INTERVIEWEE: ROBERT WHITE

INTERVIEWER: PAIGE E. MULHOLLAN

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M: Let's begin by identifying you generally for background purposes. You are Robert M. White, currently administrator of the Environmental Science Services Administration, and I believe you are the only administrator this agency has ever had. Is that correct?

W: That's right.

M: You began with it. Prior to that, you were the chief of the National Weather Bureau.

W: United States Weather Bureau.

M: United States Weather Bureau--from what time, sir?

W: From October, 1963.

M: So that would be during the final months of the Kennedy Administration you joined the Weather Bureau, and came over here during the Johnson Administration.

W: That's correct. When ESSA was formed in 1965, I was nominated by the President to be the first administrator.

M: Right. Did you have any prior contact with President Johnson at all, prior to the time you entered government service or prior to the time you became administrator of this agency?

W: No, I had no contact with the President prior to coming in the government.

M: Does the President, in an agency of this kind, which is within one of the major departments, does the President have direct contact with the man who is administrator in the course of his work frequently or at all?

W: Quite infrequently. I have been asked to give briefings to the Cabinet on the occasion, for example, of a weather disaster like a hurricane. The President, from time to time, did evidence through the Secretary of Commerce considerable interest in the weather sufficient to want to have a briefing at a cabinet meeting. So this is the only kind of contact really that I have had.

M: There has been quite a bit of publicity and public prints from time to time regarding Mr. Johnson's techniques of appointing people to office. Were there any unusual circumstances connected with your own appointment?

W: No.

M: No business about keeping it from the press, this type of thing?

W: No.

M: Did he give you any special instructions at that time as to what he expected ESSA to do?

W: No. What ESSA was expected to do presumably was specified in his message to Congress at the time he sent the reorganization plan that brought it into being. This message, of course, was in part prepared as basic material prepared in the Department of Commerce, revised in the White House before going down, of course, and we took this to be the general intentions of the President in regard to this new organization.

M: Where did the inititative for the reorganization originate?

W: It's hard to say. For many years there have been very many prominent scientists like Lloyd Berkner, he's now deceased, who for a long time felt that there was a need for amalgamating certain scientific and technical agencies in the government, especially those that, one, didn't fit directly into, let us say, the mission purposes of a

large department as closely associated with it, which provided general scientific and technical support and services to a broad spectrum of society. And among those dealing with the environment were prominent. And so there had been many proprosals over the previous decade that some steps ought to be taken to bring some of these scientific and technical agencies together that dealt with the physical environment. I had been involved as a meterologist at M.I.T. and later with the Travelers Research Center at Hartford with people who were like-minded and we had attempted to build a group at the Travelers Research Center in Hartford dealing with physical environment as a whole, and that meant dealing not only with the weather but with the oceans and the hydrology of the rivers and things of this nature. When I was appointed as chief of the Weather Bureau by President Kennedy, I had essentially adopted many of these views and thoughts and felt very strongly about them. When I came here, we had a fellow named Herb Holloman (sp) whom I'm sure you will also interview, who is an extremely dynamic kind of a person and who had been brought in essentially as the first assistant secretary for science and technology.

M: In the Commerce Department.

W: In the Commerce Department, that's right. And this was a new post that had only recently been set up to try to put something bigger into the science and technology activities of the Department of Commerce. Not many people realize it, but approximately 70 percent of the total personnel of the Department of Commerce are involved in science and technological activities.

M: No, I didn't realize it, for example.

W: If you take--originally, the Weather Bureau, the Coast and Geodetic Survey, the Patent Office, and the National Bureau of Standards, between them, they represented the bulk, literally, of the personnel of the department. And so Commerce was heavily involved in science and technology, but it had never had at the policy level a focus for the science and technological activities. And Herb Holloman came in to that post, and he was very much interested in this question of, one, what is it that the Department of Commerce should be doing in science and technology, how do you go about invigorating this activity in the Department, and what kind of institutions should one build in order to provide a structure on which this scientific and technological activity could grow? He was a great stimulus in the sense of wanting us to look at new ways of doing things, asking about what are the requirements of a nation going to be over the next ten, twenty years with the kinds of scientific and technological services which the Department was then rendering, and what would be the best way to organize them. He had a system for evoking, if you want to call it that, a controversy, discussion, he did it in the form of, one, personal contact with the bureau heads, and secondly by getting the bureau heads together in what he would call management meetings and would from time to time go to a retreat which would be a place like Airlie House or a place up in the mountains to spend a few days, you know, in some examination in depth of what it is we were about. It was at these meetings, really, that the germ of the idea behind ESSA actually was incubated.

M: Does the White House play any part in this? Is there a White House staff man, for example, at these retreats?

W: No, there wasn't at these, although we did have people in for special conferences from time to time from various other parts of the Commerce Department, occasionally from other departments; Herb, of course, was working very closely along with the Secretary of Commerce on these problems, and this process started when Secretary Hodges was still here, and also of course with the President's science advisor, who at the beginning was, when we first came here to Washington, was Jerry Wiesner, of course, then Don Hornig. And in looking over the kinds of things that might be possible in the Department of Commerce and how we might best meet what we could perceive as the sum national needs, we came to the view that this environmental concept, and by this I simply mean that looking at the total physical environment, the word 'environment' is used by everybody, it used in many, many different ways. It means almost everything; it is almost a useless word it has become so widely used. But what we are talking about here specifically is the physical environment of man.

And we felt that it was no longer possible to deal exclusively let us say with the problems of the atmosphere without also taking into account the problems of the oceans, that the problems of the solid earth were very closely connected with the problems of both the oceans and the atmosphere and that there was going to be a real need for some structure, some mechanism to enable the nation to look at the total physical environment because what we could see was this: technology had finally produced a situation where we could observe the global environment in a way which had just not been possible before. And by this I mean the use of earth-opening satellites, high-speed communications, computers to process the data, that this wonderful technology which we could now use to do things we had never been able

to do before had some problems with it in the following sense. It was tremendously expensive technology, and this technology could be used simultaneously not only for observing the atmosphere, observing the oceans, conditions in the solid earth or the sun, and if you are really going to be able to do this in an efficient way, you ought to begin to look at the multiple use of this technology in examining the total physical environment. This was one of the motivations.

Another motivation that we felt that there should be some central focus within the government which would take on the job of being able to alert and warn the people with regard to natural hazards, whether they be atmospheric hazards or oceanagraphic hazards or hazards in space or hazards generated by the solid earth, these should be one authoritative source for dealing with this kind of problem in the federal government. And lastly, the kinds of services that we were expected to render--I'm speaking of the Department of Commerce as a whole--were of such a nature that certain scientific limitations would have to be removed if you were really to realize them. Let me give you a few examples. If you were to develop a capability for modifying the weather, or if you were to develop a capability for making a long-range forecast, let's say on the order of two weeks or a month, these are kinds of problems that are not going to yield to any simple or superficial kind of scientific or technical approach, that it would have to be done in a long-range fundamental way. And furthermore these scientific limitations could only be removed if you really took a sort of multi-disciplinary approach to them. The problem of long-range weather forecasting is as much a problem of the oceans as it is of the atmosphere.

M: I see. In other words, the research capabilities diffused couldn't undertake projects that they could centralized. Basically what you are talking about here is the problem of major research undertakings.

W: Right. So these are the motivations, and when we looked at the Department of Commerce what we found was that within the scientific and technical agencies of Commerce, the nuclei of all of these capabilities and services existed. The Weather Bureau dealt by and large with the atmosphere, although it had a lot of ocean responsibilities. The Coast and Geodetic Survey was by and large an ocean organization plus a solid earth organization; they are responsible for the geodetic control in the United States, the seismological problem in the United States, they are responsible for forecasting the seismic sea waves. The National Bureau of Standards was heavily involved, for example, in the problems of the upper atmosphere and predicting conditions in the sun and the effect of conditions on the sun on radiation in space or the effects of radiation on telecommunications and things of that nature. It became soon apparent that if we could bring together those physical environmental functions in the Department of Commerce under one roof, we would have the beginnings of a capability to do the kinds of things we thought needed to be done. But this presented some problems. First of all, we were dealing here with several agencies whose tradition and history go back almost to the founding of the Republic. The Coast and Geodetic Survey was founded by Thomas Jefferson in 1807.

M: It has built up a lot of bureaucratic construction in 160 years.

W: The Weather Bureau will be a hundred years old in 1970. The National Bureau of Standards was a younger organization compared to these two,

and so you are dealing with two of the oldest line agencies in the federal government. And the question was, how do you bring about a wedding of two old line agencies and in a sense bring them into the modern world and try to attack problems in a new way, a way in which these agencies have not attempted to tackle them before. Holloman's technique for bringing people to a realization of what is, one, in their best interests, and, two, in the best national interest, is rather unique, and it is almost a Socratic Kind of a technique which involves probing, questioning and so forth.

But the three bureau heads got together--at that time it was myself as head of the Weather Bureau, and Arnold Karo (sp) who is the admiral directing the Coast Survey, and Allan Astin (sp) who was the director of the National Bureau of Standards. We looked at the problem, and we had asked ourselves the following questions. One, was there validity to the concept? I think we all agreed there was validity to the concept. What would happen if we didn't head in this direction? And I think all of us concluded that if we didn't head in some direction such as this, why we would probably continue to be old line agencies without a new drive behind us, without really moving to do the kind of things we felt should be done. And so we recommended to Herb at the bureau head level that perhaps a detailed study ought to be undertaken on the feasibility on doing this. Did these things really fit together? Was there something positive that would come out of bringing these groups together? What would the organizational problems be like if we tried to do this?

And of course all of us there were, I am sure, personally concerned about what was going to happen to us as individuals. But

I must say it was a group that did subdue to a very substantial degree concerns about their own, the effects of such a thing on themselves personally. So we had a small study group to look at the problem, and we say that there were a lot of problems involved, but on balance the potential that would reside in some amalgamation such as this was worth the confronting the problems that we knew would have to be confronted. And at that point what we did was--I say 'we,' I mean Holloman and the Secretary--asked a group of outside people to come in and look at the concept.

M: Out of government, now?

W: Out of government.

M: Clear out of the government.

W: And this was an interesting group of people that consisted of Roger Revelle, who was formerly the director of the Scripps Oceanagraphic Institution and is now the director of the Center for Population Studies at Harvard; Emanuel Piore who was then, I guess, chief scientist, or vice president in charge of research for IBM; Dr. Tom Malone, who was vice president in charge of research for Travelers Insurance Company; and Lloyd Berkner, who was a president of the Graduate Center for Research in the Southwest at Houston. They looked at it, and they thought it was worth moving in this direction, also. A report then was drawn up making a formal recommendation after these studies that such a step be taken to reorganize the scientific and technical activities of Commerce dealing with the physical environment into a single unit. This, as I understand it, was discussed with the President by the Secretary.

M: This would still be Secretary Hodges?

W: No, by this time now Hodges had left and Jack Connor was the new Secretary. He of course was continuously briefed on this. The Commerce Technical Advisory Board, which is advisory to the Secretary on technical matters, was briefed, and apparently everybody up and down the line felt that this was a reasonably good idea and the decision was taken to bring about the reorganization using the President's power under the reorganization plan in 1965.

M: The Bureau of Standards did not go out of existence as an independent. Only part of its functions were put under ESSA; is that correct?

W: That's right. One of the major divisions of the Bureau of Standards was brought into ESSA, and that was the division dealing with the upper atmosphere and with telecommunications.

M: And this was the only one of their functions that qualified as part of the physical environment?

W: Right. What this did do was bring together within the Department of Commerce a single complex dealing with the physical environment. Now, in his message to the Congress, the President stated that he wanted to see this to be a single national focus for the description and prediction of the state of the atmosphere, the oceans, the river, the upper atmosphere, and this then we took as our charter. I think in many ways we have been quite successful and in other ways we have been unsuccessful. I think we have been successful in bringing the groups together to a large degree and being able to deal with problems we haven't been able to deal with before. In making our recommendation to the Secretary and in his letter of transmittal to the President, it was pointed out that merely reorganizing and carrying out the functions we had previously was really not going to do the job that

was envisioned, that this was going to require the injection of considerable new resources, the point being that each of these agencies was almost completely committed to the provision of certain kinds of services which would have to be provided in any organizational structure; your daily weather forecast; the nautical chart that you use if you go boating on a Sunday afternoon; your aeronautical chart; so these things were fairly routine services that had to be carried out, and there was not much flexibility within the existing resources of the organization to begin to do the kinds of things that we envisioned. And this was made clear in the proposals going forward. And I think where we have been unsuccessful is that after the formation of the organization we received rather good support for the purposes and programs of the organization through the Executive Branch, but we were unable really to convince the Congress, and by this I mean our Appropriations Committee, to put up the resources that the Executive Branch was requesting for this new organization. And so in the three years that we have been in existence, I think we must face up to the fact that we have not been able to get the resources from the Congress to do the kinds of things that were originally envisioned for the organization.

M: One of the things at the time of the reorganization, I believe, that was either claimed or was hoped from the reorganization was substantial savings in the conduct of what you would call fairly routine activities. Has that materialized?

W: This had been a point of issue. We were very clear to point out that there would be certain administrative savings. We had two personnel offices, we would have one office. And no claims were made

other than that these savings would be of the order of $700,000 or so of this kind. But you see this group was brought together not because the functions they were discharging were duplicatory. There weren't two organizations here, both of whom were putting out charts at one time, and you say, okay, put them together and you can eliminate one. Those kinds of savings were not involved, but what we did state was we would be able to do things and very much less expensively with the new organization than we would if we were to remain separate. Let me give you some examples. We said, if you bring the new organization into being, we will be able to use our weather satellites for other purposes. It cost you around seven or eight million dollars to launch a single weather satellite. For you to operate a separate satellite system, let's say to observe the oceans, or to observe the sun, it would be tremendously expensive. We said, look, we can add sensors to monitor the sun or to monitor the oceans from that weather satellite, thereby avoiding the cost that would be entailed in operating separate satellite systems. This we have done. Or, we said, look there are certain things that we would be able to do with the new organization that we couldn't do if we didn't have it; for example, the problem of air-sea interaction. Here is a problem where you've got to study not only the oceans but the atmosphere and you need for this both ships and aircraft. By bringing this organization into being, it became possible, therefore, to deploy our vessels which were operated by the Coast Survey and our aircraft which are operated by the Weather Bureau jointly in a single activity. We are actually doing that kind of thing.

M: I suppose some computer systems might be applicable to both functions, too.

W: Right. So there were major things that we wanted to do, some of which we have done which are in the nature of avoiding requests for substantial additional monies by the independent groups. But this has become confused, and I think this is one of the reasons why we have not been as successful as I would like in getting the resources from the Congress, and that is that they felt that the amalgamation of these functions would yield lower requests for money. Whereas right after the organization was formed we came in for substantially increased requests. And the problem you confronted was, now, here you people are brought into being a new organization amalgamating these things, talking about all the wonderful savings that you are going to bring about, and here you are coming in asking for more money. Now, that just doesn't fit. And I don't think we ever successfully have been able to explain to the Congress that our requests for more money were for new and important programs and that the requests out of the separate bureaus would have been very much larger if we had gone our separate ways. And the other factor, of course, that hit us as it hit all government agencies was that we ran into what everybody in federal government has experienced, is a very tight financial situation generally.

M: Has it hurt you being in the Commerce Department; is that a logical place, first, for this agency to be really? There are a lot of independent scientific agencies around the government, NASA, AEC, and some others.

W: Well, this question has been raised. In fact, it was recently raised in a letter from Congressman [Emilio Q.] Daddario [D-Conn.] to the President just three months ago about whether ESSA is properly placed.

I think you have to--you know, a government organization is amoeba-like, you know, it forms, it breaks, it separates, and it forms, it breaks, and it separates. And what you do is you form organizational structures which appear to be necessary to solve a problem at the moment; then the environment around the whole structure changes and by this I merely mean the problems that the nation has to confront change in severity, importance, and so forth, and at what one time was a perfectly suitable organizational structure now becomes in a sense anachronistic if you are going to confront the problems of the day. Let's look at the history of the Weather Bureau which is one element of ESSA. It originally started out in the Signal Corps, and it started out in the Signal Corps because the military had the technical capabilities at that time and too were very seriously concerned about weather. It moved from the Signal Corps twenty years later in 1890 to the Department of Agriculture because it was felt that agriculture was so vitally affected by the weather, this was obviously the logical place to have the Weather Service. And in many countries of the world that is where the weather service is, in the Agriculture Department. With the growth of aviation, on the other hand, you see, aviation became so weather-sensitive that this became the major problem that weather people had to confront was, how do you provide weather service for aviation? Well, at that time the CAA was in the Department of Commerce, and the rationale--they said, "Well, fine, let's get the aviation and the weather people together." and if you look at many other countries you will find that the weather service is affiliated with the civil aviation group. Since that time, you see, the aviation function has been taken out of the

Department of Commerce, and the original rationale bringing the Weather Service into Commerce has disappeared.

M: In that sense you might put this department, ESSA, in Transportation under the same sort of rationale.

W: Sure. So I think what you really have to say insofar as the weather service is concerned, there is no logical place, because it serves everybody, it serves agriculture, it serves aviation, it serves marine interests, it serves the general public, it serves the water management, water resource people, it serves everybody across the board, and if you are going to have a central weather service which is really the only way to run a weather service; otherwise you would have duplicating weather services all over the place; and you ask the question, "Where is the logical place for it?" There isn't any. It can, either logically or illogically, be in almost any agency of the federal government or apart from any agency in the federal government.

M: I was thinking in terms of the--you mentioned the appropriations difficulties. The independent scientific agencies seem to have always done rather well with Congress--NASA and AEC and others--and perhaps ESSA might have done better as an independent scientific agency with their appropriations.

W: That's an "iffy" kind of question. One doesn't know. But all of our activities are really of that nature. We render a common technical service, that's what ESSA is about. They have to deal with the physical environment. The same with the National Bureau of Standards; it renders certain common technical services, and where the logical location for such a set of functions is is a real question.

M: You said that the executive [branch] had given you adequate support

for your appropriations request. Now, that would be the Commerce Department; you have received fair treatment within the Commerce Department.

W: Commerce and the BOB and the Executive Office, I think have given us a fair shake in our appropriations requests. They have been, of course, under the same pressure that all departments have been under.

M: That, of course, involves the general tightness that you mentioned. What about another problem that seems to an outsider to be a difficulty. What about recruiting the type personnel that a scientific agency needs? You yourself have a background in private industry along with government service and university work and others. Can you compete in hiring scientists under the current setup, current administrative organization, pay scale and so on?

W: Well, let me put it this way: you are always looking for more top-notch key innovative kind of people; these people are scarce, under any situation. We generally have had no real difficulty in recruiting scientific and technical talents for our activity. I honestly can't say that we have. Now this isn't to say that the federal government is the utopia as an environment in which to work for a scientist or a technical man, but there is no utopia anyway, whether it be university of industry or federal government, each one has its own problems. The thing the government offers to scientists over and above what you would get in industry and a university is long-term stability and access to facilities that you just couldn't get anywhere else. This, then represents the core of the attraction of federal government employment to scientific and technical people. The salaries, of course, are not as great as you would get in industry. The frustrations in

federal government stem from really from the fact of its bigness, and they are the kinds of frustrations that one finds in any big organization whether it's federal or private. It's conventionally known as red tape or what have you, but what it really boils down to is that decisions made for perfectly valid policy reasons either at my level at the Department of Commerce and the Executive Office of the President or by the Congress. The major fundamental decisions that are made when propagated through the system have all sorts of unforeseen consequences down at the working level.

One of the things that has struck me and one of the things that I think is part of the normal process of bureaucratization of anybody who comes to work for a large organization is that, after making certain decisions on a policy basis, you suddenly discover some time later the consequences of your decision down at the working level, and some of the consequences are almost unanticipable because the system is so large and so complex that after you go through a few of these you begin to hesitate before making any decisions because you say, "My God, what are going to be the consequences down there? Some of the previous ones that I have made have all sorts of adverse consequences." And so you get to the point where you really want to understand what the effect of this decision which seems obviously rational to you sitting on a policy level is going to have somewhere down there. You say, "Look, our procurement this year is going to have to be cut by ten million dollars, and let's do it this way; let's have a reporting system set up." Well, it propagates down to the system and suddenly you find that people carrying out your policy decision have set up some sort of complicated reporting system which

suddenly becomes onerous on a scientist and prevents them from going out there and buying a screwdrive when he needs it or things of that nature.

M: And may cost ten million dollars that you are trying to save in other respects.

W: You become a little bit skiddish about making these decisions in a cavalier way, and so you say, "Let's have a lot of staff work on this damned thing before we make a decision; let's have a lot of staff work to be sure we know what's going to happen." And this is part of the process. It slows things down. It's not that people don't want to make decisions; they gradually come to the realization that--

M: That's when you become a bureaucrat.

W: That's right. That's one of the things that happens to you. But I think this is the kind of thing that brings about what we normally think of as the red tape. Nobody wants to, at any level in the government, force a scientist or anybody in the system to be doing screwy things. Everybody is absolutely up in arms when they learned about some of the things that finally transpired. That's one of the problems of federal employment and this is one of the things that makes people shy away aside from the fact that the salary may be lower. So you have to balance those advantages, and universities also.

M: Right.

W: And it depends upon your makeup as an individual which set of advantages and disadvantages balances out for you as being the best.

M: That's where I was going to go to is the industry side. Are there complementary or even duplicatory functions, research functions, being

carried on by the private sector and has there been any attempt by the administration to coordinate what you do at ESSA with what may be being done privately; is there any institutional manner of contact in that regard?

W: In a wide variety of ways. Let's take the provision of weather services. At the end of World War II, you had the beginnings of a growth in this country within the private sector of private meterological services, people who provide a specialized weather service for profit to individual companies. These people, then, in the private sector were providing weather services and there is a free government weather service and then you are immediately confronting by a policy issue as to, what do they do and what do you do? How far should the federal government go in providing weather services? Where is the proper role of the private sector providing weather services? The problem is not an easy one because, you see, public safety and welfare is involved here. You have to ask yourself the question, if there is a tornado warning to come up or a hurricane warning or severe storm warning, what is the responsibility of the federal government and the private sector in insuring that the general public gets consistent and proper information rather than confusing information? You can imagine the situation you would be in, for example, if there were three different weather forecasts on a tornado situation or a hurricane situation.

M: I come from tornado country; I know exactly what you mean.

W: You could have a serious catastrophe. On the other hand, there is the question of whether the taxpayers' dollar should go to provide a service, let's say, to an individual oil company or an individual power company. Well, as this private sector activity got going,

there was considerable friction between the public weather service and the private weather services. The private weather services felt that the public weather services were taking the bread and butter out of their mouths, and the public weather services in some cases felt that some of the private services were selling shotty goods. When I came on board, I institutionalized the arrangement in several ways. First I appointed a special assistant to me for what I call industrial meterology.

M: Meaning private?

W: Private. And his job was to deal with all the problems that would come up between the public and the private provisions of weather services. And secondly [I] established a policy on the role of the public and the role of the private sector in the provision of meterological services which generally goes to the point that the public weather services have the obligation to protect the public safety and welfare, that any citizen of the United States is intitled to weather information from the public as a taxpayer. But when it comes to the provision of individual services to individual companies, this by and large is the role of the private sector. The taxpayer's dollar should not go to providing specialized services to individual companies. If it was that valuable to them they should seek their services from the private sector if the services that they wanted were over and above those that would normally be provided to the general public and to broad segments of the economy like agriculture and things like that.

This has worked reasonably well. From time to time there arise issues as to whether one of our weather stations provided a service which would rightly have been provided by the private sector, and

the special assistant for industrial meterology gets on top of these as soon as possible, gets the parties together, and irons it out, because you cannot draw a sharp line, there is a gray area here, and it has worked reasonably well. The private sector, the private meterological services, have grown over the past five to ten years. My personal belief is we've got to have a healthy private sector and public sector in the provision of meterological services. There is room for both, there is need for both.

M: What about research? Do you have your own research division?

W: In research, you see, there is very little problem because most research in meterology is funded by the federal government in the private sector.

M: Is most of the research that ESSA wants done and has funds to do carried on actually by the private sector, funded by ESSA, or is it mostly carried on by ESSA people directly?

W: Both. You are going to the point of in-house versus out-house kinds of support for research. We do both. We maintain a set of in-house laboratories; we also support research under grant and contract with universities and private industry. We feel that we need in-house laboratories to give us the necessary technical and scientific confidence responsive to us; we feel that we need the flexibility and the talents that are available outside the federal government and we use those and purchase those services under grant and contract as do many other government agencies in meterology; we are not the only, in fact we are a minor sponsor of research in atmospheric sciences in the federal government, strange as it may seem.

M: You mean there are other government agencies sponsoring research in

atmospheric sciences?

W: The National Science Foundation, for example, spends more money in atmospheric sciences research than we do. NASA spends more money in atmospheric sciences research than we do. The Department of Defense spends more money in atmospheric sciences research than we do.

M: Is there a method for you to obtain the benfits or the results of the research sponsored by others?

W: Oh, yes, this is all available.

M: No problem with inter-agency coordination in that regard?

W: No. The research inter-agency-wide is coordinated through an arm of the Federal Council of Science and Technology and also to an office of the federal coordinator for meterological services in supporting research. But this is not a problem at all. I mean, in having access to and being knowledgeable about what research is being sponsored by any other agency.

M: What about international implications of your work? Do you have any difficulties--you have a lot of people overseas, for example, at various stations around the world. Do you carry on relations with individual countries through your representatives or do State Departments people get involved here, or how is that done?

W: One of the things that pervades all of the things that we do is international or global characteristics, whether you are dealing with seismology where you need a worldwide seismograph network or whether you are dealing with the weather where you need weather data from all over the world, or whether you are dealing with oceanography, almost everything we touch is international in character because we are

interested in the global environment. You can't locate an earthquake unless you have the seismic information.

M: Whether it's American or Mexican or Indian--

W: And you can't forecast the weather for the United States unless you have the weather information in the Soviet Union. So we are heavily involved, heavily involved, in international activities and this takes places on a number of levels. First it takes place on the level of international organizations, for example, of the UN system, organizations like the World Meterological Organization or the Intergovernmental Oceanographic Commission or the International Hydrographic Bureau. So we operate as representatives of the United States in these international organizations carrying the US views, the US position, in regard to these things that have to be done internationally like agreeing on codes, transmission time, schedules, kinds of observations, standardization of observations, international research programs, you name it.

At another level we deal very extensively bilaterally with individual countries, in a number of areas, whether it be Mexico or Canada or India or UK, you name it, we are in constant contact and exchanges of information and people with these countries carried out on a bilateral basis between ourselves and our counterparts in these other countries and this is across the board, also, all of the fields of the geophysical sciences. Some of these result in formal bilateral agreements as we would have with many countries where we do something and they do something. Others are much more informal exchanges, and in addition to that there is the whole complex of international scientific organizations which are non-governmental

in character, for example, all of the international scientific organizations which come under the heading of the international council of scientific unions, for example, where our scientists as individuals participate rather extensively in the work of these international scientific organizations. But there is very little that we touch or can do without some international contact.

M: The public image, I think, is that, in the scientific community, that they are capable of at least normally rising above the cold war tensions or other international tensions that may exist bilaterally between countries. Is that an accurate assumption?

W: By and large that is true, but I think it would be quite naive to come to the conclusion that science is immune from the pressures of whether it be the cold war or any other international political pressures. Attitudes of governments change, attitudes of their representatives change, they decide to cooperate, from time to time they change as a function of the international political situation, and this is reflected in scientific activities to a certain degree. They are as immune as reasonable practical people can make them, let's put it that way.

M: Which is not a 100 percent, I'm sure. You mentioned earlier in passing that President Johnson has shown several times an interest in the weather function of the ESSA operation. Are there any particular programs, particular activities, that he has indicated direct attention to or interest in?

W: Well, he has been very much interested in our hurricane warning service, and he has also indicated an interest in the weather modification.

M: The hope that we can produce weather rather than just predict it.

W: Change it.

M: How does he demonstrate interest of that type? Does he call you up on the phone?

W: No, I have never had a personal call from him. This has been transmitted through the Secretary. And it will be manifest as, for example, where he asked for a briefing of the Cabinet as to what is going on in hurricane forecasting and weather modification.

M: You are one of the people who started out as a Kennedy Administration appointee and moved not out but up which is not the trend that many took. Have you ever felt like there was a Kennedy stigma among those who stayed on through the Johnson Administration?

W: I can only comment from my own personal situation. Insofar as I am concerned, no. I'm sure this would be quite true of almost all people in the scientific and technical areas in the government. We have been brought in because of our technical and scientific capabilities. I have felt none of this whatever. I have had only support both in the Kennedy, and that was for a very short period of time, and in the Johnson Administrations. I felt no carry over feeling whatever.

M: There has been, on occasion, some publicity that President Johnson is not always happy with the political analyst. Have the writings of Theodore White given you any special problems?

W: No, I'm aware of the fact that some of the views my brother expresses and some of those that the President expresses don't always coincide, but there has never been any kind of an effect of that kind, any effect that I can detect, merely because of the fact that my brother is a political analyst and may not agree from time to time with the

particular administration that happens to be in power.

M: I don't want to foreclose anything that you think is important to say because of my own ignorance of scientific things. Is there anything, any subject, that you think would be important to go into that we haven't touched upon? You have been very patient.

W: No. I do have a strong feeling that the problems of the environment, and here using the environment more broadly than the physical environment, and man's need to insure that he has a suitable environment in which to live, are going to be among the most pressing problems to which science and technology can contribute to a solution. They are going to become probably one of the outstanding kinds of problems any administration is going to have to deal with. I like to think that over the past four years or so that there has been a really conscious move in the direction of doing something about this. I think a lot has been accomplished; I think there is still a long way to go. I think the things that we have done, for example, just bringing ESSA into being, of new legislation dealing with air pollution and water pollution and things of this nature are symptomatic of the general concern of the nation with this problem and of the concern of the administration with these problems, and I think it has taken a number of very meaningful steps to do something about them. I think the problem is going to become itensified, I think even further steps are going to have to be taken.

M: Has ESSA become involved in the drafting of legislation on air and water pollution directly?

W: The air pollution legislation, of course, runs through HEW, but we are, we work with them when the legislation is--

M: I thought that was the department of origin on those, but you are in consultation.

W: That's right. For example, in the air pollution problem our job is to essentially provide the information as to how the atmosphere will disperse or concentrate pollutants. We would be responsible for issuing pollution warnings to various communities and we work very closely with HEW on these problems. The same with water pollution, we are responsible for predicting stream flow in the United States which is very critical to all kinds of water management problems. So we get involved in that way.

M: Thank you very much for your time. I enjoyed talking to you, sir.

W: Okay.

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By Robert M. White

to the

Lyndon Baines Johnson Library

In accordance with Sec. 507 of the Federal Property and Administrative Services Act of 1949, as amended (44 U.S.C. 397) and regulations issued thereunder (41 CFR 101-10), I, Robert M. White, hereinafter referred to as the donor, hereby give, donate, and convey to the United States of America for eventual deposit in the proposed Lyndon Baines Johnson Library, and for administration therein by the authorities thereof, a tape and transcript of a personal statement approved by me and prepared for the purpose of deposit in the Lyndon Baines Johnson Library. The gift of this material is made subject to the following terms and conditions:

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