROUP (SCAG)

Date: 12 March 1952

Time: 0900 - 1130
1230 - 1345

Place: Room 3E-1020, the Pentagon.

Present

- Dr. H. P. Robertson
- Dr. R. K. Potter
- Mr. John H. Howard
- Dr. Charles B. Tompkins
- Dr. John von Neumann
- Dr. Claude E. Shannon
- Dr. Howard T. Engstrom
- Mr. Edwin A. Speakman
- Dr. Stewart S. Cairns
- Mr. John Cloud McPherson
- Mr. Dean Post

CIA

OGA

Mr. Chadwell

[Redacted]

Mr. Hecker

*Original destroyed
as too bulky.
This is only
copy in
existence.
W.F.T.*

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MR. SPEAKMAN: Time is rather rigid. We have a luncheon date at 1130. Maybe we can start the preliminary things until Dr. Engstrom gets here. He has attempted to draw up a paper in answer to the series of questions which we had put together.

I have asked Mr. Chadwell to come over and to give us the benefit of what he knows concerning CIA with reference to the primary problem and the importance of it.

Would you like to start out, Mr. Chadwell, and give us the background on this problem? I am sure it would be of benefit to the group here who will have to put their thoughts together later this morning.

MR. CHADWELL: I represent merely one group of consumers who are interested in the take. The importance of solving the problem to me is as great now and perhaps even greater than it was when the group was first organized. The organization of the group was followed for some time by a period of concern among the consumer groups.

It is possible that advances may be made by the success of clandestine operations. For my own personal appraisal we ought to consider such advances and on the basis of opportunity there may be an extra year-end dividend. If it is declared, so much the better.

I am in hearty agreement with the effort that is going to be made here to appraise the program divorced from the success of such activities, as to its feasibility and possibility of success.

As I say I am a consumer. I need the take. How much value it will be to me as distinguished from other consumers is a remote question. I am sure that the value is there from previous experience. I am merely thinking that if it was recognized the problem could perhaps be broken down on the basis of two kinds of distinct components, the mathematical side of the thing as distinct from the technical side of the thing.

Recognizing that, I think that after almost a year of study by this group we are in a position where we can cash in on your advice.

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Those are the points that I have in mind. If you would like to have me elaborate on anything that I have said, I should be glad to do so.

MR. SPEAKMAN: As you well know, the group was formed on a somewhat informal basis. There is no formalized charter. The question has arisen as to whether we should address our attention primarily to the Albatross problem, whether the group should concern itself with whether AFSA is doing all that it can do or should do on the Albatross problem and other problems, or whether this group should address itself primarily to the solution of Albatross per se. It is a question of the technical approach as opposed to a discussion of the organization and the organizational pattern for attacking such a problem, whether we should go into these broader questions.

MR. CHADWELL: My personal feeling again is that Albatross is Problem No. 1 to this group. A reorganization of AFSA or correction of component weaknesses in my opinion is No. 2 on the list. There is another group, as you know, studying the overall organization. Again I think that any recommendations on your second point would most certainly be seriously considered. The two tie together to a certain extent. On the other hand, the high crypto problem is No. 1 for my money.

MR. BECKER: My attitude toward this group is to regard its problem as one of two or three of the most important things that we are engaged in now.

The thing that worries me the most is not so much as to our current position but as to our basic position with respect to research. I think we have made a lot of improvement since the last war in all respects. My feeling on the question of Albatross as distinct from the organization of AFSA is that the organization, except insofar as it relates to focusing all possible resources on the solution of Albatross, will be taken care of by other committees. I would be very unhappy if you in your determination of the questions on Albatross did not feel entirely free to suggest any re-organization of AFSA's structure.

MR. SPEAKMAN: From the customer's standpoint your interest lies in the technical solution of the Albatross problem?

MR. BECKER: I don't quite understand your question. Do you mean that we are interested in the techniques and that sort of thing because I don't presume to be qualified to have any opinion on that? We are interested in the organization

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of it, in the possibility of solving that technical problem although we at the present time are entirely in the status of a consumer agency. We always regard ourselves as a potential producer. If the present facilities do not satisfy the needs to finally solve the Albatross problem, they will not satisfy those needs.

Dr. Engstrom entered the meeting.

MR. SPEAKMAN: We have asked three representatives of CIA to sit down with us for the first part of our meeting in crystallizing some of our thinking as to whether we should concern ourselves primarily with the technical aspects in the solution of the Albatross problem or whether we should go into the broader aspects of organization.

Mr. Chadwell has told us that Albatross is No. 1. In addition he wants to make any comments on the other aspects that would be in order.

MR. CHADWELL: On the organization part of the thing, plain text is in my opinion a separate problem.

MR. MCPHERSON: We want to determine whether we can safely make the assumption that Albatross is a fixed problem wherein if we solve this problem we are in for good. This Committee has looked a little at the broader than existing machine systems used on this Alabtross problem because we have assumed that the machines changed last year and may change tomorrow or next Monday. Therefore, the Committee must probably go beyond a single solution to this problem and consider pretty carefully what to do if it changes.

MR. BECKER: I was thinking of Albatross in the broadest sense in which you describe it rather than the mathematical interim solution to accomplish that and also to set up something that will permit us to face whatever comes next.

DR. CAIRNS: Any method developed in this connection should be powerful.

IR. ENGSTROM: The activities of SCAG should be concentrated on the Albatross problem not with the idea they will solve the problem but with the idea of isolating a particular area. I think that the members of SCAG should now look at the Albatross problem in all of its ramifications. We have

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reached the point where we should make certain specific recommendations with respect to this particular problem, not that these recommendations ought to be limited necessarily to this particular problem. Perhaps there ought to be more general ones. The field is so broad that unless you concentrate somewhere you spread all over the place. It is very difficult.

DR. POTTER: CIA is not especially interested in just how SCAG operates in getting a solution to Albatross, whether it has to do with the reorganization of AFSA, whether there are recommended changes that might give a better solution or give a solution, or whether it is a technical thing?

MR. BECKER: I would say that we are not interested specifically in the technical recommendations. I think we might be more interested in any recommendations that you may or would make on the reorganization of the functional activity over there, primarily because of a possible impact on some of our other relations and activities at AFSA.

DR. POTTER: The point I was driving at is that there is a machine going now that is directed primarily at that problem. There are two ways for us to approach the solution they are asking us to get there. We can take the problem off in a corner and talk about it quite independently of what is going on in other places. The other is to consider not only what SCAG might do but what might be done to reorganize, if you will, or redesign the machine work on the problem.

DR. ROBERTSON: You mean AFSA? Haven't you the machine time at AFSA? Would it be possible to get it?

MR. BECKER: Our preference would be the latter. We would not want to confine ourselves to what might be done completely independently but to consider the whole thing.

DR. ENGSTROM: Adm. Wenger expressed the problem. The primary question is, "Is AFSA doing everything possible to solve this high-level intelligence problem?" That is the first question he would like SCAG to answer. Well, I think the answer to that is inevitably "No". The possibility depends upon the sources, so you get back to how much money and manpower is reasonably allocated to those problems. This Committee says that we don't feel everything possible is being done. We mean that there are resources, technical,

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manpower, and industrial-wise which are not being brought to bear on this problem. However, to judge that, I think one must get an expression from an Agency like yours who is the user which will give us some measure of the value of this atomic bomb or airplane or whatever it is to give a standard.

DR. VON NEUMANN: Within ourselves is it possible for us in our independent efforts to use Roberts' method? It would be possible to make the calculations which he made and assign them to a larger phase of time?

DR. ENGSTROM: Very definitely.

DR. VON NEUMANN: We would be justified in putting it in. The number of hours they devote to the problem is extremely small.

MR. SPEAKMAN: In essence it would be a speed-up.

MR. BECKER: You can only predict the results of a successful solution of the Albatross problem because that sort of thing is so variable. Offhand you would say that it might condition all other priorities if you solved it successfully by virtue of the intelligence received. As to the resources, I think of ourselves as possibly capable of adding to the available resources in a somewhat more flexible manner than AFSA may be able to do. We would stand ready to consider most any suggestions you would have on that score as you probably know from what Mr. Douglas has said before.

MR. MCPHERSON: The problem is worth double the cost of AFSA?

MR. BECKER: I would think it would be.

DR. ROBERTSON: When you say you are in charge of production over at CIA you mean production from all sources coming in? I would like to get some kind of feeling of the preminence of AFSA in your general take. I can't ask you to give a number on that.

MR. BECKER: Actually in the most recent figures I have seen it varies terrifically depending on what particular use you put it to. I can say that it is one of our primary sources at present and at present is a very sorry take compared with what it should be and what it was during the last war.

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DR. ROBERTSON: None the less it is important. - - - - -

MR. BECKER: The whole thing, as you can see, stems from enormous difficulties of intelligence collection. You are dealing with a whole complex list of countries who proceed on the theory that even normal economic reports are classified.

DR. ENGSTROM: The answer to Adm. Wenger's first question, to repeat, "Is AFSA doing everything possible toward a solution of this problem?" I think the answer is "No".

DR. POTTER: You brought up a point here which has been a bit confusing to several of us on the SCAG group. That is the question of whether our responsibility is primarily to answer Adm. Wenger's question, or is it a question of trying to suggest what might be done to find a solution to the Albatross problem?

DR. ENGSTROM: I think, Dr. Potter, that our primary one is to answer the question that Adm. Wenger asked. If the answer to that is negative, then the next question is, "What should be done to take advantage of the other possibilities?" In answering the second question, I don't think the limitation is essentially on what AFSA should do. It is just what should be done.

MR. HOWARD: There is quite a bit of difference if CIA asks me whether AFSA is doing everything possible or if Adm. Wenger asks me whether AFSA is doing everything possible. I think it is an entirely different problem. I would answer it quite differently. I think you would have to answer that problem in different ways. Your approach might be satisfactory from CIA's standpoint but not satisfactory from AFSA's. You might just put it on the table and say, "AFSA just isn't capable of reorganizing itself to get at the thing. If you were working for AFSA, I think you would have a different answer.

DR. ROBERTSON: On Adm. Wenger's question, "Is AFSA making the best use of its resources and intelligence?" Is this being looked at enough from the outside? First, is AFSA as a whole doing enough in the general picture? Secondly if it is, would it still be enough? I think SCAG has to consider both of these questions.

DR. POTTER: You brought in one question.

DR. TOMPKINS: That is a very nice little approach to an entirely different problem from what we as SCAG or what some other group outside of AFSA could do to find a solution to this problem. I think we are not all shooting at the same aim here.

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DR. ENGSTROM: I think it is perfectly clear, Dr. Potter. SCAG has devoted nine months to the study of this Albatross problem. Adm. Wenger says, "Are we adequate?" The answer is "No" on it. The next question is, "What do we do specifically to solve the Albatross problem with no holds barred?" Is there any conceivable way of implementing the solution, whether it is AFSA or CIA or Bell Laboratories or anybody else? I think the issue is perfectly clear.

In AFSA there is an operating agency. They must produce from all sources. They just can't put all their resources on the Albatross problem. They are working with a chain

[REDACTED] AFSA can't possibly say, "Well, here. We will dump everything on the Albatross problem."

DR. ROBERTSON: If you did, Mr. Becker would object.

DR. VON NEUMANN: Is that more important than the other?

MR. BECKER: Not solely.

DR. ROBERTSON: In the present take it is not.

DR. ENGSTROM: Gen. Canine said to me the other day, "In running an industrial concern, you have the problem of research in providing for the budget. The Board of Directors will decide how much you can put on fundamental research."

In an industrial concern you must make money. You don't divert your complete effort from manufacturing private things to something which is in the future and which may be uncertain. It is a question of how much effort you can allocate to this sort of thing.

DR. ROBERTSON: It depends on the estimated chances of success. I was very much interested to hear those who are coming into this field express optimism. I don't know whether it would be well advised to put greater effort on this one aspect. I am not sure in general that we would agree with the optimism which you express here.

DR. CAIRNS: I am not so sure. The optimism of the group is based on the fact that there are methods to do this problem. The Roberts' method, that information must have been completely explored.

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DR. VON NEUMANN: We have been waiting for machine time for nine months. What does this mean? If this is urgent, we have been waiting for machine time. The machine sits there.

MR. SPEAKMAN: CIA thinks that it would be the No. 1 problem, Albatross?

MR. BECKER: Yes. From AFSA. Is it certain that the question is resolved in the question of priority? In other words is there no possibility of securing additional resources so as to eliminate the priority problem?

DR. ENGSTROM: I think that it is one of the things that the Committee should consider.

MR. BECKER: I would be inclined to ask you people to give your advice as to what should be done without worrying about priorities. How can the problem be solved? Then follow up those recommendations by having a go-around. Are they controlled by priority products or things of that sort that require us to impose priorities, or can we by the allocation of additional resources carry on both activities at what we regard as maximum efficiency?

MR. MCPHERSON: You do have spare lead-time. It is one to three years' time. Should there be a local priority, a short-term priority, applied to increase the probability?

DR. VON NEUMANN: Anything you would want in six months you would want done in twelve months?

MR. BECKER: Yes.

DR. CAIRNS: Things like the East German problem we can hardly expect those to be set aside.

DR. ENGSTROM: A great deal of machine time is being devoted to other problems which are equally important. There is the additive job, Zomby, and Bootstrap Operation.

MR. HOWARD: The priority will always be by you. You have to figure out the right things to do. You can't find an infinite number.

DR. VON NEUMANN: We would have to find out whether it is more important or less important.

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MR. HOWARD: To say that all attention should be devoted to Roberts' method is a little bit rash on our part.

DR. ENGSTROM: That is right, John. You must approach certain avenues in the solution of the problem. To say that the problem exists and that it is very important is not enough. You must say, "Well, what will we do?" Here is the mathematical technique, the Tompkins' and Roberts' approach^s which Dr. von Neumann says have been insufficiently processed. He is not satisfied with them to the exclusion of anything else. Here is a street which appears to be open. Let's go down the street. If anybody has any other avenues of approach, let's do it.

DR. TOMPKINS: The long and short of it seems to be this. Here is a scheme which has some promise but has not been adequately tried. Equipment is there which could be used for that. Historically that equipment was bought for this kind of business and turned over to production usage. I don't think that by saying that we should give this Roberts' method a fling on that machine means that AFSA should go out of the production business completely. The question is whether it is not proper to reassign time on the thing, put some time on continuing the capital investment, and have more knowledge so that we won't be in precisely the same position five years from now. They are doing the two-bit work out there and still do not know how to do the important work. There are a lot of people out there who are not competent to do this sort of thing. They have to have it processed for them to handle it.

MR. BECKER: The difficulty in answering a question like that is obvious. If we had your recommendations as to what time would be required and then were given a chance to see what those machines are being used for now and evaluate what the production is worth to us as compared with the acceleration of the Albatross problem, I don't think we would have much difficulty in giving you an answer. The basic factors on that could be determined without too much difficulty with your advice.

DR. ENGSTROM: The more I think about it the more I feel the ultimate solution of this type of problem requires a separation of research activities from the operational activities. I mean a separation with a strong wall between them. In our experience during the war the same thing happened. We had lots of machines. We could get no time on any of them for any exploratory effort. They were always in use on the daily work.

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MR. BECKER: You want to physically take out part of the capacity?

DR. ENGSTROM: At least there must be a strong separation so that there will be no poaching of fundamental capacity from the operational people.

DR. CAIRNS: Perhaps machine time could be dedicated to the exploratory work.

DR. VON NEUMANN: Being practical, there are only two proposals which have been made. One is Albatross. There is not the slightest doubt that this calls for two machines. Why bother with Albatross if nothing is going to happen for twelve months. No. 2, the people who are interested in this, our supervising and planning personnel, exist in such numbers. What they would need would probably be a smaller amount of machine time. That is easy to get. What we need last is priority for us to have one machine for a certain fraction of the time which would be specified and would be say 25 per cent or 30 per cent. It came out on something the order of 25 per cent.

MR. BECKER: From my knowledge of the present production of AFSA my entire reaction to that is that we would support production.

DR. ROBERTSON: I am interested in knowing how much of the present problem that you must have from AFSA does involve machine time.

MR. BECKER: That is an unknown factor.

DR. TOMPKINS: Much of that could be done as well somewhere else. The thing is to make any sort of reliable estimate. This sort of thing could probably tie up one machine for 45 per cent of the time.

DR. CAIRNS: There are other machines in other places which would be appropriate to use with the Roberts' method.

DR. TOMPKINS: On a smaller basis you could probably get the 604 and the CTC.

DR. ENGSTROM: I think as far as the discussion is concerned, Gentlemen, I think that as far as the representatives of CIA are concerned, what we would like today is a statement of

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the broad issues, the details of which we are not getting into. The details are something which we ought to settle in a closed session. We have certainly a very strong sense of the importance of this thing which these gentlemen have given to us.

I would think that the time is appropriate to get down here to producing this report. There is pressure to make some sort of formal report of the findings of SCAG. This pressure comes from two sources. One is from Adm. Wenger of AFSA who would like to have such a statement. Secondly, as you probably know the Brownell Committee is also anxious to have the findings of SCAG in some kind of written form. I have prepared a working paper in connection with the findings of SCAG here. As soon as appropriate we ought to get to work on it so to speak.

MR. MCPHERSON: Going on to the question I asked, is the solution of the Albatross High Level Cipher Problem something which is worth twice the cost to AFSA? Is this thing really worth doubling the effort there?

MR. BECKER: There isn't the slightest question in my mind but that it is. When you consider the savings in our own resources that we would acquire from a solution of this, assuming that it is decent, that would be a rather modest estimate of its value to us.

DR. ROBERTSON: In considering the kinds of questions that people are asking you, there is one point that I would like to bring up in connection with what Dr. von Neumann said about the avenues for collection. That was correctly stated except for one, the direct approach. The AFSA people have a sort of tendency to turn criticisms of themselves back into criticisms of the Central Intelligence Agency for not getting accurate and correct information concerning this device. If those fellows really want to get the answer to this problem, they will still have to use one of these machines.

MR. BECKER: We are devoting every effort that we can to this. If you haven't informed SCAG of that, we would like to see it.

DR. VON NEUMANN: It is completely different from the other one. If you have it, then you are able to analyze a lot of past information but you can never get anything into the future.

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DR. ROBERTSON: That depends on how it is done.

DR. ENGSTROM: Perhaps somebody might steal the whole machine, or any information or photographs. Somebody might tell you how many wheels there were in the thing.

MR. BECKER: As you know, we are aware of this problem. We will welcome suggestions from anybody who has any solution. There is one more word that would be helpful on priority. At present there is a great deal of waste on our primary sources. I think you would be somewhat horrified to see the large bulk from primary sources that is plain text pure and simple. If you were to evaluate the decrypted product today, it would be much lower than your estimation. I say that with some qualification because in certain cases one or two items may mean the difference between a large mass of plain text and a complete or unqualified statement. As far as the value of existing production material, other than plain text it is not terrifically large.

MR. SPEAKMAN: You are getting a lot of plain text even now?

MR. BECKER:

DR. VON NEUMANN:

MR. BECKER: Messages.

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MR. CHADWELL: All of us have come to a personal opinion on that. That opinion is that this material does not reflect the interpretation of the people passing it along to you. It is in the record. You are not dependent upon one person saying, "I heard this. I saw this and I heard that." It is going in the record. I think the group ought to plan to get together in executive session to hit these particular problems. I would like to suggest that the CIA representatives be excused if there aren't any other questions to put to them.

MR. SPEAKMAN: Are there any questions that the members of SCAG would like to ask of our CIA friends here?

There were no questions. The CIA representatives left the meeting at 1000.

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DR. ROBERTSON: Mr. [] represents Mr. Douglas. He is with Mr. Douglas and Mr. Chadwell. They are both with Mr. Douglas. Mr. Douglas has the whole COMINT shop there.

DR. POTTER: Do you have a notion of his relative interest?

DR. ROBERTSON: I don't. The problem is so great. CIA is working on a problem for us at the Pentagon.

MR. HOWARD: He is an Executive Adviser or something. Mr. Chadwell represents Scientific Intelligence.

DR. ROBERTSON: CIA is set up in different offices of which one is Scientific Intelligence, which puts him in as Assistant Director of CIA.

DR. ENGSTROM: I have a set number of copies of this thing, Gentlemen. I got this up as a working paper.

DR. ROBERTSON: Have you read the second volume of Churchill's Memoirs? During the bombing that whole thing was broken by COMINT by a man named Jones. That will locate where Mr. Chadwell sits on this picture. You remember that the Germans had various beaming sections. The function of those people, how they would work, and how they could weaken them was broken by COMINT by this chap, Jones. The story of that is given in the second volume of Churchill's Memoirs. You can't tell from Churchill's account that this is the source.

DR. ENGSTROM: Let's start off with the paper. The first two paragraphs of that statement are somewhat general. I think that the question, "Is the problem solvable?", may require some discussion.

DR. POTTER: How do you want to handle this discussion, paragraph by paragraph or read through it? We want to do whatever is best.

DR. ENGSTROM: Referring to the Englishman, I don't know whether there was a written report. Dr. Campaigne will explain it to you.

Manpower, that is something that perhaps we can discuss.

DR. TOMPKINS: I have here a copy of the proposal from the shop to Corona. Should we stick that into the paper?

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DR. ENGSTROM: We have to get out some kind of a report or a statement. The Brownell Committee desires it. Our first problem is to get out some kind of a report.

DR. ROBERTSON: The plan is to meet with Gen. Canine tomorrow. It is desirable to have a report and discuss it with him.

MR. MCPHERSON: I wonder whether we shouldn't consider this report a report to Gen. Canine and let him have the option of releasing it to CIA or the Brownell Committee. The people here are shaking their heads hard.

DR. TOMPKINS: We work with RDB.

DR. ROBERTSON: I would say that this should be to Gen. Canine only.

MR. HOWARD: I think it should be given to Gen. Canine. Whether it is a report to Gen. Canine or to the Brownell Committee, it is a statement of our opinion.

DR. POTTER: Could you give it to the Chairman of RDB? He may pass it to the Brownell Committee. If we leave it with Gen. Canine, it may not get far.

DR. ROBERTSON: This brings up something which I was going to mention. On page 2 it says, "Is the Armed Forces Security Agency carrying out all possible steps toward a solution of the Albatross problem?"

We have been talking about two phases of this. There is the question of whether AFSA within its own organization is making optimum use of its own resources. That should be in the report. That part is of concern to Gen. Canine.

There is a question which is involved in further recommendations here of augmenting the resources of AFSA. That is, of course, of interest to RDB, CIA, and the Brownell Committee. There are both elements involved.

DR. ENGSTROM: Whether the report is to Gen. Canine, it is understood that he wants to see the group tomorrow afternoon. Whether it is a report to RDB, my reaction is simply that it is a statement of SCAG's opinion and the distribution of it is something beyond that.

MR. SPEAKMAN: If this is a report of the findings of SCAG, what you visualize as a result of your work to date, what you want to do in the future, what is the realistic question to ask ourselves?

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DR. POTTER: I don't think you can toss that over your shoulder as glibly as that. We have to decide on an audience.

MR. SPEAKMAN: Definitely we will speak to AFSA. We are working for them on Albatross primarily.

MR. MCPHERSON: It would give it much better direction. We have been given the responsibility to try and help them. If we can help them by saying what is wrong with their present resources, I think we should.

MR. HOWARD: Are we now deciding on who SCAG works for?

MR. SPEAKMAN: In a sense we are making a report to AFSA. If that intimates that we are working for AFSA, I think we should so admit.

DR. TOMPKINS: If we make the report to Gen. Canine and we feel that the report should have a somewhat wider distribution, we could properly include remarks to show what we think is the proper distribution of the report.

DR. ROBERTSON: I am on the Committee for CIA. Ed is here in the same sense for RDB. In this report to Gen. Canine I would consider it legitimate for me to inform CIA of the results of that, to inform my office in case we are called up by the Brownell Committee. I feel that the report should be for Gen. Canine.

MR. SPEAKMAN: We could still give the original to Gen. Canine. We can say, "This is our report. We are giving copies to the Director of CIA and to the Chairman of RDB."

DR. POTTER: I am not arguing about who the report ought to be directed at. I think it ought to be directed at a specific group as the generalized comment of what we think of the situation. One of the things that you can criticize a little bit about the way this is written now is that it is not entirely directed to AFSA. We can say that we think if we did so and so the thing would be much better. You are trying to do two things here, to define AFSA's position as against CIA's.

DR. ENGSTROM: All I have tried to do in the working paper is to write down a combination of the expressions of opinion that have been given in various SCAG meetings. This is simply a working paper. I tried to get something

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down on paper which this Committee could hash around and do anything with which it liked. I am not trying to present a case here. I am trying to present the various comments that have been made today.

MR. MCPHERSON: I think that is a good suggestion. Make it direct.

DR. ROBERTSON: The distinction I have been making concerns the answer to Question No. 2. The two parts that I have mentioned then fall into place. In the part where you say that we think AFSA could make better use of what it now has, we can make definite recommendations. On the other part we can say that in view of the importance of the problem, we do feel that AFSA should have more support from outside, if we feel that way.

DR. POTTER: It would not be confined exclusively to Gen. Canine alone or exclusively to anybody else.

DR. ROBERTSON: If it is sharp enough to state to Gen. Canine, we should put it up to him to do it.

DR. ENGSTROM: In order to get the thing done by tomorrow afternoon I suggest that probably the best thing to do is to have a group appointed as a working committee on that this afternoon and maybe tomorrow morning. In the meantime we will try to get the general statement somewhat clarified. We have a stenographer. Maybe this outline should be tossed over board and we should start anew.

DR. ROBERTSON: What you have to do is to get a small group together to prepare a draft. For guidance on this we will go over this paragraph by paragraph and make comments.

DR. ENGSTROM: I think that Dr. Robertson's comment under Question 2 is a very good one. Your point is that it should be put in two parts. One is, "Is every possible thing being done within the present structure of AFSA?" The second question is, "Should the resources be augmented beyond that?"

DR. CAIFNS: The first question includes the question of whether AFSA should itself be expanded. The second question is whether it should be supplemented.

DR. ROBERTSON: Not expanded ^{or} reorganized. It is a question of whether you should put a certain amount of machine time on Albatross to some extent right within AFSA. You don't want a narrow margin.

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MR. MCPHERSON: Go back to the first page. You provide advice and assistance. I think it should express exactly what this Committee should consider its operation. I think that we might go farther in that same connection and state specifically that this Committee is constituted for AFSA to solve the Albatross problem, the specific problem. I feel that we couldn't solve the problem if they asked us to do it. I don't think we should separate that responsibility in any form. I don't know whether that is a good conclusion or not. I feel that so strongly.

DR. ENGSTROM: You don't think that there is any expectation that this group is going to solve the Albatross problem?

MR. MCPHERSON: We can offer assistance, suggestions, or advice.

MR. SPEAKMAN: This is primarily an advisory group.

DR. TOMPKINS: Make the suggestion explicit enough. When you read the results you find out where they are going to hit next week. That is a very good suggestion.

DR. ENGSTROM: I think that the stenographer should take down a few key sentences to incorporate into the report because if she transcribes the complete record this is not going to be done by tomorrow afternoon. If we could get the sentence that you just stated into the record, it would be helpful.

This Committee cannot accept the responsibility of being a substitute for AFSA in the solution of Albatross.

MR. HOWARD: If it is a correct solution of Albatross.

DR. CAIRNS: I wonder whether that should be said. It is true that no one has intimated it.

DR. POTTER: If you come out with a solution, those words would be used time and time again.

MR. SPEAKMAN: The implication has frequently been given in conversations with AFSA and CIA that SCAG has primary responsibility for Albatross. Why don't you solve it or tell us what to do? It would put us somewhat on the spot to say that we expect it from you. We were not formed on the basis that we would do that, that we would spell out the facts. This is primarily an advisory group.

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DR. ENGSTROM: How about the rest of the first page?

DR. POTTER: We ought to have an additional statement of the requirements for solution of the problem contained as the last paragraph of this report.

DR. CAIRNS: Doesn't this exaggerate our convictions somewhat?

DR. ROBERTSON: To me this is what it means. The problem is solvable. I have heard you say that in your judgment it is. I have confidence when I make that statement. I accept it. The fact that I am accepting it adds nothing to it. To say "unanimous" is pretty strong.

MR. SPEAKMAN: It is the opinion of those qualified to say this.

DR. ROBERTSON: The opinion of SCAG is that the problem is solvable. It is the opinion of the experts on SCAG that the problem is solvable.

DR. TOMPKINS: There are still a number of things to do. Why don't we do them?

DR. ROBERTSON: What the Brownell Committee wants to know is, "Did SCAG think the problem is solvable?" Possibly some of the people from AFSA didn't think so. They want to know. This in particular was extremely important to them.

DR. TOMPKINS: Mr. Friedman told me last week that he didn't feel that the problem could be solved on a continuing basis without some direct kind of help such as Mr. Howard was talking about earlier. You can recover key every day. What else has to be done?

DR. POTTER: He doesn't think it is solvable?

DR. TOMPKINS: How do you feel about the problem? I don't see why this thing is any worse than any other problem, for example, the Jap Naval Attache thing.

MR. HOWARD: It is not a static problem. I could take the problem as described and get no more information on it.

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If I go off in the corner, I doubt that I could solve it or that anybody else could solve it. I am looking for dynamic growth, for new information to be made.

DR. ROBERTSON: Do you require information from clandestine sources or do you know of direct information? Do you think you can solve it without that?

DR. ENGSTROM: Direct information is most valuable.

DR. TOMPKINS: The Brownell Committee would like to have an opinion on the solvability of it. I don't know that we are competent to have an opinion. My guess is "Yes".

DR. ROBERTSON: If you want to put a rider on that, you might say that there is extremely valuable information from clandestine sources. That is very real and is something they want to know too.

DR. ENGSTROM: State here that members of SCAG are of the opinion that the Albatross problem is solvable.

DR. TOMPKINS: It might be done by a slight rider to this if anybody would like to put one on it. I think it is solvable. At any rate there are several conclusions, several constructive suggestions as to things to do which will increase our knowledge. We ought to include the probability that some of these things will work together in such a way as to make the most of them and go ahead and try them.

DR. ENGSTROM: That is in the latter part of the report. You want to make a statement in some form or other in general terms about the solvability of the problem.

DR. VON NEUMANN: I am in general consonance with the statement that we think it is solvable. I would concur with it if we had a formal statement. I would perhaps formulate it in a slightly different manner to make it more direct.

DR. TOMPKINS: You would say that there is a very clear-out program which should be pursued and which shows good promise.

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DR. ENGSTROM: There is a very clear cut program which shows promise, good promise of solution in a reasonable time-- good promise of successful solution.

DR. TOMPKINS: Some of us might be losing track of the facts.

DR. ENGSTROM: Is his definition of the solution satisfactory? You mean recovery other than in wiring, day to day? If you get to it, you can turn it out.

DR. POTTER: Qualify there what you mean by talking about the interim solution rather than the final solution. I am asking the question now. We might extrapolate our expectations here considerably.

DR. ENGSTROM: I think if the thing shows hope, it is worth pushing hard.

DR. POTTER: There are two ways you can answer that. Can you get a final solution, a solution that you can carry on? Is there an entering wedge to this? Can you see an entering wedge?

MR. HOWARD: We don't say that it has to be ready currently on the day or two weeks later.

DR. ENGSTROM: We might go on to the next thing here.

DR. POTTER: In the middle of the second page, in the second sentence it says, "In answer to the above question therefore, SCAG is unanimous in taking a negative position." I don't think we ought to answer it that way. Is AFSA carrying out all possible steps? I don't think they are. I think they would be quite frank about admitting it. They don't know whether they are or not. We might show them some better way to do what they are doing.

DR. ENGSTROM: Adm. Wenger says that AFSA is set up with a mission to solve this problem. What should AFSA do? Should they supplement the present effort? Is it SCAG's opinion that what they are doing is all right? Give them a commendation and go home.

DR. VON NEUMANN: It depends on what you mean by negative.

DR. CAIRNS: You are answering the question.

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DR. ENGSTROM: Put something in here about the present priority of Albatross in machine and program time.

DR. POTTER: Does this mean that I am saying "No"?

DR. ENGSTROM: Something is in order here about the priority, a statement that we are not giving sufficient priority in machine and programming time to this.

MR. HOWARD: We can't expand in detail how we would allocate the machine time.

DR. ENGSTROM: Here is a promising avenue of approach which depends on machine time which we have not had.

DR. VON NEUMANN: I don't know. I am asking. There certainly may be a reason for giving it a low priority.

MR. HOWARD: I have attended all the meetings. I don't think the question of the allocation of time has officially been brought to our attention.

DR. TOMPKINS: It has been brought up in the meetings. There was a definite statement by me which Mr. Friedman combatted in the meeting with Dr. Gleason.

DR. ENGSTROM: I think that we must not defer to members of the Committee in this report. If we expect to get unanimous agreement on every point which is brought up here, we will never get anything done.

DR. CAIRNS: You made a specific suggestion a moment ago and recommended that 25 per cent of the machine time be devoted to this.

MR. SPEAKMAN: We might point out the priority is not apparently commensurate with the priority, with the importance of Albatross. I don't think it is the machine we are talking about.

DR. TOMPKINS: To pound out a statement like the one you just made is somewhat dangerous. You are going to have to make corrections year by year.

DR. CAIRNS: You would have a specific category to which the time should be devoted. By contact with certain current traffic that is essentially solved. When they use the machine, they know how to do it.

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DR. ROBERTSON: Say that it is feasible or is reasonable.

DR. ENGSTROM: Do you have anything you want to question?

MR. MCPHERSON: Is the Armed Forces Security Agency carrying out all possible steps toward a solution of the Albatross problem? The answer is "No".

DR. ENGSTROM: Say all practicable steps. That is a good word. Get it broken down into two questions.

DR. ROBERTSON: It can't be answered within AFSA itself.

DR. ENGSTROM: Rerword the question. Say "practicable".

DR. POTTER: On page 3, paragraph 2, I am asking the question. I am not criticizing anything here. In the last sentence it says, "It is felt that AFSA is carrying out an effective program in this direction." Does that mean within their capabilities or are there any limitations machine-wise or otherwise?

DR. ENGSTROM:
are doing a good job in that regard.

I think they

DR. POTTER: You want to distinguish between doing a good job with what they have or doing a good job with what they might have. I am not at all sure that they have enough equipment to do a good job. They may be working very diligently on intercept itself. Perhaps they don't have enough machines to scrutinize the material or enough personnel to get at these . Is that wrong?

DR. ENGSTROM: They are very active in this field. My feeling in putting this down was that I didn't personally have any better suggestion on how to do the thing better than they are doing it.

DR. POTTER: Are we going to recommend here any place that they increase the personnel to do this kind of job or increase the number of machines they have on this kind of job?

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MR. HOWARD: At one of the earlier meetings Mr. Friedman said that that was one of their weakest points, that it would be helpful if they could get people out at the intercept stations and keep them there. That is outside of AFSA, the augmentation of the facilities.

MR. MCPHERSON: It has to do with the problem of getting all the intercept from the stations.

MR. HOWARD: I have a question. Are they in direct control of the intercept?

MR. MCPHERSON: They have the ability to put the stations where they want to, to do the best job.

DR. POTTER: One thing that I criticize here on the intercept side is the fact that we don't see anybody paying any attention to the systematic aspects of the intercept problem because it has grown up like Topsy. I see that nobody has taken that as a study.

DR. ENGSTROM: My feeling on the thing, Dr. Potter, is that the report should somehow concentrate on the Albatross problem. The intercept quality of the problem is an all-embracing problem. I agree with you that there are a lot of things that could be done there to improve upon the Albatross problem. As far as our present knowledge is concerned, I don't think we know.

MR. MCPHERSON: Strike out the sentence, "It is felt that AFSA is carrying out an effective program in this direction." We are saying that they need to increase the quantity and quality.

DR. TOMPKINS: Is this an organizational as well as a technical experiment?

DR. POTTER: We can and do look at the different aspects. You are concentrating on one. It just happens that I picked the intercept field because I know a little bit about that field. That has nothing to add to the main thing. From that standpoint there may be something that they can do about intercept.

DR. TOMPKINS: I agree with you on that, that it has nothing to do with the administration of the one big bottleneck in intercept operations, that it would be well to expand them regardless of whether the Army, the Navy, or the Air Force does the expanding.

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DR. ENGSTROM: You think that we should state that the areas of the problem concerned here should be subject to further study.

DR. POTTER: This problem deserves more detailed study.

DR. TOMPKINS: Be specific and say the "intercept problem". You can't keep the people on the track.

DR. ENGSTROM: At the bottom on page 2 it says, "Acquisition by surreptitious means". Is that strong enough?

MR. MCPHERSON: I think we should have something.

DR. ENGSTROM: On page 3 we are looking for increased effort on [] and analysis.

DR. TOMPKINS: I would like to point out that maybe this isn't the right place for it. I don't think it has come up before SCAG. SCAG has considered in detail increased effort along the mathematical line. It has considered it in detail but with less coverage of the actual field. They want to give increased attention to high speed computing devices, such as Mr. Shepard's. They have equipment enough to fill a room. Other people, including me, tend to feel that we ought to go to high speed computing devices.

There is a third aspect which we haven't touched on at all but which is obviously necessary. It is a question again of making basic studies on propagation, then opening that up and going to the sources of information and interception of the message. There is VHF and UHF. That gives the lead to [] and other information from traffic analysis. All of them depend on learning a great deal of information, more than anybody knows about the ionosphere. If you take a certain part of the ionosphere, you can do several things.

There are implied in this business two things. One is increased attention to analytical methods, increased attention to high-speed data-handling components. I think that both are more reliable than the third thing. They need to increase the attention they are paying to such things as the ionosphere.

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They need to give attention to interception, to monitoring the material of enemies and potential enemies, and to intercept fixed positions more accurately than they have. They need to have good traffic analysis.

MR. HOWARD: That is covered under paragraph 2 up here. The "bust" is not the main point there.

DR. ENGSTROM: That might come under the basic research kind of thing.

MR. POST: There is a time element involved in the suggestion here on the ionosphere business. It is not something that we are going to do today or tomorrow..

DR. ENGSTROM: I think it would be under basic research. You could make the immediate suggestion, implement it, and get results from it, plus the basic research program.

DR. POTTER: We could get results rather soon if somebody gives attention to this whole matter. There are ionospheric data.

MR. POST: Would it be worthwhile to say anything about the time element?

DR. ENGSTROM: Probably.

MR. POST: If it takes five years to do it, where are we?

DR. TOMPKINS: If we start five years from now, it will still take five years to do many of these things.

MR. POST: It would be nice to give hope of how long the project ought to take.

DR. ENGSTROM: Let's go on to the analytical methods here.

DR. ROBERTSON: You have the security consideration in all of this. There are a lot of people who don't like to work for the Government.

MR. MCPHERSON: There is one general criticism which I would like to lay on the table. Perhaps Mr. Speakman knows the background. I have a feeling that in presenting our recommendations we want to develop the fact that we feel that additional machine development is a subject of

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importance in its own self as far as it applies to crypto problems and not leave it as a part of the analytical method. I feel that the whole picture as it exists today is rapidly changing and will change still more. There should be basic research on the machines.

DR. TOMPKINS: Separate it into three paragraphs. One paragraph is analytical methodology and machinery which is necessary for carrying it out. Another has to do with the other research aspects which contribute to the problem.

e DR. ENGSTROM: Under analytical methods, I think we ought to put Dr. von Neumann's comments in here. We ought to have some statement that these suggestions of Tompkins, Roberts, von Neumann, Pendred, and others should be followed more vigorously. Another was that the priority and machine time is not consistent with the statement of the importance of the Albatross problem or something like that.

e DR. TOMPKINS: I would like to modify that. It contains Pendred's name. It would be nice if we knew what Pendred suggested. I would like to have a strong indication of what he said if we leave it in there. e

DR. ENGSTROM: Say Roberts and others.

MR. HOWARD: We had great hopes here of solving [redacted]. The suggestion might be modified to say "by other people". There are operational people who aren't mathematicians in a sense.

DR. ENGSTROM: The organization here may be wrong.

MR. HOWARD: There are still a great many analytical methods applied. You don't have to have a completely divorced problem.

DR. ENGSTROM: What do you want to say, John? There are avenues in connection with recovery of information from [redacted] which show promise and which have not been studied on which additional effort could be put.

Scratching is one operation in the research process. It is the type of approach which Mr. Shepard feels is most promising.

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MR. MCPHERSON: I went out a couple of weeks ago and saw one man and a boy on the job. On the main problem two or three technicians could be applied to this high-speed electronic rotor problem and possible development of the actual machine. If we had the job, we would expend roughly a million dollars a year on it. It is that promising in my opinion.

MR. HOWARD: That usually means that you know where you stand. If that is not our position, then we need to do a lot of analytical work, to give attention to machine development. It is still a split thing here. The method of procedure here will give a lot of attention to analytical methods, to the importance of mathematical methods in machine development. I think we can certainly recommend a much expanded program.

DR. ENGSTROM: There is no doubt about it that Mr. Shepard's material is very promising. We are not doing very much about it.

MR. HOWARD: I would get a number of machines as described under Exploitation in the hope that I was going to have to have them pretty quickly.

DR. ENGSTROM: I see that we will have to rearrange the thing somehow here.

MR. SPEAKMAN: I don't think that all the comments will be lost.

MR. HOWARD: The thing that I am a little worried about here is that we don't make analytical methods appear to be the only method or to be the highest priority method.

DR. ENGSTROM: We have just said "Roberts' method". They can't get enough time on the 1101.

MR. HOWARD: That doesn't mean that they don't run them insofar as the development program is concerned?

DR. ENGSTROM: The order is of no significance.

MR. HOWARD: I was trying to be helpful here.

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DR. ENGSTROM: Under Exploitation I tried to state that we are interested in switching techniques, in rotors, and in all the rest of it.

DR. ROBERTSON: I suggest that the Chairman be the Chairman of the group which is appointed to do this revision.

DR. ENGSTROM: I would rather leave this to someone else.

MR. HOWARD: I think you have done a swell job.

MR. SPEAKMAN: You be one of the people to work on it.

MR. MCPHERSON: I will do whatever you would like.

DR. ENGSTROM: How about the material on Administration? Do you want to put the technical matters first in this report?

MR. MCPHERSON: I suggest that before we get into Administration we draw up the basic research. Do you have any suggestions on basic research of the type that might speed up the system? We might divide it off from the operational problem. We want to keep looking for a new solution to the problem. We want to keep administration separate from basic research. We may have a radical type of research or a production type of approach to the problem which we may take off on tomorrow. We may take long gambles hoping for unexpected results.

I think it should be clear to us that it is the No. 1 problem.

DR. POTTER: We can add an indication that it is the responsibility of higher supervision to be sure that research is kept away from development.

DR. ENGSTROM: How about personnel? It says that a careful revision of personnel policy is needed.

DR. POTTER: Do we know what the difficulties are?

DR. TOMPKINS: I would still like to bring up a question. We may not be experts in organization. If we limit our suggestions on the organizational setup to guarantee some continuity or some continuing program on basic research, we have done about all that we as a group are probably competent to do.

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DR. POTTER: You can indicate the difficulties they have to hurdle in order to pull the group together.

DR. ROBERTSON: We have seen the same problem come up in another Government organization. In order to get research in line with everyday routine, isn't it true that in order to get the money and resources it has to be done right at the top? The Assistant Director in charge of research should be responsible only to the Director. He would be the fellow who would determine it.

DR. TOMPKINS: Granted that what you say on the thing is true, I am not willing to make the same statement. There has been so much experience in Government research. I would even tend to challenge a little of this, namely the sufficiency of your solution.

DR. ROBERTSON: Within the organization?

DR. TOMPKINS: Even at that. You still see what the report says, who has the most power really. There is no power in the Army, Navy, or Air Force who is responsible for all interception.

DR. ROBERTSON: You have jumped over the Joint Chiefs of Staff here. There is no sense of us trying to do anything with that. If it is something within the organization, it is reasonable to suggest it.

MR. POST: Could we suggest that a civilian be set up under Gen. Canine to have complete say over the research group to devote its entire effort to a particular problem without anyone telling the group what to do except Gen. Canine?

DR. TOMPKINS: That is on page 5.

DR. ROBERTSON: It doesn't define what he is to be concerned with.

MR. MCPHERSON: You say that the present status of the Director of AFSA leaves much to be desired.

DR. ENGSTROM: They came up with the Brownell Committee. The super-structure is rather uncertain.

MR. MCPHERSON: Is the super-structure uncertain?

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MR. POST: He has two separate organizations to answer to, AFSAC and USCIB.

DR. ROBERTSON: And the Joint Chiefs of Staff.

DR. TOMPKINS: He has no direct authority for the Army, Navy, and Air Force unless the Joint Chiefs agree.

MR. POST: Some action must be taken on the super-structure before anything is going to come out of it.

MR. MCPHERSON: That is not our problem.

DR. ENGSTROM: I put in the sentence to indicate that we were aware of the problem. Probably it would be better left out. It is clear that SCAG has considered the problem of having a civilian in control. It is agreed that the need for military leadership is there.

DR. ROBERTSON: Say responsibility instead of leadership.

MR. POST: Spell out in more detail what the civilian should do.

DR. ROBERTSON: The need for military responsibility is apparent.

DR. ENGSTROM: Detail the duties of the civilian under Gen. Canine. Say, "It is acknowledged."

MR. POST: We should comment right about the details of the Civilian Director.

DR. ENGSTROM: Have you any ideas on writing the job description for this fellow?

MR. MCPHERSON: I don't think they ought to be confined to research. If you are talking about organization, if that is what you have in mind, we need a military man to take care of the responsibilities of the military. We need a technical man to head the whole setup. You need two distinct divisions. You need one individual, an Assistant Director, whose responsibilities are primarily research. He doesn't try to ride two horses. He does the research end of the problem and tries to look ahead. The development fellow

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looks after the more immediate problems. It is still the responsibility of the top man here to be sure that they don't pull all the good men out of research and rush them over into the development area every time a lot of problems come along. There is no reason why they should have to put research out on the West Coast and development right here.

DR. TOMPKINS: That isn't a very good solution, it seems to me. Actually I am inclined to think that the same person ought to do some of the research and some of the development and some of the operations. That works out fine in universities where the men are teachers for awhile and researchers for awhile. Their reasons are organizational reasons however.

MR. HOWARD: I think it is born in a man to do one or the other well.

DR. TOMPKINS: This may be the only feasible approach.

DR. ROBERTSON: We have the Technical Director and the Operations Director. The Operations Director could be military, the Technical Director a civilian. You have the Executive Officer to handle administration. He comes under Gen. Canine.

DR. TOMPKINS: The real important point is to have the technical fellow in order to keep the research effort from being throttled. I would not run it the way Dr. Potter would run it.

MR. POST: Should he have complete authority over everything that goes on under him. What happens to the personnel problem when the military man says he wants these things?

DR. ROBERTSON: We will have to pin that down.

MR. POST: We also have a law that says he can't do this. The problem is coming up all the time with the military. You get a couple of good men and they are gone. If this is going to work here, that has to be stopped.

MR. MCPHERSON: Try to sell him the plan so that it will be stopped.

DR. ROBERTSON: Sell it to the Director so that it can be stopped.

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MR. POST: The man should have complete authority over all things in his particular program.

DR. TOMPKINS: He has the power to project the research effort.

DR. POTTER: You have two divisions here which should take care of those things, whether you have the personnel kind of problem or whether it is an organizational thing.

DR. ENGSTROM: To expand the facilities seems to be the general opinion.

DR. POTTER: This isn't as if we were recommending some solution of the Albatross problem. We ought to have air conditioning, etc. Shouldn't we say that in addition to a great need for machine facilities some of these other things ought to be done?

DR. ROBERTSON: I suggest that we draw up some pretty definite recommendations in two categories to the Director of AFSA. The others are recommendations that AFSA makes concerning things which should be done which are not within the power of the Director, some augmentation of funds and facilities. You ought to put the things in pretty definite recommendations. Take a look at it. There are recommendations where action is required. Put them into two categories.

DR. ENGSTROM: We say that the amount of money required by AFSA seems extremely modest. That statement is relevant.

DR. TOMPKINS: Are the funds mentioned the total operating funds, research and development?

DR. ENGSTROM: They are research and development funds.

MR. SPEAKMAN: The budget has hung around twelve to thirteen million dollars in the past three or four years as compared with 100 per cent increase in research and development funds for the overall Army and Air Force. This Agency seems to be unique in that research and development funds have not expanded. In spite of the fact that they have a very important problem, no additional research is needed.

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DR. TOMPKINS: That might not be true.

MR. SPEAKMAN: Within the present money that they allocated, the general statement is that it hasn't been expanded to that extent in spite of the fact that they do have a very important problem.

DR. TOMPKINS: The overall budget has expanded to the extent that it is frighteningly large. Much of this has to go into effort to refurbish their intercept stations. Wise or unwise though it may be the net result is that the budget for the year might be on the order of a few hundred of millions of dollars which is not small.

DR. POTTER: Would it strengthen the statement to consider the importance which CIA attaches to this problem?

DR. ROBERTSON: That is too weak.

DR. POTTER: All others.

MR. POST: Some particular person here.

DR. TOMPKINS: We try to get the best advice that we can.

MR. SPEAKMAN: With respect to the paragraph on research and development money, it is not obvious that there has been any expansion of research and development in the area of Albatross.

DR. TOMPKINS: That is a little dangerous. You want to say, "Within the areas which contribute to the Albatross problem."

MR. SPEAKMAN: There has been expansion in the programs which are related to Albatross.

DR. ROBERTSON: On the top you talk about procurement. That is not adequately taken care of. We should say something with respect to contracts.

MR. SPEAKMAN: We will put something down on that point.

DR. ENGSTROM: Put "outside contracts" here instead of "procurement". Emphasize the possibility of engineering research contracts.

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DR. POTTER: Back up on this. I think that is an awfully important part of our report. I am still not sure that the emphasis was put on this properly. One way to say it is that we as a group have attempted to find out how important this problem is in relation to other kinds of things. We are convinced that the effort which is being put on it is entirely inadequate. Our general conclusion is that the effort is entirely inadequate. I would think that could be one of the major items in our report. Considering the importance of the problem, it is kind of weak.

DR. TOMPKINS: Still somebody has to face the question that we need to take the money and reallocate it.

DR. ENGSTROM: There is another major problem which requires an answer. Mr. Speakman asked about it. What about SCAG itself?

MR. SPEAKMAN: There is a question in my mind as to whether we want to continue having these meetings as we have had them in the past with tours and lectures by the various members of AFSA. If you do, specifically what subjects would you like to cover? If you don't, do you propose that we hold fewer meetings or that we postpone all meetings until we get a reaction from this report? Perhaps I haven't covered all the alternatives.

DR. POTTER: I would like to throw in one point. I don't think this kind of group ought to be a continuing group. I think we ought to come out with some kind of a report and terminate the group. Then if there is a real purpose, we can start another kind of group, say mathematical.

DR. ROBERTSON: I think we should include in this thing a permanent continuing group, meeting perhaps twice a year with both elements of the people concerned. I think it is not desirable to disband and start over again. There you have a long process involved again.

MR. SPEAKMAN: You are thinking continuity-wise?

DR. TOMPKINS: Are you proposing now that we have finished our work?

DR. POTTER: We were set up to do a certain job here.

DR. TOMPKINS: We weren't set up to do the job.

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DR. POTTER: We had a definite thing to shoot at here.

DR. TOMPKINS: We opened the meeting by saying that we wanted to get some idea of the mission of SCAG. About the fourth meeting we got it. When we got through with Albatross, we could do something with Leghorn. They can invent bird names as fast as they can solve them.

MR. SPEAKMAN: Do you want to take up those or not?

DR. TOMPKINS: You run into the same problem. Somebody has to take them up.

MR. HOWARD: We made the recommendations. Why can't they take care of the problems in the other setup? They can still have military or outside activities or groups that might help.

DR. ENGSTROM: On the basic thing here I agree with Fr. Robertson. AFSA felt that there was a group of people in the country. We were singled out as having certain knowledge and background which could contribute to their problems. They set up the mechanism whereby they could get the people to come down and talk about them. Now you want to set up a mechanism and assign Albatross as the major problem. That was just the first assignment to this group of people. It would seem that we could all go home and start over again.

IR. CAIRNS: I think the group ought to be continued. For one thing we mention travel as a minor aspect. The time and effort that has gone into clearing and briefing us on all of these things is quite an investment.

MR. SPEAKMAN: It is a permanent investment. I have talked with Capt. Holtwick out there. He intimated that they were more impatient about getting something out of SCAG than the SCAG members were themselves. We don't share in it. We think that it is a long-range program, that it takes a long time to educate these people, and that we should be very patient with this sort of thing. I am not so sure that I share with him in that. I would like to ask Dr. Shannon to speak with reference to the mathematical aspects of this, to tell us what he thinks of his own experience as a member of SCAG. Where can we make a major contribution? Can you visualize a potential contribution for us in the future?

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DR. SHANNON: I don't really get the problem at all. I don't think the other members do either. We get a feeling about the problem when we are here and forget it when we go back. We aren't here long enough to make a contribution. If SCAG does continue my feeling is that the meetings should be of a different sort. We shouldn't come down here to hear a couple of lectures and then go back. We should perhaps have fewer but longer meetings. Perhaps we could come down individually for an extended period of time, if that is at all possible. I think that it would be tough for some of us to do that. It would be difficult for me to take a month off. I don't think we can do anything very constructive in less time.

MR. SPEAKMAN: Meetings are not too appropriate.

DR. SHANNON: You have to get in and work with the people directly.

MR. SPEAKMAN: It is a full-time job for maybe a week or two weeks.

DR. ROBERTSON: It is a framework in which to fit the thing. Sometimes you have a specific job and work for a longer period of time. We made one major contribution as an advisory board.

DR. POTTER: As the SCAG group was gotten together here, it was to look at AFSA. We tried to state it in the words of CIA and others that we are looking at AFSA and trying to find out whether AFSA is doing a decent job. To that extent I think we can make a major contribution as a group. There would be a lot of things overcome by that conclusion. Now first I say that it is a very important job. I wouldn't think of wasting any time or effort here getting the people together and getting all the clearances. There isn't any necessity for wasting some of these clearances. Some of the people here can carry on the work and implement some of the score of things we have indicated should be done.

DR. ROBERTSON: SCAG's framework gives something to hang the activity on.

DR. POTTER: I don't know whether we should call it SCAG or something else.

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MR. MCPHERSON: Essentially we can present the report and say to Gen. Canine, "We feel that the primary purpose for which this group may have been gotten together has been served. If you find it necessary to call upon us for any future work which you would want done, you could call on one part or portion of the group or on the group as a whole. We would be willing to plan to meet on a very infrequent basis."

DR. ENGSTROM: You would be disbanding the thing if you did that. I don't think the initiative there comes from AFSA to call in special groups.

MR. POST: Is there anybody here who wants to spend a private session, let's say from a week to a month?

MR. MCPHERSON: The scratching business is neglected.

DR. ENGSTROM: I think the impetus must come from SCAG itself.

MR. POST: You might be able to squeeze out a week or two some time.

DR. SHANNON: I don't think a week would be sufficient.

MR. POST: How about a month?

DR. SHANNON: It can be looked into certainly. I don't feel that an individual can do very much. It would take every one of us anyway to really get into anything good. I feel that the problem is important enough that we should all try to do it.

MR. POST: You would not be unwilling to consider such a thing?

MR. HOWARD: You all feel that way. I think any one individual would hate to put himself up as being so important that he should up and voluntarily take a month or two months out of his life. The other thing is that I think when it comes to AFSA's interest in this, you can't come in from the outside and tell him that he ought to be glad he has us working for him. We are ready to work for him. You won't get the cooperation. You won't get the drive. If we are essentially outsiders going to AFSA, perhaps the critical part of the report becomes CIA's, to tell them they are not going a very good job. I can't see how we can do very much.

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MR. SPEAKMAN: I am supplying what Mr. Friedman and Gen. Canine have said. They are greatly disappointed that some members of SCAG on an individual and voluntary basis haven't spent full time for a week or two really digging into this thing. I am not quite clear as to what SCAG's responsibilities are in connection with such actions on the part of the individuals here.

In my opinion we can advise AFSA that such things be done by individuals in a particular area and the problem is subject to solution if we had some outside people come in. Then I think it is up to SCAG to take the initiative and say, "Will you, Mr. Jones, come down to sit in on this problem?" SCAG would be enabled to solve it with certain people. We think you are the people who can do it. I don't think we should point a finger at someone and say that he hasn't done the job because the people haven't spent full time on it.

DR. TOMPKINS: We can point a finger at AFSA insofar as they haven't welcomed the people who have volunteered to come down. I have spelled out to them information which went into considerable detail giving them a reasonable program by which they could get this done. They have called me from California. You can't commute between Washington and California.

Mr. Friedman makes that statement out of one side of his mouth. Out of the other side he has no constructive examples of the problems which he can offer as suitable information. He cannot tell us where such problems exist. He just hasn't found them.

MR. SPEAKMAN: It is in order for SCAG to point out such problems.

DR. POTTER: When it comes to criticizing an authority, I think it is dangerous.

MR. SPEAKMAN: I want to avoid any restrictive comments from SCAG saying that this is where you need additional help.

MR. HOWARD: We are sitting as a board of experts. If somebody has a private axe to grind and goes around and beats them on the head and makes them do it, that is a very critical thing.

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MR. SPEAKMAN: I wonder if we should come back here and postpone our visit to Arlington Hall.

DR. ROBERTSON: We could clarify what our future role is.

The meeting adjourned for lunch from 1130 to 1230.

DR. VON NEUMANN: I would like to ask a question. I am sorry that I couldn't come to the last conference. I saw Jackson. He told me about one group of problems. I wanted to ask how controversial those problems are. One had to do with clear text traffic, intercept clear text. With the production problem you have quite a bit of diversity. Where you have a problem of two million messages thrown at you, you can't be expected to list any of those three. It is conceivable that devices like the literal devices might have some real advantage there. I want to ask if this is in AFSA's province.

DR. ROBERTSON: AFSA's or CIA's.

DR. VON NEUMANN: Not AFSA's.

DR. ROBERTSON: Both.

DR. ENGSTROM: We suggested to CIA that when we finished the machine they should take a look at it.

DR. VON NEUMANN: It is reasonable.

MR. HOWARD: I think that CIA has the activity going on. I don't know where it is. I know that IBM has been searching for a machine which could be tied in with that type of activity.

MR. MCPHERSON: There are such devices under development. There is something of that sort out.

DR. VON NEUMANN: We may be overstating the problem five times or understating it five times.

DR. ROBERTSON: When I said CIA, I was thinking of the material we fish out of it. There is a mechanism for fishing it out.

DR. VON NEUMANN: Fishing it out is what I mean.

DR. ROBERTSON: It is AFSA and not CIA.

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DR. VON NEUMANN: I think the problem is of general importance.

DR. ROBERTSON: That is an AFSA problem.

DR. VON NEUMANN: Should we mention it?

MR. HOWARD: It is one specific problem to which the Committee might give its attention. They stirred it up and gave attention to it and then dropped it. People like you and I should be optimistic about attacking the basic problem, not the mechanization of it.

DR. ROBERTSON: We will find out this afternoon or tomorrow from those people what has to be done.

MR. SPEAKMAN: We can ask Gen. Canine this afternoon.

MR. HOWARD: I am not so sure that it isn't a CIA problem.

DR. ROBERTSON: It depends on where you put down the requirements. That is what you have to look for.

MR. HOWARD: The problem is divided. You have the basic private intelligence. Suppose you have a great mass of data coming in? If you know what you are looking for, then it is easier. Suppose you have good evidence that the Russians are building up strength on such and such? Then you start looking for that. You can find a lot of evidence, perhaps. Suppose you don't know that they are building up strength there? You want a system that will suggest that to you in the first place. There may be a great mass of information to analyze from indirect sources. From shipments of medical supplies in that area, you arrive at that conclusion. It is quite simple in looking for intelligence information. When it comes to the business of looking for "busts", that is different.

MR. MCPHERSON: I think that perhaps the two are the same. We might apply it in two different areas. We might fish it out to develop the trend within the so-called collection information.

DR. ENGSTROM: The problem was studied quite a bit in the chemical field, per se.

DR. TOMPKINS: It is a question of what per cent is going to do what and what will be read by the experts and classified. It is quite a problem that AFSA is faced with.

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MR. MCPHERSON: That presupposes initial analysis which is somewhat hard to do in this.

MR. HOWARD: It presupposes that you have an awfully tough problem on your hands.

DR. ENGSTROM: What do you think about that? You are the experts on this general subject of information.

DR. SHANNON: I feel that it would be quite a project to even start thinking about how to sort out the information mechanically with a machine which will go over all the messages to determine if there is a trend in there. It sounds like a possible thing, but a thing which is not going to be done within ten years.

MR. HOWARD: It was kicked around in the past. People got interested in what they called the clinical approach. They take every message and write the completed additives to that message.

DR. ENGSTROM: This is essentially directed at cipher text. With every cipher text message they have a set of statistics that could be computed from Teletype directly. From the statistics they might be able to go to the Hagelin system or the Enigma system.

MR. HOWARD: You could conceive a machine instead of a system. The machine could examine every message that comes into AFSA in plain text to see if there was anything which should be looked into further.

MR. SPEAKMAN: I would suggest that we complete this paper. We can add on what Dr. von Neumann has brought up here.

DR. ENGSTROM: It really indicates an extension of SCAG as a body. Certainly we can't make any definitive statement about a program of a broad nature by tomorrow afternoon.

DR. ROBERTSON: Tomorrow afternoon we may hear something from them out there. It can't wait until tomorrow afternoon to see Gen. Canine.

MR. SPEAKMAN: I can talk with him this afternoon.

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DR. POTTER: It would make a beautiful project to pull away completely the unclassified material and turn it over to a research group.

DR. ENGSTROM: It might be valuable to go through the methods intelligence section at AFSA. They do have certain procedures now for sorting out information on so and so.

MR. HOWARD: I don't know whether they have done anything more. They used to put information on ditto and send it to thirty, forty, or fifty places by name and location.

DR. ENGSTROM: There were key subjects. On the subject of the SCAG thing here.....

DR. ROBERTSON: It should be fairly concrete, something to shoot at. We think SCAG can be extremely useful to AFSA as an advisory group to the Director. That presupposes first that the Director wants advice. Assuming that he doesn't, methods and steps would have to be taken to find out what he really does want. I think SCAG could very well continue as a permanent advisory body with fixed meetings. I would say have two or three at the most a year. If the Director wholeheartedly favors having such a group, that it should have a problem to look into. You could refer anything to the group for advice. The group to be most useful most of necessity be able to initiate subjects that it thinks it should look into. In order to carry out any definite and constructive suggestions on specific lines, individual panels could be set up just as Ad Hoc groups of the permanent panel. They could take the material and put their time on it as they were able to. You could have a mathematical panel. It would be a continuing panel and would look at the mathematical aspects of the problem. They could actually come down here and work for a period with the people at AFSA. With that kind of a group it would be extremely useful. We could look into these problems and not just say, "I will volunteer as an individual to come down here." We would come down under the auspices of this advisory group to the Director.

DR. ENGSTROM: Fine.

MR. SPEAKMAN: At the present time we have identified everyone here without exception as a member of SCAG. Do you wish to enlarge that to include membership from AFSA? We have a representative of CIA.

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MR. SPEAKMAN: SCAG in many ways should be advisory to the General, the Director of AFSA. For that reason it should be strictly a civilian group without membership from any other agency.

DR. ROBERTSON: It should be individual membership and not group membership. There is no reason why there shouldn't be officers on SCAG.

MR. SPEAKMAN: Would you expect to have two members from AFSA?

DR. ROBERTSON: I would not expect to have members of AFSA on it at all.

MR. SPEAKMAN: I am uncertain at the present time as to whether there is need for Capt. Harper to be a member or not.

DR. ROBERTSON: I think they should not be.

DR. POTTER: Here is a group that is going to tell the Director what ought to be done. He certainly doesn't want to take the people who are under him and put them on the group.

DR. ROBERTSON: Nor does he want representatives from CIA or the RDB telling him what to do.

MR. HOWARD: This is a workable mission. You know where you stand and what you are trying to do. Whether there is still need to continue reporting to RDB or CIA, I don't know.

MR. SPEAKMAN: We will suggest to him tomorrow afternoon that we think SCAG is or should be a group advisory to him and should not include membership from AFSA or CIA as such.

MR. HOWARD: Can we recommend that he set up a thing like that?

DR. POTTER: I think there are things which SCAG could be doing to advise the Director, that we ought to be kept on as a continuous organization here. There is no reason why that shouldn't be brought to his attention.

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DR. ROBERTSON: I didn't mean to put it in the formal paper. I meant to sound out the Director about it. We will not put it in here. Probably you will have a chance to talk with Gen. Canine beforehand. We will have to talk about the other members for SCAG, about their clearance. Most of those people should add to the SCAG group. I think it desirable for SCAG to take other people on an Ad Hoc basis, not as members of SCAG but as members of the Panels, to get a particular job done. We have never been able to tap other resources.

DR. ENGSTROM: I am wondering whether the comment on SCAG shouldn't be crossed out of this report.

DR. POTTER: I don't think that is a smart thing to do until we have a better notion of where we want to go from here.

MR. SPEAKMAN: What kind of question can we pose to Gen. Canine?

DR. ROBERTSON: Ask him what he thinks the original purpose and present function of SCAG is and see whether he thinks the things we have outlined are something which he wants. The charter is too flexible.

MR. SPEAKMAN: It is not too clear about the Panel structure.

DR. ENGSTROM: How about travel orders, money, and things like that? Mr. Speakman has mechanisms for that. I don't know whether AFSA has or not.

MR. SPEAKMAN: We would have to identify the particular jobs which have to be done before we could say that we need this panel or that panel.

DR. ROBERTSON: I don't want to go into all the details here. There are several things outlined here.

MR. SPEAKMAN: There are certain jobs to be done. We should establish panels to do them.

DR. ROBERTSON: We ought to make a recommendation whereby SCAG would work up to its capacity.

MR. SPEAKMAN: There is difficulty in getting people to spend more than half a day or a day here in Washington.

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DR. ROBERTSON: If this had been organized along these lines, the individuals would have been down here by now instead of individuals being called for help and having them more or less wait for us to volunteer. They say that any of us can come down and spend as much time as we can. If SCAG thinks there is something which should be looked into in connection with the use of a machine, an Ad Hoc Panel should be appointed. They could spend two or three days or a week looking at the thing.

MR. HOWARD: It is a pretty clear-cut problem as to what the Ad Hoc Panels are supposed to do. There is the organizational literature.

MR. MCPHERSON: You have to have a job for them.

MR. SPEAKMAN: You would have a commitment from the panel members that they will spend time on it.

DR. POTTER: SCAG, for example, is going to come out with recommendations which I assume will be rather specific before they are through. At that time it seems to me RDB could go to Gen. Canine and say, "It has been concluded that this and this ought to be done. How do you feel about keeping SCAG on the job here to put its effort on this or that?" It will not make it too definite, a continuing thing, but it will at least carry out the kind of recommendations that have been made.

MR. SPEAKMAN: We can put the question to Gen. Canine and get his support. We don't want to jump into this field until he says that the things should be done. We can point out to him the need for Panels to do the job.

DR. ENGSTROM: There are two problems to consider if we start out on an Ad Hoc street. One is the scritchng business of Mr. Shepard's which seems to be somewhat lagging for support. The other is the mathematical material. Does SCAG feel that it wants to recommend panels in those two areas?

DR. ROBERTSON: No, I don't.

MR. SPEAKMAN: Are there any more conclusions to put down? We have tried to word those so that anyone who reads this will end up with the definite impression that SCAG has come out with one, two, or three conclusions.

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DR. ENGSTROM: The second point is that in view of the importance of the problem it does seem to us that AFSA should spend the effort required.

MR. SPEAKMAN: AFSA is not expending the effort that it should or that it is insufficient effort.

DR. ENGSTROM: Additional effort would produce.....

DR. POTTER: Much more effort could be justified.

DR. ENGSTROM: The next point is that we feel CIA ought to make more effort to steal some of the material. Is that a major point?

DR. TOMPKINS: It would be nice if they stole some.

DR. ROBERTSON: Off the record.

DR. ENGSTROM: The CIA people indicate that they are doing everything possible.

MR. POST: That is the only answer you will ever get out of them.

DR. TOMPKINS: We don't have any means to say that that is a correct statement or an incorrect statement on their part.

MR. POST: I have been after them time without number in five and a half-years with G-2. I have asked CIA what they were doing.

DR. ROBERTSON: Maybe they want to keep G-2 from finding out.

MR. POST: I asked Mr. Chadwell last week and he said that they were doing everything they could.

DR. ROBERTSON: They ought to give that information in detail.

DR. POTTER: It would be reasonable to say this if we can, "We are uncertain whether enough effort is being expended on this direct approach." We are not trying to get the answer. We are bringing it out into the open.

DR. ENGSTROM: We should say something to the effect that the greatest promise for a quick solution of Albatross lies in the direct approach.

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DR. TOMPKINS: How about using the phrase "best hope"?

MR. MCPHERSON: It gives the biggest lift quickly.

DR. TOMPKINS: Is there any feasibility in considering this? If there is not, I am not in position to make that statement.

DR. VON NEUMANN: We need a little more knowledge.

DR. POTTER: We don't know anything.

DR. TOMPKINS: Can't we state that?

DR. CAIRNS: I might go further and try to steal it myself.

MR. SPEAKMAN: We are confused as to whether you would actually require the steps you would have to go through to acquire the machine. We don't want to jump to conclusions. If we had a machine, then our solution would be much faster than if we had to go through this process.

DR. POTTER: We are looking for information in other directions.

DR. TOMPKINS: I don't think we have enough information to say much more. I don't know what we have to do to get one.

DR. ENGSTROM: The best hope for a quick solution is in the direct method.

MR. HOWARD: There was one thing brought up in the Committee when you weren't there. They wondered just how much attention and effort was being given to penetration of people coming across the border. We are not trying to steal the machine but to get evidence of what it consists of. Russia must have one way or the other and one may get across.

MR. POST: The object is to find that man if he comes across. It would be better to find the man inside and get him to come across. The intelligence machine is waiting for people to come in. We are not.

MR. MCPHERSON: Are we?

MR. POST: I don't think anybody is kidding himself on that point because of security.

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DR. ENGSTROM: I know of several cases in which they have actually.....

MR. POST: We are not doing anything to encourage that type of person.

DR. ROBERTSON: We are.

MR. MCPHERSON: There is a question there as to whether your statement should go into the major summary.

DR. ENGSTROM: The best hope for quick solution lies in the direct approach.

DR. TOMPKINS: I am incompetent to make any such statement.

DR. VON NEUMANN: Anyone who is absolutely opposed ought to go along in the interest of the five who do agree.

MR. SPEAKMAN: I would suggest that any members who feel that they cannot subscribe to such a statement as it is worded submit another statement and sign it.

DR. ROBERTSON: I think if it is perfectly worded, the other people should agree to it.

DR. ENGSTROM: Don't you think it is of importance to Gen. Canine as well as to CIA?

DR. CAIRNS: I am in favor of leaving it out.

MR. POST: It provides a needle.

MR. MCPHERSON: Really if there is any question, I am in favor of leaving it out.

DR. VON NEUMANN: It does give the implication that we have considered the problem and channels for solving it. We think the facilities at AFSA are so poor that we might as well try to steal a machine and take the risk of compromising the whole project.

DR. ROBERTSON: It doesn't require that.

MR. MCPHERSON: A lot of work could be saved if they did not have to duplicate the technical work, if they could start with the structure and go from that to a more advanced position to the solution. It cuts out a lot of the background work that has to be done on the mathematical method as it stands now.

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DR. TOMPKINS: My position is the same. You make an obvious distinction but we are absolutely unable to estimate the cost of buying this. I am.

DR. ENGSTROM: There is one other point that I think is worthy of bringing up and that is that one must take a rather long-range point of view with these problems. The quickest solution of that might mean stopping the mathematical approach and all the rest, which would be a catastrophe..

DR. TOMPKINS: I don't think there is any great danger. With that word of advice, Gen. Canine has his officer in charge who selects the material anyhow.

DR. ROBERTSON: He is responsible for putting out the requirements.

MR. HOWARD: All we are doing is advising Gen. Canine that we think he is right in keeping pressure on CIA.

DR. TOMPKINS: Let's make that statement and convince CIA to tell us something. This is it.

MR. HOWARD: I feel that inasmuch as we work for AFSA we ought to support him in that contention.

DR. ENGSTROM: The best hope for a quick solution appears to be in the direct approach. However, this should in no way diminish effort on the theoretical solution and other approaches.

MR. SPEAKMAN: I would rather not say "best". Say "another". Say "one hope for earlier solution".

MR. MCPHERSON: The solution might be advanced quite a distance by the direct approach.

DR. TOMPKINS: Leave out the word "hope" and the word "best".

MR. SPEAKMAN: The solution would be expedited, would be appreciably advanced by the direct approach.

DR. ENGSTROM: I have two or three more things here. One is the Roberts' business.

DR. VON NEUMANN: I don't quite understand about the computing of these. I think it is in order to make recommendations about it. We feel that the Roberts' approach and his

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developments are also one of the most hopeful mathematical approaches to the problem. We feel that the 1101 program justifies considerably more computing time.

DR. ENGSTROM: Is that specific?

DR. TOMPKINS: The time that Dr. Cairns has assigned to these things is not consistent with the evaluation of importance we have given to the problem.

DR. ENGSTROM: How about scritchng and NOMAD?

MR. HOWARD: There is an extrapolation in paragraph 2, .

DR. ENGSTROM: By methods suggested by Mr. Shepard.

DR. VON NEUMANN: Electronic rotors.

MR. MCPHERSON: There are two recommendations. The next to come should be greater effort in machine development, high-frequency machine development, directed at a specific type of problem. The other major point is the recognition of the need for basic research to be constituted separately. It is to be a separate part of the functions of AFSA. They do the research job. That is a part of their total budget.

DR. ENGSTROM: Having a civilian director, that is a major point.

DR. POTTER: They have that now. They have Dr. Kullback who is the man in charge of research.

DR. ENGSTROM: He has taken Capt. Harper's job as Director.

DR. ROBERTSON: If that has been accomplished, I don't think we ought to put it in here. We can comment on it. To whom does he report then?

DR. ENGSTROM: He reports to Adm. Wenger. Adm. Wenger reports to Gen. Canine.

MR. HOWARD: What is the attitude on the part of top management of the thing? Is there a specific responsibility to see that this thing gets done?

DR. POTTER: The important thing is that we need somebody over research who has the prime responsibility to report directly to the head of both development and research. That is being taken care of by Dr. Kullback now. I don't think that will help very much.

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MR. SPEAKMAN: We are talking about titles, are we not? We are saying that there should be a civilian director in charge of all research. I don't think that ends there.

DR. POTTER: A civilian director who has sole responsibility for research. There is a civilian director there who has charge of research. He also has charge of development. The whole point is that we don't think any one director can perform both of those functions simultaneously.

MR. SPEAKMAN: Does Dr. Kullback have power over his subordinates?

DR. POTTER: I don't know.

MR. SPEAKMAN: Do the military people report to Dr. Kullback?

DR. POTTER: He is the Technical Director. He was not in charge. I didn't know that part of it had been changed.

DR. TOMPKINS: Has he relieved Capt. Harper?

DR. ENGSTROM: Capt. Harper relieved Capt. Holtwick recently. Dr. Kullback has the space which was filled by Capt. Harper.

DR. POTTER: There is more than one technical directorship.

DR. ENGSTROM: Instead of them saying that we recommend that AFSA should have a civilian director of research, we should state that the civilian director of research should have authority.....

MR. HOWARD: For development and operations to a certain extent. Development is tied in so much more closely with operations.

DR. ENGSTROM: In the suggestions we have made, we have been talking about the top man. We would have two men under him, one the director of research and the other the director of development.

DR. TOMPKINS: They would make recommendations to Dr. Kullback and not to the Director?

DR. POTTER: What is happening there, if I judge their organization correctly, is that they are trying to carry on two functions, research and development. They are

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carrying those on in a one-headed organization.

You can go down the line here as far as you please and you will find groups doing work on both research and development. What you need to do is to split those responsibilities pretty close to the top.

In other words, have a director of research with a reasonably sized group under him and have a director of development. Have them sufficiently separate so that the director of research isn't constantly faced with the problem of trying to decide whether to do a development job or whether a research job ought to be done first. You need a two-headed organization with a director of research and a director of development. They report directly to Gen. Canine.

MR. SPEAKMAN: How much of the allocated research would you want left in the hands of a civilian?

DR. POTTER: It ought to be in the hands of a technical director.

MR. MCPHERSON: Dr. Kullback is the Director of Research and Development. He should be best fitted for one or the other.

DR. TOMPKINS: There were two points made here on which I go along wholeheartedly. One is that there should be a civilian, a competent, continuing, and technically able civilian. I don't care whether he is a civilian or not who reports at the highest level and who has authority over research and development and whose position is to protect research among other things.

A second thing is that research and development should be split immediately below this person. There should be two people reporting to him.

My personal feeling on the second is that if you get a competent person in the top job, he should be given the authority to decide where and when the split should be made.

DR. POTTER: The fellow at the top here is quite sympathetic toward research. He cannot go down into all the little projects that are going on in that organization and say, "Look here, boys. You must shift your interest over on research here. You can only do so much on development."

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MR. HOWARD: It seems to me that one of the general functions that we have experienced in administering research and development was being in a position to advise in this regard. I think we can recommend that. Maybe we don't have one per cent agreement on this.

DR. ENGSTROM: Those are the facts that we are trying to get at.

DR. TOMPKINS: We have one hundred per cent agreement on that.

MR. MCPHERSON: The top man has a much bigger job. He has to get top morale in the organization.

DR. ENGSTROM: Say something like this, "Research has been sadly neglected by AFSA. Research is one of the basic problems."

MR. HOWARD: You agree wholeheartedly with what we have been saying so far?

DR. TOMPKINS: I certainly agree that everything possible should be done to support expanded research at AFSA. I agree and I think everybody in this room agrees that one way of doing it, at least it would be the best stroke that we can recommend would be to pick out, as Dr. Robertson suggested, a civilian with authority to promote and protect research.

The only disagreement I have is with how far we should go down into the technicalities of the organization.

MR. MCPHERSON: We can make the suggestion. He doesn't have to accept it.

DR. TOMPKINS: You can make the suggestion.

DR. VON NEUMANN: You are proposing that we should have a man in charge of research and research only who would report to the Director?

DR. ENGSTROM: I think that is right. The Director of Research should have his attention downward rather than upward. The civilian who has some understanding of the problem should be the one to battle with the upward echelons. I agree with this thing as you have it now.

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DR. ROBERTSON: I am not quite satisfied with this. It seems to me that research should be completely separated from development and operations with personnel officially assigned who could not be infringed upon by development and operations.

DR. ENGSTROM: The first thing we need to achieve this end is a civilian technical director with sufficient authority to see that this policy is not infringed upon.

MR. MCPHERSON: I still think we ought to say that one of the most applicable things is to set up a separate director of research who is not infringed upon in his day to day problems by development for a specific purpose or by operations.

DR. POTTER: I don't know of any industrial solution that has worked.

DR. ROBERTSON: Dr. Engstrom will thrash it out and get together a reasonable wording of the thing.

DR. ENGSTROM: Mr. McPherson was the one who brought it up. We said basic research. Should we be specific here and denote why implementation through Project FAM has not taken place?

DR. TOMPKINS: I don't think it has been summarily dismissed.

DR. ENGSTROM: Emphasize basic research. Set up the project with a corporation which has the time, personnel, and facilities to carry it out. That has to be implemented.

MR. SPEAKMAN: We can go on record.

MR. HOWARD: It is entirely different trying to find a contractor to supplement the basic research.

MR. SPEAKMAN: Whether he implements it or not, he puts it outside or inside.

DR. TOMPKINS: Right now this has been brought up. There have been explicit suggestions which seem to me to be realistic as to how they could get some work done fairly soon by contract with Remington Rand or some other similar outfit. The specific question is, "Should that be included?" My views on this are well known.

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DR. CAIRNS: We might include it in general terms. I don't think we should mention the RAM Corporation by name. liand

DR. ENGSTROM: Further effort ought to be made to enlist outside contractors.

MR. HOWARD: That applies to other things.

MR. SPEAKMAN: Identify it with basic research.

DR. ROBERTSON: Probably we should mention them separately.

DR. ENGSTROM: Outside contractors should be used as much as possible.

DR. TOMPKINS: I would like to bring up one other point. You can throw it out in thirty seconds. There is a tremendous amount of compartmentation in AFSA for security reasons which makes it impossible for a genius to find a problem which he thinks he can solve. To work on it is next to impossible. We have observed that from time to time. I have from time to time recommended against some types of compartmentation. I think the best way to get research done is to get a problem, get the people who are to work on it, and let them begin whittling away on each other in a fairly relaxed atmosphere.

DR. ENGSTROM: That brings up a larger issue. There is no doubt that the security policies and security procedures in AFSA are strangulating the efforts in many respects.

MR. MCPHERSON: We ought to pass that on. It is outside of our province at the moment. If we can go along this line, research can certainly be improved. There can be free interchange between research groups of information, of problems. If we can ask that information in that area be essentially free, we will have a start.

DR. TOMPKINS: Other phases of research and development get throttled by not being able to transfer information.

DR. ENGSTROM: That covers it as far as I am concerned. Leave out any comments on SCAG.

MR. POST: Funds are mentioned as a recommendation.

MR. SPEAKMAN: I would like to get an idea from the members as to what we should discuss with Gen. Canine before the meeting at 1430. What should we put to him in the way of

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questions? What new jobs does he want SCAG to undertake? That is what we want to ask him.

DR. POTTER: As a result of the session that we have had today, it looks to us as if SCAG is to come out with some specific recommendation along this and that line. Can you ask him how he would feel about continuing the function of SCAG in an advisory capacity?

MR. SPEAKMAN: I would like to make it more specific, to specify what we expect from SCAG. Possibly if we come up with conclusions tomorrow afternoon, we will have our next meeting in a month from now or two months from now. Then there will be another agenda to come out. When are we to come down and go through?

MR. MCPHERSON: I would like to suggest, that unless he requests otherwise, we don't meet again for six months.

MR. SPEAKMAN: The members feel they have discharged the primary responsibility for which they were appointed. This report ties it up.

DR. ROBERTSON: Then you may wish to have a group take the recommendations here. You may wish to set up an advisory group to meet. Then you can wash your hands of it.

DR. ENGSTROM: We can say, "The SCAG group is available to Gen. Canine and will meet upon his request for consideration of specific problems which he might have in the future."

DR. ROBERTSON: The function of the group should go beyond that. He should have a group with him, a continuing group, that feels free to initiate topics for advice to him.

MR. MCPHERSON: The areas you are thinking of are the areas outside of real intelligence. If you knew about them ahead of time, you could be useful to him. The one question is to find out from Gen. Canine whether he would like that sort of advice. It is apparent from the informal discussion here that they would be used as a continuing advisory group and would have one, two, or three meetings a year.

DR. TOMPKINS: Why not state that in the report?

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DR. ROBERTSON: There might be an advantage in stating it in the report. There might be an advantage in recommending that he have an advisory group. I am not saying SCAG.

DR. POTTER: It gets back to the thing of saying that we recommend that you have an advisory group. Well, here we are.

MR. SPEAKMAN: I can say that to him.

MR. MCPHERSON: Certainly the one thing that we are trying to do is to give the ball back to him.

MR. SPEAKMAN: We can say to him, "SCAG believes they can be useful to the Director of AFSA along these lines." Put it right to him. Ask him whether he wants them to continue.

MR. POST: You won't be able to get action out of him.

DR. TOMPKINS: It seems to be a proper statement for SCAG to make. SCAG feel that it will have not future usefulness except possibly as such a group.

DR. VON NEUMANN: It was proposed earlier by someone that we have discharged our functions, that we have advised Gen. Canine to have an advisory group.

MR. SPEAKMAN: It would give him the impression that SCAG considers that it has discharged one of its primary functions by this report.

DR. ROBERTSON: It ought to be in here as a part of the report.

DR. POTTER: I think the advisory group ought to have functions essentially different than the functions of SCAG. They ought to be broader. The emphasis is going to change on this. Just offhand it seems to me that it is a different kind of prescription all the way through.

MR. SPEAKMAN: Then we could expect him to outline it. We could put the question bluntly. The SCAG members feel that their job is beyond what they have put in this report. What reason do we have to meet again?

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DR. TOMPKINS: We have given them much less than they expected to get or than I hoped to give them by this report.

MR. MCPHERSON: I have a similar feeling.

DR. TOMPKINS: If we have discharged the functions to the best of our ability, then I think we have been a failure. If that is what we have done, the Committee probably had the wrong constitution. That wasn't what I intended to do.

DR. CAIRNS: I have the feeling myself that I for one have merely acquired a fairly superficial understanding of some of these mathematical things that are involved and by further work might be able to help out still more in the event that anything should be said in the report about SCAG itself. Let's confess. We should make some statement in here about SCAG.

DR. VON NEUMANN: I originally understood that this was meant as a continuing group. The purpose in the life of this group was to make technical recommendations about Albatross. Has something changed in it?

DR. ENGSTROM: I think not. The Albatross problem was the first assignment given to this group. AFSA has other assignments in mind.

MR. MCPHERSON: We agree on the fact that it is intended to be a continuing affair. I feel that our part at this time is simply to get a reaffirmation of interest in the continuation of this group, a better charter, and a clearer picture from him of what areas he feels we can help him in.

DR. ENGSTROM: We can talk about it with Gen. Canine. Leave it out of this report.

DR. CAIRNS: You can say that the Committee has done its work and asks that it be discharged.

DR. ENGSTROM: This report has to be in tomorrow afternoon. It is certainly not a very elegant language job. Does the SCAG group feel that perhaps this should be a tentative report and that a sub-committee should dress it up? Do you think it is good enough the way it is?

MR. MCPHERSON: You have to have the report promptly.

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MR. SPEAKMAN: We have had a request from Gen. Canine that we give him our comments on this.

DR. ROBERTSON: Do you think we should discuss the report with him?

MR. SPEAKMAN: Do you want me to express my feeling with reference to the next meeting?

DR. ROBERTSON: I think that should be tapped out informally with him.

MR. SPEAKMAN: The consensus is that you don't think you should meet for six months? Suppose you have the same type of agenda as you have here? Are we going to speak for all the members?

DR. ROBERTSON: Could something be done to get an Ad Hoc Panel to come here in the summer for a week or two or something like that?

MR. HOWARD: That again is where he has the ball. We could suggest items to him for that.

MR. SPEAKMAN: You don't need a steering group or a planning group to plan a program of meetings?

DR. ROBERTSON: We could decide what we consider the more important aspects.

MR. HOWARD: It has to be done with their enthusiastic support.

DR. ROBERTSON: It ought to be on some other aspects. SCAG should have an Ad Hoc Panel come in for awhile.

DR. TOMPKINS: There is a whole creation of problems. You can replace the permutation matrices. You can have non-negative elements and with this variable instead of the discreet set you had before, you can still solve your problem..

DR. ROBERTSON: Discuss that with the Research Bureau.

DR. TOMPKINS: It is problems of this class that I had in mind.

DR. ROBERTSON: Take it up with the Research Director.

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DR. TOMPKINS: With the research computing facilities it could be done anywhere. It could be done down in South Africa.

MR. SPEAKMAN: I do not see any need to see Gen. Canine before 1430 tomorrow.

MR. HOWARD: You are going to do it by outside help or by the Panels? When you start a project with a commercial organization, there is a lot of spade work to think out before you get approval.

MR. MCPHERSON: The question to be asked from our side is whether or not they want a group of people down here this spring or summer.

MR. HOWARD: If that is done, maybe we would have some thoughts to propose on how that group should be formed.

The meeting adjourned at approximately 1345.