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REMARKS

A copy of the transcript of the recorded version of my lecture, "R/D--Its Mission and Some Thoughts As To Its Future", is attached for your information and retention. Please return your copy dated 17 February.

Clark Lecture

Approved for Release by NSA on 11-18-2013 pursuant to E.O. 13526

FROM NAME OR TITLE A. B. CLARK Deputy Director	DATE 21 Apr
ORGANIZATION AND LOCATION	TELEPHONE

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Replaces AFHQ Form 12, 10 Nov 47, and AFHQ Form 12, 10 Nov 47, which may be used.

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R/D--Its Mission and Some Thoughts as to Its Future

I have been around here now for something like 11 months. Of that 11 months, I was a Bell Laboratories man loaned to NSA for at least 10 of the months and I really started to work regularly for this Agency on 1 February; so it seemed to me that I wanted to talk to R/D personnel to give them a few notions--I think this is primarily a matter of getting acquainted. I wanted to see what a good looking bunch you were and for you to see what kind of a guy I ~~am~~, so that is the whole lot of it.

Another object in preparing this talk was to let everybody know how they stood organization-wise so what I did was prepare the speech very carefully and then tried it out on a few people, like the General and some of the people with him, as I was very anxious that the principles that I am going to talk to you about be agreed on by everyone; so with the exception of a few details, this speech is going to be correct and has been agreed on by other departments.

First of all, let's define R/D. I like to define R/D as the laboratories organization of NSA. Like all other R/D laboratories organizations, I know anything about, it produces two things. One of the things is relationships and the other is things--physical things, so our charter is very very simple. It is nothing but relationships and things.

Well, what are the things? You know what they are. They are devices for COMINT purposes and for COMSEC purposes, but you know that.

You may not quite understand what I mean by relationships. You don't invent a relationship--you discover it. It is the kind of thing that nature did a long long time ago, all you do is discover it. Maybe it's a basic mathematical principle; maybe it's a physical principle but whatever it is, you don't create it, you discover it.

~~On the other hand,~~ R/D's mission is simply to do creative work. R/D is not a military organization and it is not my intention to run it as if it were a military organization. That is true even though NSA, as a whole, is properly a military organization encompassed within the Department of Defense and, of course, R/D's mission in life is to serve NSA.

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Another thing that R/D is not is a maker of policy. The only policies that R/D makes are the policies that have to do with its own internal organization.

It is R/D's job to assist other organizations, such as the General's advisors, COMSEC and the COMINT people as to their policies and we do that by supplying them with whatever we know about either physical things, or the laws of nature, or mathematical relationships, or anything like that but we definitely do not make policies. I regard that as an element of strength; not an element of weakness because if you are dealing simply with factual things, your fundamental background is a set of facts and you don't worry about what you might have said policy-wise a year ago. If you say nothing policy-wise, then you simply deal with facts so that is an element in my judgment of great strength.

One of the most vital requirements for the success of an organization is that it know what its job is and I think we have an admirable job to do. I have tried to tell you in a very general way what it is and now I will tell you in more detail. It is important of course that you know this for two reasons.

First of all you need it to carry out your own work every day. You want to be sure that you know why you are working, otherwise, you can have no enthusiasm for your work and you won't enjoy it. One thing that I believe very much is that everyone should have a lot of fun in his work.

There are two main things in this life--one thing is your work, and the other is your family and I don't draw any distinction as to which one is more important. I said at one other occasion, and my wife objected strenuously, that your job is the principal thing in this world, so now you see I have amended my statement a little bit. Anyway, your job is of tremendous importance and you must have fun at it otherwise you lead a miserable existence and that is what we don't want you to do.

It is also extremely important that R/D people know where they stand relative to other organizations. You can fool around a lot and fritter away time needlessly if you don't know what you are supposed to do and what the other fellow is supposed to do, so you must have understanding in order to avoid friction and have harmonious relationships.

One particular thing that I intend to do is to very promptly take care of anything that is not sweet relative to the relationships between you people and other organizations. That is one of the most important things that the Head of an organization should do, so I want to be sure that in your daily work that whenever anything like that

happens; whenever you are not sure what you ought to be doing relative to some other organization, that you immediately pass the word up the line because I can assure you that that is one of the things that I will give the most prompt attention.

I can give you a little general advice, of course, because we don't want too many little silly things carried up--a particular bit of advice is this: Never argue with somebody else who wants to do something that you think encroaches on your job. You have more than enough to do so if anybody else can do part of your work and wants to do it by all means let him do it.

Now, as I said at the beginning, R/D is the laboratories organization of NSA. It encompasses all of the laboratories functions and I believe that is as it should be because NSA is not large enough to afford the luxury of more than one laboratories organization. The Bell System, from which I come, which is an enormous organization, has just one laboratories set-up for the same kind of reason.

The fact that R/D is the laboratories organization, and the sole laboratories organization, is not intended to shut out operations people, either in COMSEC or PROD, from such use of laboratory facilities as they properly need in the course of their regular operations. Neither is it intended to shut out COMSEC or PROD from technical knowledge. Also it is not intended to shut them out from the use of technical tools which they need for their operations.

Now as to a little more detail on organization. One thing which we all know and believe in is that an R/D organization cannot exist if confined to an ivory tower, therefore you folks need, for an effective operation, first-hand knowledge of the fields of operation wherein your products are applied.

More specifically, in the COMINT field, this means that R/D needs and has freedom to visit representative intercept stations in different parts of the world wherever they may be. It is also necessary that R/D be familiar with the network of communications channels and other means which bring COMINT material to NSA headquarters.

R/D must also be familiar with PROD's operations. With respect to PROD's operations, the requirements of security introduce real handicaps to R/D. We, of course, must all appreciate that R/D must not jeopardize security; however, it must have essential knowledge of PROD's operations. If R/D does not have this essential knowledge of PROD's operations it could never rise above being simply a model shop for PROD. Neither PROD nor R/D want anything like this so we are both earnestly striving to set up a working arrangement whereby we will not jeopardize security but nevertheless will know these essential things.

Now in the COMSEC field:

R/D is free to contact directly all communication users; military, other government departments, and commercial communication organizations.

R/D has full responsibility for the creation of all new COMSEC gear and it must continue this responsibility for vital features of over-all design as well as component design throughout all phases of manufacture and such modifications as may later be indicated desirable as a result of experience in the field. This applies throughout the whole life of the equipment.

R/D has no facilities for and does not aspire to become the custodian for detailed design information of the gear which NSA manufactures or has manufactured, either in the COMSEC or COMINT fields. In this it differs from at least one very important laboratory that I know which actually maintains the custodianship of detailed design information on everything it creates. It seems to me that for NSA, however, on balance, R/D should not endeavor to maintain this custodianship--one of the reasons being that their products are so short-lived. Another reason is that they do not have the facilities for this custodianship and are better off [↑] in my judgment by not attempting to take them over.

now

At this point, I might say that another thing that R/D does not do is to seek any monopoly on new ideas. R/D should welcome ideas from everywhere and does. Above all, R/D should have no "pride of authorship" whatsoever with respect to ideas. Ideas are the whole life blood of this place or any other creative place and you must get ideas from any place you can find them and you must do everything not to dry up this source.

I want to discuss R/D's internal organization a bit and since I am a part of this organization I must necessarily say a few words about myself.

I came here because R. D. Parker, one of our consultants, thought that I might be interested in the job and told the General about me. I want to give full credit to him for that because I think that working in this place is going to be one of the happiest periods of my life.

Secondly, I didn't really want to retire after all. I am 65 years old--I am one of these people who believe that you are much happier to continue working rather than drop out of things.

Another reason, of course, is that I am anxious for the safety of my own skin and I think that NSA has a great job to do in helping to protect this Nation.

Another reason is that this communications business, and particularly the research and development business, is something I have been at for more than 40 years and it is so near like the kind of thing I have been doing that I honestly felt that I could help you people; however, I can assure you that I have much to learn since you folks know really how to make the communications business really tough.

Another point is that I have great personal interest in both the discovery of relationships and the creation of new things. Thus my major interests coincide exactly with the charter of R/D and I do expect to have a lot of fun, as I said before.

Finally I noted on my first visit to NSA and have had this confirmed as I have become better and better acquainted, that R/D has already in being a great organization and a record of great achievement. I don't know entirely how this good result has come about but I certainly believe that Dr. Kullback deserves much of the credit and of course much of the credit goes to all of you.

One of my ambitions, therefore, will be to see that R/D is adequately recognized for what it is. It ~~deserves~~, I believe, the ~~record of being the~~ most effective R/D organization in the whole military establishment of the United States and I think it deserves ~~and should be~~ recognized as such.

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Since Dr. Kullback has already achieved a wonderful organization, I intend to disturb its workings as little as possible. I therefore intend to leave the regular day-to-day operations in his hands.

For myself, my principal desires are to:

Do whatever I can to further improve the organization and in particular to bring in the new men which this organization so sorely needs.

Secondly, I want to do all I can to plan for the future.

More simply expressed, I propose to devote my efforts to the greatest extent practicable to personnel and planning. Dr. Kullback will take care of everything else. Since he will also, of course, participate in the work on personnel and planning he will continue to be a busy man.

Now I want to give you a few words expressing my current thoughts on personnel and planning.

PERSONNEL

First of all, in regard to the Civil Service set-up, I think Civil Service, from at least my observations of it however I am far from an expert on the subject, is far from as bad as it has sometimes been painted. You have a good pension plan and a good plan for vacations and sick leave. Salaries in R/D, for at least the first 10 to 15 years, compare favorably with commercial organizations with which I am familiar. This includes starting salaries.

Another point about Civil Service is, it seems to me, that we should always bear in mind the very worthy objectives which led to the creation of the Civil Service. As I understand it, the primary objective was to eliminate politicians and political influence. Now in order to do that it has had to set up some rules which tend to be onerous; however, I think if we try to keep in tune with the spirit of Civil Service and rise above the petty annoyances and rules that we will do pretty well.

General Canine has already made great strides in that direction. One example--it is no longer necessary to warp an organization into a form which it should not possess in order to meet Civil Service rules. That I regard as an extremely important thing. Therefore, I believe that, on balance, Civil Service should not be a serious obstacle to the further success of R/D.

The next point, which I think is also very important, is that R/D does not operate under military dominance of such a nature as to inhibit its success. It is quite true that I report to Lt. General Canine, and he, of course, is a military man; however, I can assure you that he is full of sound business ideas. His military background is of great value to NSA; in fact, I believe it is indispensable to NSA and I don't believe that his military background has much significance one way or the other to R/D so, on balance, I consider General Canine a very great power for the good of NSA and also for R/D.

Now I want to say a bit about military personnel.

Military personnel, mostly of lower rank, are now used widely within R/D and have contributed a great lot of good. In particular they have helped enormously in offsetting the shortages of manpower. We must therefore do everything we can possibly do to make military people working for us happy.

We must, however, recognize two problems. One is the fact that military people are generally of short service--two or three years. The second is the difficulty of rank. The short-service feature of military people, whether they be of low rank or high rank, makes it

if constrained to short service,

practically impossible to use them to direct technical work. Anyone at all, whether he is a civilian or a military man, would need to be exceedingly gifted or exceedingly experienced, both in knowledge and understanding, to be able effectively to fit into a technical organization at high level for purposes of directing the work. However, high-level military people can be very useful as liaison people and in the positions of the R/D organization that deal with administration.

I believe that we will continue to use at least as many high-rank people as we now have and perhaps more.

Now, I want to come to one of the most important things of all and that is the recruitment.

In order to start that off, I am going to give you some figures* as to what happened last year. By last year, I mean February 1, 1954 to February 1, 1955. This is the latest full year for which I was able to get figures. I am going to consider engineers alone because those are the only good figures I have.

Last year we obtained a total of 20 engineers input to R/D. We lost exactly 20. Where did we get this 20? We got four new people out of colleges; we lost one of these in the school, however, and another one left after a few months; so of our college recruitment, we have just two left.

We obtained nine engineers from the junior military people who took off their uniforms after their military service requirements were terminated and stayed with R/D. Of these one was a private and eight were junior officers. Why we got more junior officers than privates, I don't know. This number nine should be compared with the total of 69 junior military people who left R/D after their military assignments were completed.

Another source of hirings was the personal solicitations of different members of R/D directly from friends, acquaintances and other sources. As I have already told you, I was one of these myself. We got a total of nine from that source. That adds up to 20. Mr. Crome got some of these people that I am putting into this nine. The fact that he got them almost single-handed makes me include them in this personal solicitation group.

Now as to where these men went. Seven engineers went to various industrial establishments. Two engineers went to other governmental

*More complete and accurate personnel figures are attached as Tab A.

agencies outside of NSA. Eight engineers were transferred from R/D to other sections of NSA. Of these COMSEC took a total of six; Logistics, one and PROD, one. Three were drafted into military service.

It is very significant that R/D received no men by transfer from other organizations. I think it is very healthy that R/D does supply people to other parts of NSA. That's a fine thing but the fact that they do this means that we must have more recruits.

Another thing you get out of this is the great importance of junior military people, both with respect to the work which they do and ~~that they are~~ ^{as} a great source of new men.

This year I have sought and obtained authorization for adding a total of 40 college people if we can get them and we are ~~putting on~~ ^{assisting in} a very heroic campaign to that end. All parts of the organization from the top down are participating in this drive. We think we know the difficulties and we think we know some ways to avoid them. I am going to stick my neck out and say that I am very optimistic--I expect to get these people.

When I say 40 I do not include the further conversions of military people who I hope will continue to want to stay with us and also I do not include the personal solicitations from friends which I want to continue to encourage. I think that that is one of the things that you people have done best and it shows how tough you are and makes me glad that you are so tough.

I have written down here something that I think you know already and that is that the nature of R/D's work is an element of great strength from the standpoint of causing other people to want to come with us and also with respect to the satisfaction of employees now here. This is a great place to work and also a great place to entice other people into.

Because you people are so good, you are continually being wooed away to better jobs. Provided the place that is wooing you is really going to give you a better job, I do not propose to stand in anybody's way at all. Rather I want to encourage it and even help you to get better jobs if I am convinced that we can't give you better jobs here. We want R/D to deserve the reputation of being a good place to come from. Also we are anxious to have sympathetic and understanding alumni in the outside world. They are good for us in many ways. ^P So I conclude that the personnel situation is far from black and I hope that if I give you people another report in a year from now that it will look better than it does now.

Finally I want to talk a little bit about planning.

Planning is my dearest hobby. I would rather work on planning than anything else I know of. Planning really consists of living in the future. Sometimes if you are too interested in planning, you never catch up with yourself because by the time things have actually gotten around to getting created you are another five or ten years in the future and you find it rather difficult ~~to be~~ interested in the creations of the day. That is the kind of guy I am anyway.

One thing you need for planning is knowledge of what is going on, so you will find, if you don't already know it, that I ask a lot of questions to a lot of people and in the years that are to come, I expect that the many other planners will be asking you lots of questions so don't feel too bad about it. Don't always expect that the question means exactly what it seems to imply.

In that connection I think it is good to use this expression that I have heard used on television to the effect that questions do not necessarily reveal our point of view. They are merely our way of obtaining ammunition for planning.

Now a few things about planning.

Planning in the COMSEC field requires a good deal of cooperation with high-level military people in the three Armed Services. I want to report to you that a Committee chaired by Mr. Dean Garner, in the office of the Assistant Secretary of Defense for Supply and Logistics, with membership from the three Armed Services; the General Staff, and myself, in R/D, have been functioning for quite a few months. I believe that ~~the~~ NSA is already feeling its effects in better understanding of many of the problems involved.

In that connection, I want to observe a few things and express some of my own beliefs. One is that human beings are inherently reasonable. If they know the facts, you don't have very much difficulty getting into agreement. I believe furthermore that this inherent reasonableness persists even though people wear uniforms and I would say the success which this committee is having is at least partial proof that this is true.

As evidence of the success of the Garner Committee, the Committee recently decided to change its name. Its name is now Crypto-communications Committee, meaning that it is a committee that considers the overall design of communications circuits of which crypto-devices are merely a part. The committee has already gotten over the notion that a Signal Corps outfit can design a communication system sitting in this dark corner and NSA can design black boxes in another dark corner and put them together and expect them to work. Rather this Committee stands for the idea that the right way to produce communications systems is to do the whole job at once, security devices and all.

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In the COMINT area, there is another Committee functioning, chaired by Dr. Joseph Eachus. This Committee has been endeavoring to set up a fundamental plan for better ~~modernization~~ in the COMINT area. This Committee has membership both from R/D and from PROD. The second phase of this undertaking has just been completed, which consists of a statement of the important things that PROD does, starting with the collection in the field; transmitting the intelligence to the central point and finally processing it here. The next phase is going to consist of suggestions, of which we have already received a lot, of what we might do to improve the situation. I am very hopeful indeed for success of this undertaking.

Also with reference to planning, one very effective way to improve a job of planning is to prepare adequate reports setting forth, at suitable intervals, the current status of different jobs; the program envisaged for the future, and the philosophy underlying this program. Such reports are very good medicine for the person who prepares it. In fact they are the best medicine I know of; they are good medicine for me and good medicine for General Canine. In fact General Canine likes that medicine very much.

Slavishly, with
With reference to these reports, I would say that the object should be to produce the kind of reports which the job needs—not to conform ~~with slavish or~~ outmoded forms of the past. We want to weed out the unnecessary things and do the necessary things and we don't want to be too much bound by the past.

I merely want to make this little bit of summarization for you. I would like all of you to remember your charter which is simply to discover relationships and create new things. It is a very simple charter, one that is very easy to remember. On the other hand, the fact that it is simple merely gives you a good definition of your job and does not imply that your job is simple. I think that all of us can be very proud to be working on such a mission as this. Also I want to express the hope that all of you have a lot of fun.

A. B. CLARK

11 March 55

R/D CIVILIAN TECHNICAL STAFF 1 FEB 54 - 1 FEB 55

<u>GAINS</u>		<u>LOSSES</u>		<u>NET RESULT</u>
<u>ENGINEERS</u>	20	<u>ENGINEERS</u>	20	0
Civ. Pers	4	Industrial establishments	7	
Military Conversion	8	Other Government Agencies	2	
R/D Recruitment	8	Transferred to other parts of NSA	8	
		Drafted to Military Service	3	
<u>MATHEMATICIANS</u>	8	<u>MATHEMATICIANS</u>	5	+3
Military Conversions	4	Terminated	1	
R/D Recruitment	4	PROD	1	
		Private Industry	1	
		Maternity	1	
		To Join Husband	1	
<u>CRYPTANALYSTS</u>	6	<u>CRYPTANALYSTS</u>	3	+3
Military Conversions	2	Back to school	1	
Transferred to R/D from other parts of NSA	4	Overseas with husband	1	
		Marriage	1	
<u>PHYSICISTS</u>	5	<u>PHYSICISTS</u>	0	+5
Military Conversion	1			
R/D recruitment (Crone)	4			
TOTAL	39	TOTAL	28	11 TOTAL NET GAIN

NOTE: Military Conversions are
14 officers and 1 enlisted = 15

11 March 1955

R/D MILITARY TECHNICAL STAFF 1 Feb 54 - 1 Feb 55

<u>TYPE</u>	<u>GAINS</u>			<u>LOSSES</u>			<u>NET</u>	<u>CONVERTED TO CIVILIAN STATUS</u>		
	<u>Officers</u>	<u>E. M.</u>	<u>Total</u>	<u>Officers</u>	<u>E.M.</u>	<u>Total</u>		<u>Officers</u>	<u>E.M.</u>	<u>Total</u>
Engineers	37	31	68	38	19	57	+11	7	1	8
Mathematicians and Cryptanalysts	6	2	8	11	1	12	-4	6	0	6
Physicists	0	3	3	0	0	0	+3	1	0	1
	<u>43</u>	<u>36</u>	<u>79 TOTAL</u>	<u>49</u>	<u>20</u>	<u>69 TOTAL</u>	<u>+10</u>	<u>14</u>	<u>1</u>	<u>15 TOTAL</u>

Net Gain credited to military $10 + 15 = 25$