ARMY RESEARCH LABORATORY

Dr. John W. Lyons: Interviews with the Director

William T. Moye, interviewer

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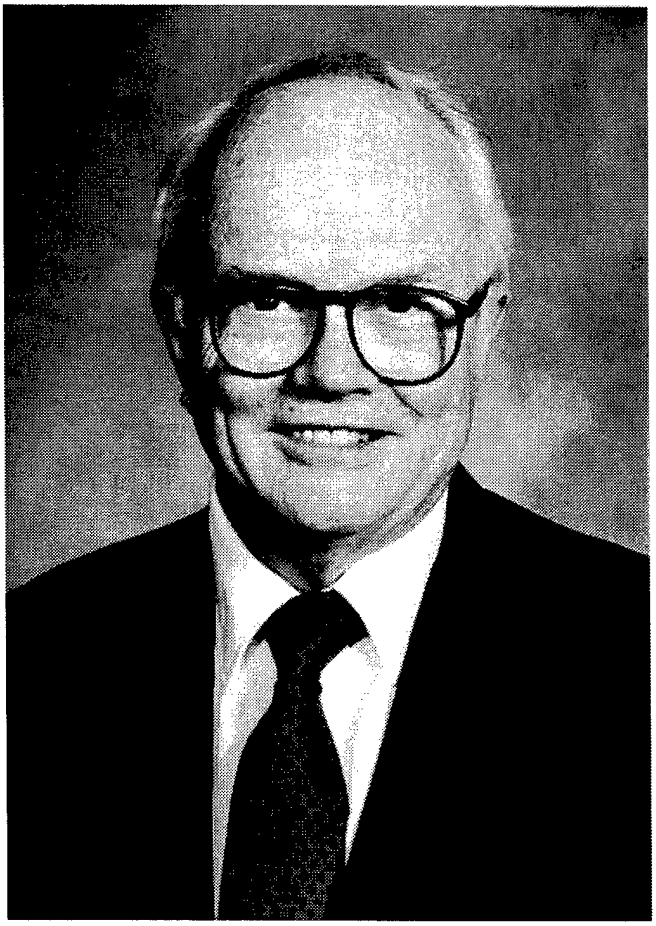
Abstract

Dr. John W. Lyons served an exciting and tumultuous five years (1993–1998) as Director of the U.S. Army Research Laboratory (ARL). Dr. Lyons and ARL count a number of significant achievements, despite operating in an environment of government shutdown, uncertain funding, declining personnel resources, and shifting defense priorities.

The consolidations of personnel and functions and the major construction projects arising from Base Realignment and Closure Commission (BRAC) decisions are almost complete. ARL launched its federated laboratory initiative, entering into cooperative agreements with three industry/university consortia. The U.S. Army Research Office (ARO) transferred into ARL to strengthen and centralize coordination of the Army Materiel Command (AMC) basic research program. The laboratory implemented its new personnel system as a "demonstration project."

On the technical side, the laboratory focused considerable energies on technologies and systems to "digitize the battlefield." ARL demonstrated the GPS registration fuze, and it maintains state-of-the-art supercomputing capabilities at the Major Shared Resource Center. Meanwhile, ARL supported U.S. soldiers deployed to Somalia, Haiti, and Bosnia, and ARL is working with the Training and Doctrine Command (TRADOC) in the Army After Next (AAN) process.



Dr. John W. Lyons
Director, U.S. Army Research Laboratory
14 September 1993–31 December 1998

Before serving as Director of ARL, Dr. Lyons was Director of the National Institute of Standards and Technology (NIST). Dr. Lyons graduated from Harvard University with a bachelor of arts degree in 1952. He also holds a masters and a doctorate of philosophy in physical chemistry from Washington University in Saint Louis, MO. He worked at Monsanto from 1955 until joining the National Bureau of Standards (NBS, now NIST) in 1973. He served as director of the National Engineering Laboratory at NBS from 1977 until 1990, when President George Bush named him director of NIST. Dr. Lyons has published four books and over 60 papers, and holds a number of patents. He has served on many boards and commissions, including the National Commission on Superconductivity and the Federal Advisory Commission on Consolidation and Conversion of Defense Research and Development Laboratories. He was elected to the National Academy of Engineering in 1985. Dr. Lyons is a Fellow of the American Association for the Advancement of Science and of the Washington Academy of Science. He is also a member of the American Chemical Society and Sigma Xi.

Preface

In September 1993, Dr. John W. Lyons became the Director of the U.S. Army Research Laboratory (ARL), which had been activated one year earlier to consolidate the seven corporate laboratories of the U.S. Army Laboratory Command (LABCOM) with other Army research elements. ARL is the Army's primary in-house laboratory for fundamental and applied research. Its mission is to provide the Army with the key technologies and analytical support necessary to ensure supremacy in future land warfare. With its state-of-the-art facilities and workforce of about 1400 scientists and engineers, ARL occupies two major sites: one at the Adelphi Laboratory Center (ALC) and the other at Aberdeen Proving Ground (APG), both in Maryland. It also operates unique outdoor facilities at the White Sands Missile Range (WSMR) in New Mexico. In addition, two research elements are collocated with National Aeronautics and Space Administration (NASA) activities in Cleveland, Ohio, and Langley, Virginia.

The five years of Dr. Lyons' term were exciting and tumultuous times for the laboratory. Together, Dr. Lyons and ARL count a number of significant achievements. The consolidations of personnel and functions and the major construction projects arising from Base Realignment and Closure Commission (BRAC) decisions are almost complete. The laboratory realigned its technical and support structures to sharpen its technical focus and reduce overhead costs. Recently, the U.S. Army Research Office (ARO) transferred into ARL, in a move intended to strengthen and centralize coordination of the U.S. Army Materiel Command (AMC) basic research program. In January 1996, ARL launched its innovative Federated Laboratory initiative by entering into cooperative agreements with three consortia consisting of industry and university partners. During the last two years, in recognition of these and other accomplishments, the laboratory has shared in three Hammer Awards presented by the Vice President through the National Partnership for Reinventing Government.

Meanwhile, ARL has supported U.S. soldiers deployed to Somalia, Haiti, Bosnia, and elsewhere around the world, and the laboratory is working with the U.S. Army Training and Doctrine Command (TRADOC) in the Army After Next (AAN) process. This is an effort to look out 20 to 25 years to envision the battlefield of the future and identify the enabling technologies required across the spectrum.

All the while, the laboratory operated against a background of government shutdown, uncertain funding, declining personnel resources, and shifting defense priorities. In addition to the internal restructuring, ARL conducted three rounds of Voluntary Early Retirement Authority/ Voluntary Separation Incentive Pay (VERA/VSIP) and Reduction in Force (RIF) actions. Moreover, the laboratory experienced two major internal personnel disruptions.

In these interviews, Dr. Lyons discusses these and other issues and actions. Dr. William T. Moye, ARL Historian, conducted the interviews, which were taped, transcribed, and edited. Dr. Lyons is to be commended for participating in the Army's oral history program.

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23 February 1994

Moye: Today is the 23rd of February, 1994. I'm Bill Moye, the historian at the Army Research Laboratory (ARL). I'm talking this afternoon with Dr. John W. Lyons, who is the Director of ARL. He has been here now just about exactly five months, having come in September. This afternoon, we're going to talk some about his impressions on coming into the laboratory and some of the initiatives that he has already started in the months that he's been here.

Dr. Lyons, you've been here since September. Could you tell us how you came to get here, and your impression as you arrived?

Lyons: It started almost a year ago. George Singley called me up to tell me that the Army Research Laboratory had been formed and that they were looking for national candidates for director. The reason George called me is I had served on the Federal Advisory Commission for what was really BRAC 91 (the Base Realignment and Closure Act of 1991), where the reorganization of the Army's laboratory structure had been proposed. The commission was reviewing the BRAC, so I met George there. Also Bill McCorkle, who was a member of the commission and who, of course, is the technical director of MICOM (U.S. Army Missile Command, now the Aviation and Missile Command). So I knew a little bit about what the Army was trying to do.

I had served as director of the National Institute of Standards and Technology under President Bush. But President Clinton appointed a new director, so I was casting about for something to do. I decided, after thinking about whether to go to a university and teach, or try this, that, or the other thing—a number of possibilities. The thing I really know how to do is manage a laboratory. That's what I've been doing for most of my life, after a career in research.

So, in response to Singley's suggestion, I considered it, filled out the application, and sent it in. That was sometime in late spring. Then, in the middle of the summer, I got a call that I was a finalist, and would I come in for an interview? So I went in to talk to a panel chaired by General Pigaty. Shortly after that, in August, General Ross called and said that I was the recommendation, and would I consider it? So I thought about it for a couple of weeks and called him back and went in to see him.

We discussed the Army Research Lab and what it was supposed to be. He told me it was a consolidation of the laboratories and had become the Army's tech base lab, providing support for the applied work of the RDECs (research, development, and engineering centers). That I should consider, as the pair of benchmarks, the Naval Research Laboratory (NRL), which has that role for the Navy, and the National Institute of Standards and Technology (NIST), which, these days, is getting a lot of publicity and attention. And General Ross thought that

would be a good benchmark model to think about. Coincidentally, of course, I know an awful lot about NIST. So anyway, we agreed.

Despite some of the difficulties that the Army is facing with downsizing, I agreed to accept the assignment, and on the 14th of September, I was here to accept the transfer of command from Dick Vitali. After I did that, the first thing I had to do was to understand what ARL is. Which meant I had to run around the country and visit all the different sites, ranging from the two small sites at NASA Langley and NASA Lewis to, of course, a major installation at Aberdeen, a major one here at Adelphi, and Fort Monmouth, Watertown, and White Sands. Get to all those places, review the program, and hear presentations from the managers and directorate executives. But also to get out in the laboratories and see some of the work first hand, and to have coffee meetings with cross cuts of the staff at these places. So we did all of that, and, because of calendar problems, fighting crises back here, it took essentially until the end of the calendar year. I guess it was December before I actually finished; the last visit was out to NASA Lewis in Cleveland. It took quite a while to simply get around to everybody.

Having done that, I developed some impressions. We, early in December, had what we call our Q2 meeting, which is the second of the four quarterly meetings that the directorate executives hold to discuss things. In the case of Q2, it was to discuss the new strategy document, what we want to see in the overall ARL plan. The Q2 was my first real chance to meet with all of the DEs as a group. I presented to them my thoughts, as a result of this series of visits, some ideas about the overall mission and vision, and some managerial thrusts that we need to engage in, in order to achieve the mission and the vision. That's now being converted into volume 1 of our business plan, which is in draft form. It should be out shortly. That was the first thing, to make sure that we would think about whatever revisions seemed appropriate. I've since been using the mission and vision statements in my presentations.

The impression I have, first of all, is that it's a far-flung enterprise, a big enterprise. There are some very good people and some very good programs. I find the technology—the science and technology—very different from what I knew at the Bureau of Standards, NIST.

Moye: As I recall, you said in September that your last contact with the Army was 40 years ago as a private.

Lyons: Corporal, actually.

Moye: You've been in civilian—government, but civilian—work all your career. Not that we're overwhelmingly military in numbers, but we are part of the military organization. Do you find the environment, in any way, particularly different?

Lyons: Let me say I spent 18 years in the chemical industry, in the private sector, then 20 years over at what was the Bureau of Standards. All of that was what we call civilian technology. That was always in research and development—a little bit of business development, too, with the chemical industry. There is no question that the military technology has a totally different motivation. Much of the subject matter is completely different. However, doing technology is the same. I think managing a laboratory is pretty much the same. The same issues are constantly coming up. Are you focused properly? Are you spread too thin? That's an issue in any large multidisciplinary laboratory. And it doesn't matter whether you have funding or you're downsizing; the same issues always seem to arise.

But as I was saying, as you go around to the places and visit the technology, in the first place, I am fascinated by it. A lot of the technology has to deal with machinery of various kinds, and I've always been interested in machinery. One of the first things I did was drive the M1 tank (actually, it was the M1A1), because Colonel Miller insisted that, right away, I had to drive the Abrams tank. While doing that, I drove the Bradley, and I drove the HMMWV (high-mobility multi-wheeled vehicle) at the track, but Colonel Miller also insisted I fire the tank cannon. So we went out on a range at Aberdeen, and I fired a couple of rounds with the M1A2. That was different. It gave me a headache.

As a result of the visits and my exposure to the programs and the staff, we refined the mission statement and so on. My impression of the whole operation is that we have, as I expected to find, a lot of very good people, dedicated staff. Everybody knows what the mission is. That's not always true in federal laboratories. It has been a long-standing problem at some of the Department of Energy laboratories, for example—not knowing quite what the mission is, now that the cold war is over. That's not true here. Everybody knows what the mission is. I think the staff understands what the new posture of ARL is.

I believe that the staff is a little concerned about what I think and what I might try to do. The general thrust of that is that I am interested in science and not so much in technology, that I am likely to take ARL back into an ivory tower setting. That's not true. It is true that I believe very strongly that any large laboratory like this needs very strong scientific underpinnings. So you need to be strong in things like physics and mathematics and computer science and chemistry and some of these scientific disciplines. Materials science. If you don't have that as a foundation, then you can't do the applied work. A place like this has to have a lot of good science, as well as a lot of good engineering and applied work. So there's no question that I will be emphasizing the scientific underpinnings, but that's not at the expense of the rest. It's because I believe that the applied work will be of a higher caliber if we have the scientific skills.

It's not to say that we *don't* have them. I was pleased to find that we *do* have good underpinning in lots of places. But I think we need more. And as we shift into this tech base role, we need to have more 6.1 money. For example, it's currently about 10 percent of our total funding—that is, of mission funding plus customer, about 10 percent is 6.1, $35 or $40 million out of the roughly $400 million. That 6.1 number, I think, should be much higher, and I just arbitrarily set the target of 30 percent in 6.1.

Here's where the benchmarks come in. The Naval Research Laboratory has almost $100 million worth of the 6.1 funding. If we're going to measure ourselves against them, then we need to get the 6.1 up. It's not to say that we necessarily spend it the way they do, but we need to have that kind of long-range effort in fundamental work, work that's not development. So that's one thing. I don't see why that should threaten anybody.

I have recently requested proposals from every staff member, every S&E (scientist and engineer). I sent out a letter requesting that they consider whether they would like to compete for a fund of about $2 million that we set aside last fall for, essentially, new-start kinds of proposals. Small ones. That great big notebook on my desk contains about 200 proposals from the staff, two pages each. We are now going through it. And those are going to be largely in the 6.1, early 6.2 area, and represent opportunities to strengthen either the scientific work or to get into new, technology-related areas.

It's a technique I've used for at least the last 20 years. It does a couple of things: One is, it draws out the staff. Gives us a chance to see what the staff's ideas are, as opposed to the managers'. I talk to managers all the time. *This* tells me what the working research staff is thinking, what their druthers are, and what they'd like to try. That's one thing. So even if I didn't have any money, just reading that book is going to tell me an awful lot about the researcher mentality. Secondly, though, it's a steering mechanism for the laboratory as a whole. A $2 million pot isn't very big. It's a half of 1 percent of the budget. In future years, it will be a bigger pot; it's probably going to rise to $6 or $7 million. But it's a way for me to say, "Well, I would like to see us get into this area or that area. I've got some money."

Moye: There's a little discretion there . . .

Lyons: Find a champion. If there's a champion, I will have the money. It's a mechanism to fund work that might last more than a year. The current request is essentially for one year, but a successful effort might get a second year's funding next year. Or we might put it into the budget, the POM (program objective memorandum) build. So it's a way to get into things. In the past, I have created entire, what we call "directorates," starting with just one of these little awards. I know that it will work. It's a chance, then, for steering from the Director's Office. So

that's going on, and I think that was well received by the staff. Obviously, the results are very encouraging. In fact, it's sort of overwhelming.

Well, anyway, that's one of the concerns that people worried about, what I was going to do. Was I going to make this place a mini university? That's just not true. I like the applied work. My feeling is that the ideal result will be a laboratory that is strong scientifically and strong in applied work. Both. That's what I'm used to. My experience in industry and in the Commerce Department was with programs with both good science and good results—good *applied* results.

Moye: You might not want to put it to a figure—and I don't know if it really is quantifiable—but are you saying half the effort in basic science research and half of it in applying that to something for an RDEC or a program?

Lyons: Well, we actually did that, and I think it's well known. I said, rather arbitrarily—because there's no magic figure for it—but, around the time of the second quarter conference for the DEs, I said it would be nice if we were 30 percent 6.1, 40 percent 6.2, and 30 percent customer. That leaves out a large chunk of money, which is 6.5. I need to go back and redo that, because SLAD's (the Survivability/Lethality Analysis Directorate's) funding is very substantially 6.5, and the Battlefield Environment Directorate has a chunk of 6.5 that is actually at issue at the moment. Then we have some other 6.5 that really is overhead support. But I shouldn't have left out the 6.5, and I have to go back and rethink how that fits in. But I did try this 30/40/30 configuration.

Because I forgot the 6.5, I can't really use it, but that gives you an idea. Thirty percent of the place may be 6.1. The problem with that is, we don't have a clue how to get the 6.1 money. Very scarce. Very hard to get. But we are putting it in our budget proposal for '96, and I expect it will trickle in, and we may get some help.

Moye: One of the big points made in one of the briefings was that ARL was going to be institutionally funded, a certain amount or percentage of the budget. I realize that may not exactly equate to 6.1, but does the problem in getting institutional funding mean there's a problem in having the amount of 6.1 money that you want? Or were they two different monies?

Lyons: I think they're related. We didn't get the institutional funding. We lost our 6.3a, almost all that. If you look at 1994, it's way down to next to nothing. A few million dollars. Eventually, it would be zero. That was supposedly in exchange for an increase in 6.1. We didn't get all of that. That's because the downsizing steamrollers rolled over us. So then we agreed that it would be okay to have as much as 30 percent customer money, primarily from RDECs and PMs (program managers). We're not too far off, there.

The scarcity of 6.1 is an additional problem. The thing with the 6.1 was that the 6.1 at the RDECs was supposed to come to us and didn't. The Army was going to give the RDECs ILIR (in-house laboratory independent research) money. They requested that in a proposal to Congress. We would have gotten their 6.1. They, in turn, would have gotten ILIR. Congress rejected the request for the ILIR account, so the 6.1 money that was supposed to come here is still largely at the RDECs. That's the problem. It's just a zero sum game. Pushing around the same pile of money. It's a difficult problem. It's one of our most serious problems.

Anyway, finishing up the preliminary business thing, I've got a great group of directorate executives to work with and a great Deputy in Colonel Miller. Sorry to lose Jerry Reed. He was a key player, with an enormous amount of history in his head. He did retire at the end of the calendar year. But I have a good team. We're still shaping headquarters some. We'll shape it a little more in the next month or so, trying both to reduce the size of the nontechnical work and to put it in the kind of arrangement that I'll be comfortable with. But that's just here. I haven't done anything like that with the directorates, the technical directorates, and I have no immediate plans to do any reorganization at that level. Whether or not the future will require it, I don't know, but for the moment, I think the place is okay, and we'll leave the research programs and the construct, the organizational structure, for the moment.

But in ACAP (the former Advanced Concepts and Plans Office), OPs (the former Operations Directorate), and my own office, there's going to be a lot more tuning up, because we will take an awful lot of the downsizing in those areas. I know we're in for a lot more decrease in staff, and my objective is to protect the research staff at all costs. Now, we can't get down in OPs to the point where the place is dirty and we can't do the research work because there isn't any support staff, but we want to keep on going down. Chuck Denney and his colleagues are going to have to rethink how they do these important functions, because you can't just streamline what you've got. Sooner or later, you're going to have to do things differently and stop putting on band aids. Jerry started that.

Moye: I understand there are those who were impressed, in that Q2 meeting, that things were more open for discussion and that the views of the DEs (directorate executives) and others were solicited more than in the past. Things were not presented as fait accompli, but reports are that you were asking, "What do you think about it? Tell me what you feel about it." Would you agree?

Lyons: Since I wasn't here before, I have nothing with which to compare it. I ran that meeting the way I've always run meetings with my senior colleagues. Try to be participative, with no question who's going to make the ultimate decision. In fact, they broke up into working

groups and made a lot of suggestions to me. I came back to the office, looked at the product, and made some further changes of my own initiative. It's not a democracy, but you want to have the best input you can get. The DEs are extremely capable and experienced, so I believe in opening meetings up to good constructive discussion.

What we didn't do was a drill of going through the ARL programs at a very detailed level and taking the time up with a lot of nuts and bolts kinds of things. The DEs only meet together four times a year, and I don't propose to use their meetings to work at the work package level. What I need from them is guidance on policy.

The next meeting is the closest we're going to get to work packages, and that's the Q3 meeting, which is going to occur out at White Sands in early April, when we have to clean up the formulation of the next budget. There are a series of issues we want to address then, but they're policy-level issues. We want to know from the DEs what is the most efficient way to organize around digital communications, for example. A second subject: we have a lot of materials research going on in ARL, in at least four different directorates, setting aside electronics materials, which would make it five. What kinds of management techniques ought we to use to make sure that we have a well coordinated effort?

Just this week, I'm putting together guidance memoranda to the DEs. Each of the 10 technical DEs will get a memo from me, indicating areas that I want them to focus on and giving them guidance, some of which is related to getting ready for the Q3. And both of those two subjects I mentioned, digital communications and materials, are subjects for a fair number of guiding comments. There are four different DEs getting instructions on the materials, and there are four being asked to do something as a team on digital communications. So that's going on.

We've got a number of interesting things going on. Right now, we're caught up in the Inspector General's (IG's) review of the two new buildings. The DoD (Department of Defense) Inspector General looked in on both of those projects and recommended that further studies be conducted. They didn't think the Army's position was tenable and recommended that, '94 funding be suspended until further studies could be made. That's giving us a lot of difficulty, because the materials people at Watertown have to get out of there in a year and a half, by law. We already know we can't build a new building in a year and a half and house the program at Aberdeen. We were ready to award a first contract about two weeks ago, but that's been put on hold, pending resolution of the IG report. That hasn't been resolved. We're scrambling now to see what to do. The Secretary will answer that at the Pentagon.

Moye: Do you have a feeling that what's looming behind is the possibility of making "purple" laboratories, or is it just that people have a hard time buying the particular program that ARL has laid out for construction? ["Purple" is a term used to designate a DoD-level facility.]

Lyons: I think it is. . . First, let me say that I don't know what's behind it. I don't know why the Inspector General looked at those two programs, or whether he was asked to or just did it on his own initiative. There's a sense that maybe this is a bad time to be building new buildings in the military. The idea that, if you're downsizing, why can't you house what you have in what you've got?

The idea that materials and electronics sound like the subjects of potential purple or Reliance programs, where someone else does them for you—those two are areas that are common to all three services. I would argue that both of them are essential underpinnings for ARL. I can't imagine any big, multi-program lab without a materials program. It's just everywhere you go. And certainly, for the military, materials is very important. Electronics has already been studied by the Defense Science Board (DSB). The conclusion of that study was that we ought to have at least an applied or a devices program, which is what we have.

It's very hard to figure out exactly what's behind it, and it's also very hard, as I said, to get a resolution. So that's a problem that's been off and on my desk, and it won't get resolved, and it won't go away, and we don't seem to be able to get started. It's very frustrating. That's one thing.

There is a new Defense Science Board study of the laboratories under General Gorman that's been under way for perhaps a month or so. It's moving rather slowly, and it's not quite clear what the results of that will be.

Moye: I would have thought they would have had it studied pretty well by now. It seems like there's one of these about every year or every other year, on one aspect or another of defense laboratory management.

Lyons: There are a couple of things going on. One issue here continues to be the idea that we ought to put more RDTE (research, development, test, and evaluation) money outside the government. Give the defense conversion funds and the whole technology reinvestment program to contractors and others, rather than devoting it to the in-house laboratories. That's one force that seems to be away from what we do, toward others. Then there's Project Reliance, which suggests that we rely on—that each of the services rely on, to the extent we can—on other services to do some kinds of work. I think that's going along pretty well.

We've been looking at that in materials. How much materials research can we count on the Navy or Air Force to do? How much do we have

to do ourselves? There's an awful lot of materials work that's peculiar to the Army. We can't count on the Air Force to look at tanks, so we don't look for any such help.

At any rate, Reliance is a program. I don't hear much purple talk, pure purple—"Let's take a site to make it the Defense laboratory for whatever." That idea was advanced in the electronics arena: should there be one major defense electronics laboratory, and should we shut down the three services? As I said, the Science Board looked at that last year, or maybe it was 1992. They looked at it and said, "Well, there probably ought to be only one service that looks at basic materials research in electronics. But all the services should have a devices or applied laboratory." They recommended NRL be the basic 6.1 electronics group, but all three services would have 6.2 and 6.3a money. So our program is conceived of as other than 6.1. Building devices. We're comfortable with that, and that is how we justify design of our new building. We backed off the level of cleanliness from Class 1.

Another thing that's going on is the attempt to improve our management style and capability, based on a study that's been conducted by the Board on Army Science and Technology (BAST) under the chairmanship of Charles Zraket, known as the Zraket Report, or more often the BAST Report. AMC (the U.S. Army Materiel Command) chartered the National Research Council to look at alternative lifestyles for ARL about a year ago. General Ross did that. The committee, under Zraket, decided to study not only the GOCO (government-owned, contractor operated) option, which was in the original request, but to look at three other possible ways of managing ARL. One of them was simply to go back and use the Lab Demonstration ideas. The second was to extend beyond that to what they called the NIST-like model. That is to say, to give authorities and delegations to ARL in much the way the National Institute of Standards and Technology is operating. NIST is a very independent laboratory.

Moye: In that they're given a broad charter to do things, without each dollar designated for something.

Lyons: No micromanagement. No tight control. No freezing this and freezing that. Then the third option (GOCO being the fourth option): the third option that they could see was a small in-house laboratory, with funding to support a set of outside centers of excellence. Rather permanent private sector entities that would be under ARL's control, but run in the private sector, like mini Lincoln Labs. The idea was to try to get the best of both worlds, the GOCO concept, with somebody else running the lab for you. At the same time, have a central core of in-house people who can still perform the "smart buyer" role and so on.

That committee reported to General Ross, and me, and Dick Chait in November, I guess it was. They laid out these four options and

described them to General Ross. They didn't recommend one. But Ross picked the second one, the so-called NIST-like option. He said, "That sounds about right. It doesn't cost too much. I just hired a former NIST Director, so we know how to do that one. I don't like the GOCO idea, having the lab leave the Army." I think, for that reason, he didn't like the other case for the centers of excellence, where most of the lab would be off site. He didn't think the Lab Demo went far enough. So he said, "Let's work up a case on the model of NIST." In fact, that was consistent with what he told me when he hired me, when he had said, "Make this place look more like NIST."

He now asked me to make a proposal, so I came back and consulted with Bruce Fonoroff and other colleagues. I told them that anything that was going to make it look like NIST was going to be largely delegation of power. It sounds like Lab Demo, but much more. So we sent a bunch of people over to NIST to look at their personnel system, their procurement, and their relationships to the Department of Commerce, and so on.

And then we discovered the Government Performance and Results Act (GPRA) of 1993, which was the companion, from Congress, to the National Performance Review that the Vice President conducted last year. The GPRA is a vehicle for, first, deciding how to measure your performance, the metrics business, and, then, as a second phase, the delegation of additional management authorities to an organization through OMB (the Office of Management and Budget). Bruce and his gang drafted up a proposal for becoming a so-called pilot project under the Government Performance and Results Act, and we drew up a set of charts, and I took it down to present to General Ross.

He thought it was neat. George Singley was there. Ross said, "Let's go forward before I leave. Let's take it up through the system and see if we can't get it done." As the next stop, we took it to General Carney, the DCSPER (the Deputy Chief of Staff for Personnel), because it was strongly oriented to personnel delegations. And he liked it. So then we took it to the Vice Chief, General Peay, and to the new Under Secretary, Mr. Reeder. And they liked it. General Salomon sat in on that one (the new commander of AMC). It has now been briefed, at somewhat lower levels, to DDR&E (the Director of Defense Research and Engineering) and the DoD Comptroller's Office, which is responsible, for the moment, for GPRA at DoD. Briefed extensively. Always gets high marks. And it looks as though it will be submitted to OMB. Almost certainly, we'll become a so-called phase one pilot program, which means we'll get to develop our planning in a fish bowl.

Moye: That's pretty exciting.

Lyons: But the test is not that. I mean, that's the price we pay, to plan in a fish bowl. The test is will we then succeed in getting delegations. And delegations will include developing our own personnel system,

modeled after the NIST system, which in turn was the natural outgrowth and expansion of the old Navy China Lake Personnel Demonstration system. This would give us essentially complete control over personnel. There would be really no ceilings, no freezes. We would manage to budget, as far as people are concerned. We would hire, and we would give raises, and we would set starting salary according to our own judgment. We'd have to document this, of course—be subjected to audits.

Moye: You say that when you briefed General Ross—when you briefed the stars—they all said it sounded like a good idea?

Lyons: Yeah. More than that, I remember one of those meetings, I think it was General Carney (DCSPER) who said that he thought it was absolutely superb that ARL had taken the initiative as the first Army group to make a proposal under this new legislation. He just thought it was marvelous. General Forster said the same thing. So the reaction is—and I find this interesting—that the senior generals from the Army understand what all of these restrictions and micromanagement and freezes are doing to the system. They know very well what's happening.

The thing I can't understand is, with all these four-stars feeling this way, why in the world somebody doesn't undo it. I mean, it doesn't seem to matter who you talk to in the Pentagon, they know that a total freeze on hiring or going on a witch hunt for high grades just doesn't make any sense to ARL. But they applaud this effort to go all the way to OMB to get relief from those restrictions.

Moye: The devil is always in the details, and a lot of times the devil is in getting the bureaucrats to move. Okay, so his boss says that's a great idea. But maybe for that 15 or that SES, the justification for his job is to monitor how that program works—and that's his form, and, by golly, you've got to fill out that form or whatever the comparable thing is. So when the next paper comes through, recommending doing away with that regulation or changing something about the way that regulation works, maybe he doesn't do anything. He just lets it sit in the "in" box. I mean, do you have a feeling from the people below, the bureaucrats who at some point have to sign off on it, that maybe this time something will change, and they will support it?

Lyons: Well, the first reaction you get in terms of personnel people is it's a terrible idea, recommend against, nonconcur, or whatever. That was true when NIST did it, and it was probably true when the Navy did it at China Lake, and it certainly is true here. But you don't get any flack from our personnel people, because our people in OPs are reinventing the whole business of administration. They know they've got to find really smart, new, efficient ways to do business. Kevin Kirby has been involved in working the AMC personnel office. But when they get to the three-star, like General Carney, who is Army-wide, well, that's great.

The problem is in civilian personnel management. What's behind this, of course, is the Vice President, the President, the Congressional Act, the throwing out of the federal personnel manual. The symbolic wheelbarrow full of stuff, remember, that they took out of OPM and threw in the dumpster. The fact is, there's a task force in the Department of Defense that's trying to write a new Defense Department Personnel System. We have contacted that group and made sure they have the NIST program on the table. So I think there's something different here. The climate is certainly right for doing it.

And I have been making a number of assertions regarding the high-grade problem we've had, freezes on high-grade promotions. I've told a number of people that, in a research laboratory, there are two things one needs to know. First, the research people are not interchangeable. If I take two physicists in the laboratory, for example, chances are they're doing very different physics, and you can't just plug one into the other slot. Secondly, the research is done almost entirely by high grades. The average grade in the S&E structure is probably 13. The vast majority of the intellectual work done is done by 13's, 14's, and 15's. Most of them aren't managers.

The government as a whole is after high grades because they think they're all supervisors. We're supposed to cut down by a factor of two in the number of supervisors. We also have a large number of 12's who are stuck, because they were brought in as a 12, and this freeze of high-grade promotions has caught a whole crew of them at 12. We can't move because of the freeze, and I'm afraid they're going to leave. Well, so I've made statements like that. It's just a different business.

A research laboratory, in this sense, is more like an office full of lawyers. They're all people with advanced degrees, and they're all high grades. You start hacking away at high grades in the Justice Department, and you'll have no government lawyers left. So it doesn't make sense. It may make sense for a production shop.

There's been a heavy emphasis on personnel. That's the major part of the GPRA. There are also some changes in procurement, changes in delegation, raising the ceiling on authority to make small purchases or capital investments. We're suggesting that we actually have a working capital fund, as industry does, so we can depreciate equipment. Anyway, that's exciting. Whether it goes anywhere or not, I don't know.

But in the process of doing it, when we went to General Ross, we suggested that he could do some things for us, like going up to Army.

General Ross gave us permission to hire at a replacement rate of 1 to 4, which is better than nothing and allows us at least to do some priority hiring of S&Es. He also agreed to allow us to hire or promote within the S&E high grades to the extent that we were under our

ceilings. So he softened up those restrictions. These are some by-products from this major effort, and I think along the way we may get other things like that. So it certainly seems to be worth the effort.

It also has gotten us a lot of attention. All of a sudden, everybody in the Army knows who we are because of this proposal, and we've gotten a lot of exposure with the senior brass. I think that's a plus development. The whole rationale for doing this is, if you're going to be half as big and if the Army in the field has some major technology needs because it, too, is smaller and must have more leverage, we have to be able to do things quickly. Maximum flexibility. Give us the authorities to do the job. That message seems to be pretty well received.

A little bit about areas of interest: I'm going to conferences, Army demos, and things of that sort. I went down to the AUSA (Association of the United States Army) meeting in Orlando, *Winning the Information War*. I went down to Fort Benning and attended a demonstration on putting the individual foot soldier into the simulation business, and I listened to a lot of people talk about getting into the 21st century.

The Army Chief of Staff is pushing very, very hard to bring the computer and digital communications into the Army. The service has been very backward about that, communications technology. We're not in real good shape, and we're way behind the private sector. So General Sullivan is pushing this very hard, I think, and getting everybody working on it and thinking about it. I think the digital battlefield, combat communications, use of satellite assets, and so forth, is a major area. And I find that ARL isn't really focused on communications. There is no director with the word communications in his title. And I asked all the DEs who was in charge of communications for ARL, but nobody stepped forward.

Well, I think it's Vito (DeMonte), actually, with his signal processing. That's why I made this assignment to get two or three DEs to try to get a handle on that, put together a program. I'm not sure what the 6.1 program under communications should be. What is communications science? Who's doing what? I'll be interested to see what the proposals look like, if we have any. So that's one.

The materials area is a common area that I think needs to be thought about more. Materials pops up everywhere. One of our objectives is to take about 20 tons out of the Abrams tank. It weighs almost 70 tons, and we'd like to take 20 out of it. Actually, we'd like to take more than that. That probably means both a lot of interesting materials work and also a much lighter weight, more efficient power plant. I'm sure a lot of the mass of that tank is back there in the engine. It's surprising that the armor doesn't weigh as much as I thought. I forget what the number is, 15 percent or so. But the thing is a massive vehicle, with

tracks and wheels and a big engine in the back. Anyway, that means that we've got a materials problem. We need to get more efficient armor. That means that we could probably use a redesign of the power plant. It is an idea that Bob Bill is working on out in Cleveland, and it is a focused effort.

I think what Robin Keesee does in worrying about information overload is crucial. General Salomon told me the other day he thinks it's my responsibility to apply sanity checks to some of the modern technology being proposed. Is it too much? Will the soldier use all this? Will he wear a helmet with virtual reality and so forth, or will he do what some soldiers have been known to do in past wars: toss that stuff in the ditch. You know, if it doesn't work, a foot soldier won't carry it, because it's heavy.

All these things you want to give the foot soldier also suggest that lightweight, much higher energy density batteries are a priority. They're talking about having virtual reality on the foot soldier and all kind of devices on the rifle. They're talking about a cooling system for the clothing. They're going to cover him up with resistant clothing. It's going to be hotter than hell in there, so they're going to air condition the suit, like for the astronauts. Well, there will be tremendous energy requirements for that. Our current battery won't do it. He's going to have a GPS (Global Positioning System) device. Lord knows all the things. . . So batteries become very, very important. There are just a lot of technical opportunities. And it's an interesting assignment to get from the COMMANDING GENERAL, AMC, to apply—presumably in concert with the Battle Labs and TRADOC schools and so forth—sanity checks.

Moye: How's it going, separating out what it is you think that ARL ought to be doing from what we presently call RDECs?

Lyons: Well, to me, it isn't all clear yet, because I haven't visited all the RDECs, but that's the next travel schedule. In the spring, I hope to do all the RDECs, and I'd like to do all the Battle Labs, but that's a lot of trips. There are other trips, as well, but the first thing to do is the RDECs, because they're the principal customers, and I need to get to them before they come in here for their annual meeting to review the contracts that we have. The so-called ARL Board of Directors. I want to get out in the field and visit all of those folks first. So I know them. People here do know them. The DEs talk to the RDEC tech directors all the time, but I don't have any feel for how that division of work goes. I think it moves back and forth. Some of the RDECs have very close relations with us, and the division of work is very clear. I suspect that, with others, it's not clear at all. I know the Natick RDEC would like very much for us to do more with the soldier as a system program, and we're trying. In the old days, there was some resentment that we were in their business, but as we move back to 6.1 and 6.2, that will get better. We're supposed to help the RDECs and provide

them with things that they don't feel able to do—advanced work. I think that'll get better. The relations with the tech directors seem pretty good.

Moye: Some people would say, when they heard that you knew McCorkle from down at Huntsville, that you'd been consorting with the enemy. [Laughter.] From what I understand, anyway, he was one of those who was not real favorably disposed toward the creation of ARL in the first place and maybe would have preferred something else. In other words, he wants to control all the missile development from the 6.1 and on through to the whatever. Seems to have been a point of friction over the years, that division or relationship between the lab and the RDEC.

Lyons: Well, my impression is that those relationships were not very good a couple of years ago. I think the reaction to the offer that ARL made, to have about half of the 6.1 and 6.2 monies subject to contractual agreements with the tech directors and the RDECs, has really changed that. They feel some ownership of the technical work.

That does restrict our options for half the mission money. The customer money is, by definition, coming in from people who say what it is you're to do with it. So, you take 30 percent customer money and 35 percent under the RDEC tech directors' "general control" (that's probably too strong a word), and that's a lot. Two-thirds of the budget is subject to direct control by the customer. But I think the personal relationships are okay.

The question is whether we're going to get off this downsizing and maintain an ARL as conceived, or will the downslope be so sharp and so steep and go so low that we have to cut out big chunks. I don't think we can continue slicing off, "bologna-slicing" every one of the programs. Sooner or later, we're going to say, "Enough of that. We have to stop this one entire area." That's one of those issues where a senior manager asks his staff, "Answer the question, which one of my children do I shoot?" It's an awful thing to do, cut out an entire directorate, and so far, I don't see any reason to do that. At some point, we won't be able to sustain ourselves, of course. I don't know where that point is. We'll know it, I think, when we see it. We hope ARL will stabilize around 2500 to 2800 people, something like that, but there's no way of knowing.

Moye: I've heard people argue that LABCOM/ARL, in creating ARL, took the big cut off the top. I mean, the number that we're suggesting for the final end state already reflects big cuts. They say they make that argument, and people sit there and nod their heads, but then the paper comes around the next day, and they've still got that next cut in there against ARL. It doesn't seem to have much effect.

Lyons: Go back and look at the curve. The high number was around 4500 at LABCOM. Might have been higher. The budget at one time was as

high as $800 million. Now we're around 3500; that's down 1000. The formation of ARL was alleged to save 774 spaces, but we've already done that, plus. But it doesn't stop there, because, as we get these decision directives coming down from on high, we get chunk after chunk after chunk chopped off. The latest number we have is 2847, which is supposed to be the end state for FY97. That's lower. The number you would have heard a few months ago is 3000. We lost almost 200 more, and that's just arbitrary. It's not based on any particular program analysis of whether we should do this or that. It's just chop. We don't know whether it's going get worse, or whether the 2847 is something that we can stabilize on. It's hard to manage.

Moye: Thank you very much.

13 July 1994

Moye: It's July 13th. I'm Bill Moye, the historian for the Army Research Laboratory. This morning, I'm talking with Dr. John W. Lyons, who is the Director of the Army Research Laboratory, in another of our regular interviews. We'll be talking about activities in the last three or four months. Good morning, sir.

Lyons: Good morning. We have here an agenda of items. A lot has been going on since February. We are now what, the middle of July, so it's a little more than a quarter.

As you point out in this list, one of the significant events is the retirement of Colonel Bill Miller, who will be really deeply missed. I think Colonel Miller was almost an ideal person for that job, a very pleasant personality, a good feel for people, with a military way of looking at things and getting things done. He was extraordinarily helpful to me as I came in. So we will miss him.

Right now, we don't have a deputy. There's a little interim—well, two interims. There was about a month and a half empty space that Colonel Jim Correia was appointed to fill as deputy until Colonel Tom Dunn comes in August. In fact, Colonel Correia is up at the Army War College for two weeks, so we don't have anybody. So I'm really feeling the loss of Colonel Miller and looking forward to having the permanent replacement, Tom Dunn.

Moye: I think, in a way, it's rather remarkable . . . you and Colonel Miller. I mean, both of you were pretty much new on the job. I think he beat you here by. . .

Lyons: Almost a year. He came here just at the end of General Kelly's. . .

Moye: That's right. He had been here about a week when General Kelly left.

Lyons: He worked with Dick Vitali for most of a year, not quite. Then he worked with me for about 10 months.

There are a series of things here that are sort of like news items of things that have happened. I've been trying to streamline the staff here in the office. We've made some moves there. We're probably finished with changing the organizational structure, but we'll be reducing the size of the director's staff steadily as we go through the next several years. I hope to do that when I'm actually running the VERA/VSIP/RIF (Voluntary Early Retirement Authority/Voluntary Separation Incentive Payment/Reduction in Force), but I think we'll be reassigning people, not replacing people. Getting things smaller. The whole question of the overhead here at ARL is one that's of great interest and concern for a lot of people. It's of interest to the staff because they see the overhead burden as part of their proposals. When they make a proposal to a customer for a job of work, the

proposal has to describe the overhead burden. So the staff looks at those numbers and says, "Gee, we've got too much overhead." That's typical.

Moye: On the other hand, they say, "Look at all this time my S&Es have to spend doing contract work." Or whatever that overhead provides for.

Lyons: It's a schizoid sort of a situation where, a lot of times, you want to complain and, then, every once in a while, you want to request more support like that. The only thing that we can do, and what I am doing, is I've appointed a special senior process action team under John Frasier to study overhead. Initially, that study was to get ready for next year's budget. How much overhead are we going to support? Now it's turning into both that kind of a short-term exercise and also a longer term assignment to assist Chuck Denney and the administrative people in doing what they're calling "re-engineering" the whole overhead operation. The Frasier committee consists of some directorate executives from the line organizations, plus Bruce Fonoroff and Chuck Denney representing both the overhead functions, and also the support that we get from overhead staff. So the director's office is both part of overhead and also supported by them. So that's going on under John Frasier, and maybe I'll have more to say about that next time.

Speaking of re-engineering, the Government Performance and Results Act, which I suspect we talked about last time, is one of these quality improvement measures. That one is a piece of legislation that Congress passed in parallel with the Vice President's well-known National Performance Review. The GPRA is a process by which we think we can eventually get some delegation of authority to us to get us out from under higher level micromanagement.

Moye: Did I just see a DISUM (Daily Information Summary) that OMB has signed off?

Lyons: Yes, we were formally nominated by the Secretary of Defense some time ago, several months. Just last week, we got a formal letter from OMB saying we were accepted as part of the GPRA pilot projects. As we understand it, we're the only laboratory in the Defense Department, perhaps in the Government, in that state. What that means, I can't yet tell. We will have to provide to the OMB essentially a business plan and a set of performance measures that they will be able to accept or not, which will show that we somehow have ourselves under control and know how to measure whether we're succeeding at what we're trying to do.

Once that's accepted, there is a second phase, which allows us to request delegations of authority. Those will be largely in the personnel area, and various kinds of fiscal controls that we feel are too tight. Micromanagement of spending. So that's going along.

At the same time we're doing that, we are beginning a self-assessment under the guidelines used in the Malcolm Baldrige National Quality Award. We're going to start that with the DEs next week down at Langley. We're having a meeting down at Wolf Elber's Vehicle Structures Directorate down at NASA Langley. We'll spend almost a whole day doing what's called a self-assessment. How are we doing in terms of quality? I expect we'll come up with a whole bunch of things we don't think we're doing very well.

Moye: That's the DEs that will be meeting?

Lyons: Yeah, it's a quarterly. It's Q4. We're going to spend a lot of it on things like overhead and quality assessment and so on. It's the one Q meeting of the year that isn't specified. It's an open agenda. We decided to use it partly for quality assessment and partly for discussing overhead.

There's an item here on marketing. There are a whole lot of things that you're aware of, since you've listed them. I don't think I'll get into it. Let me just check them off. We had a meeting here with the Special Operations (SO) people. As far as I can tell, it was very successful. I don't know the details of it. I got a letter from the SO folks saying they were delighted and plan to follow through in the future on some actions that came out of that.

Moye: My interpretation is that this is something you're stressing as a way to improve that coupling with the Army, especially with the PMs and PEOs (program managers and program executive officers)?

Lyons: Well, I guess there are two kinds of marketing efforts: One, our marketing to direct-use customers to make sure that they know what we can do for them. Some of that results in transfers of funds to us for support. In fact, that's what will happen with Special Operations. They will ask us to help them. We need more sponsored work. In some cases, as in DCSOPS (Deputy Chief of Staff for Operations)—who controls, ultimately, the budget for Science and Technology—it's a matter of making them aware. What we do is a pure marketing job without the expectation of projects, but merely support in the budget process, kind of a more general-purpose corporate sort of thing, as opposed to projects. With the DCSLOG (Deputy Chief of Staff for Logistics), we've had great success with the Knowledge-Based Logistics Planning Shell—the so-called KBLPS. That has gotten us also into the Total Distribution Advanced Technology Demo, which the Corps of Engineers is leading. That's led to the Log Anchor Desk idea, which I won't explain in detail. That's another development that's gotten a lot of attention.

Moye: That really has been a success story.

Lyons: It seems to be. At least it's had a lot of four-star attention. I think what we're doing in logistics is getting a pretty good reaction.

With TRADOC (the U.S. Army Training and Doctrine Command), the big thing—besides the normal relationships, and we have a lot of relationships with the various schools and so on—the big push there is the "futures concepting" idea. Are you familiar with that? It's the notion that maybe we could get a better understanding of technology by the TRADOC people if we had some place where we could meet together on a fairly even basis. What we now do is we send one or two people out to a TRADOC location. We'll send something equivalent to a FAST (Field Assistance in Science and Technology) person, or the human research people stationed all over the place. But they're just one or two people. There's no place where TRADOC and the technical community can come together in moderate-sized groups where they're both represented about equally, so they can really talk together collegially. More often than not it's just a one- or two-person consultant kind of relationship.

We're talking about an institute where both the war fighters and the technologists can come together. A think tank, almost, to work out better approaches to technology problems. That's being called "futures concepting." It's not grammatically very satisfying. I told them so, but they can't find a better phrase. It's catching on. TRADOC is interested in it. AMC is interested in it and supporting it. Mike Fisette is supporting the idea. ARL has the lead. It's our idea, and we're promoting it. We'll see whether anything comes of it.

Moye: It seems kind of an extension of what they call "technology-based war games."

Lyons: I don't think it's gaming. I think it's just a place where you can have seminars and discussions and make sure that TRADOC has a true understanding of the impact of various technology trends without necessarily having anything specific in mind. So it's an educational effort. Anyway, that's something to watch. I don't have anything specific on it yet.

AUSA—we went out to the San Jose meeting and talked about digital technology, and I'll come back to that. The relationship with West Point is really something Colonel Miller did. It's really going great guns. We have a lot of people down from West Point for the summer. We set up an ARL chair at West Point, and we have somebody up there.

Moye: To talk about the technologies?

Lyons: No, teaching mathematics, I think. No, I don't think it's a general ARL kind of discussion. It's simply a chair at West Point, and I believe it's in mathematics. You could look that up. There is a person who is now doing that, or did. I'm not sure. Part of that is the idea that graduates at West Point need a better understanding of technology. So we're trying to create an ARL presence there and also have as many of the faculty come down here as want to.

Let's see. The BRAC business. I'll come back to digitization. We have good things to report on BRAC. We got the ground broken at APG, and they're pushing dirt around up there to get ready for the Materials building. That's back on track. It's a little late. The relocation of people from Materials is going to have to be through swing space, and we're now looking for suitable temporary quarters for the Materials people. We should have something to say about that next time we meet, but we're looking.

Moye: You're looking at Aberdeen?

Lyons: In the area. Close enough by so that the staff can work there, and then switch to the new building when it's ready without having to move. We are putting some kind of a radius in the procurement for the temporary space. I forget what it is, 30 or 40 miles.

As far as Adelphi construction goes, we've just gotten approval for the construction here at Adelphi. We've been hung up since last fall, when the DoD IG suggested it warranted further study, but all that's happened now, and we've got it approved.

Moye: You kind of changed some of the concept? It's no longer really primarily microelectronics.

Lyons: We've changed the concept to physical sciences. We're going to change the name of the directorate that's coming from Fort Monmouth. That's part of this digital discussion that we're having now. We have reduced the clean space, both in size and in cleanliness. So it's not going to be a super-duper clean space, but a more ordinary capability. It will be clean space, but not nearly as stringent in terms of specifications. That saves money.

We've also decided to rethink the parking problem, which was going to be solved by a multi-level parking garage. That didn't sell. The OSD people said, "We can't support building a fancy parking garage." So we're going to have to do something different there. We've got some more surveys going on of the property here to see where we can build something flat.

Moye: I was moving some files in my office yesterday and came across this stack of papers on the parking problem from 15 years ago, which I had never refiled. Somebody had asked—Gary George or somebody—had asked a year or two ago, when they were initiating some of the paperwork, "Do we still have some of these files?" Newspaper articles about cars parking in the neighborhoods and radio antennas being broken and people upset over having to pay for their parking. Could never get the Army to buy that, I guess?

Lyons: Well, we were going to build a multi-story garage. I forget. Five or seven stories. It was going to cost $7 million. OSD said, "We can't support that. That's crazy." So we've got to go back and look for some single-level, flat parking space. That probably means across the Paint

Branch. The current thinking is it might be over in the 400 area, in the woods over toward the Navy but still on the installation. That's got to be surveyed archaeologically before we can build. It means a short walk for a lot of people. That's the only available space, and it's on the other side of the bridge. Plus we'll tuck in some parking around here where there's some space. But there's not enough for the 700 cars we expect to be displaced by the construction. We've got to sort that out, but I'm confident we will.

What it means, though, from the point of view of the staff, is that, until we get that sorted out and that parking space built, when they start digging out here in the north parking lot, people are going to have to park somewhere else and shuttle here from a further away space. Currently, we think it will be over in White Oak. They have to go to work in White Oak and then ride a bus over here. Not good. You need to ride around on the public streets on the bus so you don't ride through the road that goes through the back gate into White Oak, which is a very torturous road. I think you'd rather ride around on the public street. It's very flat. Have you ever done that internal ride over to White Oak? It's interesting.

Moye: No, sir. I see, though, some of the generals come over in helicopters. . .

Lyons: We land behind the main buildings at White Oak, which you can see from the street, and then, you drive this back route, which actually tours around the outside perimeter of the White Oak property, a mile or two. It's up and down, in and out of ravines, over bridges, and all over the place. So anyway, there's a parking problem.

We did not get permission to build the expansion of this main building for administrative reasons, so we may have to relocate administrative people off site. Administrative people don't need fancy laboratories. They just need good office space and computer terminals and so forth and so on. We may have to find some commercial lease space. We have a special action team addressing that. We're going to go jointly with the Navy, because they have a similar problem. That's going forward now.

Not much to be said, actually, about the international program, except there have been a whole series of meetings. We've been visited by the Israelis and the French and the Germans, although I didn't meet with the Germans. I think there was a German general invited by Aberdeen. I didn't do that one. The British are here today from the embassy, and there will be further interactions with them later on. There's discussion of a group going over to Japan to look at a variety of technical things.

We're trying to work with the Former Soviet Union. Having a terrible time. We've got a lot of ideas, but we can't seem to get the funding. There's supposed to be a big pot of money somewhere in the Pentagon for working with the Soviets. What we'd like to do is invest some

money in laboratories in Russia, in areas where we have relationships and know that there's something to be gained by doing that. But we can't figure out the mechanics. We're not the only ones. Nobody can figure them. That's part of the problem. We're working on it. I'm trying.

High-performance computing. What's happening there is we have been designated by the DDR&E to be what's called a "shared resource center" at Aberdeen for the Pentagon, which means that we will set up and operate advanced computers on behalf of the whole Pentagon. It will be accessible by technical people around DoD. We'll manage it. We will have the advantage, of course, of having the machine there and understanding it, so we can use it for our own work, too. It makes us a focal point. That's accomplished. So we will be continuing to pay attention to advanced computing issues.

We have announced to the staff that we're going to run a RIF/VERA/VSIP again. We did it last year. A couple hundred people took advantage of it. We're going to do it again, because we have to downsize. Available workload and money are going to decline. The customer money is going to be very hard to get, because Army procurements are going down dramatically. PMs and PEOs are just going to have less money to give us. The total customer budget is something over $100 million. It's going to be hard to hold at that level. It's certainly not going to increase. It's probably going to decrease. Our direct appropriations for inside support are declining and programmed to go down further. That means the staff size is going to be smaller.

And in FY95, we're supposed to get smaller by 500. That's a lot of people. So we decided we needed to offer another VERA/VSIP, which translates to "early-out" options. To do that, you have to put together a RIF package. The people who don't take the VERA/VSIP will be RIFed. We think that we can almost, if not completely, meet the target of getting down by about 500 with a combination of normal attrition and the effect of the move out of Watertown. That means a great number of Operations Directorate people going out, those who don't transfer. That's about 150 people. Then, if we move the rest of the Materials Directorate down to swing space, some fraction of those people won't come. They'll resign instead. So there's an additional number. If we get a couple hundred people to take VERA/VSIP, I think we can piece it all together and not actually run a RIF, but we have to be prepared to run one.

We put in the notice to AMC, and their only response was, we said we wanted to do it in October, and they said, "Why don't you do it in September?" Well, it doesn't matter, because that's not when they go. That's when they have to make the decisions. So it may be we move that into September. I haven't heard a lot of static about that from the staff. I think the staff understands what it is because they've been

through it before. You always run the risk of demoralizing the place, but I think they're really almost numb about downsizing. It's just more of the same. FY95 is the worst year. If VERA/VSIP makes it easier to deal with it, so much the better.

I should point out a major loss for ARL: namely, the death of Norman Berg. He was one of the ARL Fellows, an exceptionally valuable member of the staff. He suffered from leukemia, or something like it, for a long time. But he did finally succumb last week, and he cannot be replaced.

Well, the last thing to talk about, and the biggest subject, is digital technology and Force 21 and what we're doing. This is a big story for us in our history if it comes to pass. I'll try to give you a summary. There will be more installments of this story.

The Army wants to enter the digital age. The military generally has been slow to pick up on digital technology, as opposed to analog, whereas the commercial sector has been doing this ever since fiber optics were conceived. The long-lines telephone system, for example, has been digital for a number of years. And increasingly, now, you're seeing digital communications, even on local phone lines. The military equivalent of that is to digitize the battlefield. You hear that phrase, "the digital battlefield" or "digitizing the battlefield." General Sullivan has been pushing very hard, believing that it's part of the technical leverage that he can exercise on the system. Given fewer numbers of divisions, what is it that's going to equalize and make the divisions that you have left more effective?

Part of the answer is to use digital technology. So he has that very high on the list of Army priorities and has, in fact, set up an Army Digitization Office in the Office of the Chief of Staff to coordinate our efforts. CECOM (the Communications and Electronics Command) has the job of fielding digital equipment for the Army. ARL is being asked to provide much more in the way of tech base—new information, new technology. We've taken a look at this. It was clear that we weren't organized to do that job when I came here and walked around.

Moye: Last time, you were saying that it was apparent that different organizations did bits and pieces.

Lyons: Right. We didn't have a communications focus, for example. We didn't find that word in anybody's title, with the exception of Bill Mermagen, who had "information" in his title. So in response to all of this, we decided to try to make a real push in the digital area. What did all that mean? Well, first you conclude that there's an awful lot of expertise on this subject in the commercial sector. You have the whole telephone system in the United States, which now is made up of a whole series of companies. It used to be that the Bell System was almost *it*. Now, a lot of people understand how to process digital information, how to switch it around and so on.

The problem is bigger than just the networking or the telecommunications problem. It's also how do you make all of your sensing devices, radars, and so on . . . how do you convert those things to digital? The local systems within the various platforms, like tanks—there are all sorts of displays and sensors on tanks. The communications from the local radios to the command post, and so forth—they're all currently using analog communications. Part of that is voice communications. All of that has to be looked at. Decisions have to be made. Architectures have to be devised. How do you organize battlefield information hierarchically? Who does what? Who has to know what? There's an interface here with the TRADOC people. Doctrine. How much do you tell the commander at what level? When does he need to know? And so forth. Call that architecture, if you want to, of the battlefield situation.

We've decided that we want to do this particular program heavily in the commercial sector. The idea is to set up a set of directorates that address the problem and link them to new centers of excellence in the private sector that we would fund. That would be part of ARL, but it wouldn't be physically at Aberdeen or Adelphi; it would be out there wherever the expertise is. The concept is a set of centers of excellence funded at about $5 million a year per center. To have maybe as many as 10 such centers on various parts of this problem. And have those centers managed by the individual directorates. Have the different pieces of the centers' programs actually responsive to branch or division chiefs, so they're fully integrated into the inside work.

Moye: Would these centers be primarily at universities?

Lyons: I don't think so. I think they're more likely to be either industry, or consortia of companies that might form, or a mixture of academic and industry. The nature of what we're trying to do is draw on the industrial strength: "You've been running a digital communications system. Help us learn how to do that." It's not really an academic kind of thing. Some of it is. The data compression and manipulation of these digital streams are subjects for academic research, and we're already coupled to some of that. It may be that parts of the problem will be academic and some of the centers might be at academic sites.

Well, we've come to call this the "federated laboratory," which means it's an amalgam of inside and outside expertise, but managed in a coherent fashion as a single ARL. It's being put into the budget at about $50 million, into ARL in an external program element, all 6.1, to do this. It also, as part of that activity, transfers—this is all still budget data, still unofficial—transfers to ARL some of the centers of excellence that have already been established by ARO. Three of those—a small center of excellence at Clark Atlanta University in Atlanta, Georgia, that works on computer software, the High-Performance Computing Center at the University of Minnesota, and the Institute of Applied Technology, which is really hypervelocity technology, at the

University of Texas. All three of those are being switched into the ARL line.

So the idea of "federated laboratory" is broader than just digital technology. It's now being applied to the whole place, to a greater or lesser extent. Suddenly, ARL becomes more than just Aberdeen and Adelphi and White Sands. It encompasses a lot of these outside activities. So we switched from being a purely in-house lab to a mixture of program manager, with outside lab work, as well as our own. It really is a change, and it's responsive to a number of OSD policies, one of which is that we should, wherever possible, use commercial expertise. Secondly, that we should think dual-use whenever we think about technology generation and use the multiplier effect of the private-sector market. Third, there's a general tendency to want to out-source R&D, anyway. Fourth, there's a need to mix up, by means of staff rotation, the expertise of the private sector and the lab. Which means that, in the federated laboratory, we hope to have a lot of movement of the staff back and forth.

Moye: Cross fertilization.

Lyons: Very good for people. It's kind of hard on the family to move, but very good intellectually.

So all these things rolled together become not only the response to General Sullivan and Force XXI and the digital battlefield, but also the response to a whole series of policy thrusts at the OSD level, which have the effect, I think, of putting us in the forefront of lab modernization. You may know there are all kinds of studies going on, from the DDR&E and from the White House. Everybody is looking at the federal labs and what they should and shouldn't do.

Well, we're out front. We're now breaking ground for a new way of thinking about it. [Dr.] Anita Jones [the DDR&E at that time] thinks this is just the greatest thing she ever heard of—the idea of the staff rotation. The idea of a considerable mass of some of our programs actually being in the private sector, instead of being inside locked gates—it's just got everybody all excited. We're actually getting our budget increased now. The new money is not coming inside. It's going to these centers of excellence. But you look at the ARL line in the budget. It's going to get bigger, while everybody else is getting smaller, which makes us about as popular as skunks, because it's coming from somewhere. It's not new money. It's being pulled out of the inside labs around the Army.

Moye: You've got the Board of Directors, the Technical Advisory Board, and, up the line, Mr. Singley and Dr. Jones. Do you get support from these people?

Lyons: Oh, yeah. Well, George Singley is in this up to his eyeballs. It's his idea as much as anybody's to do it this way. Dr. Jones, as I said, is

exceptionally supportive. AMC is supportive, although they realize that, in a zero sum budget environment, if we get to do this, somebody is going to pay, and it turns out that a lot of this money came from 6.1 accounts in the RDECs. In fact, some of it came from us. Some of our money is being rolled over. But that's minor. Some of it is old money from the centers I mentioned. The rest of it will come out of the RDECs.

So we'll see how it goes. The budget is actually showing ARL going up in the out years by $50 or $70 million extra. It's exciting. It's better than sitting around wringing your hands and just watching everything sort of crash around you. We could be in that mode. There is still no sign in the budget formulation process that the Army's budget is going to turn back up. If you look at some of the figures, you see a slight upturn at the end of the century, but it's so far out, and it keeps getting pushed out further. So far, there doesn't seem to be any stomach on the Hill for a dramatic change to plus up the budget. So I think we're still in a very harsh, very negative environment.

Moye: This is pretty exciting. It's like the old military adage of the guy who's surrounded. Enemies on all sides. So what's the best thing to do? Attack!

Lyons: Either that, or run like hell. Yeah, I think we're going forward in a somewhat different direction. I think it will cause some difficulties. We're having to rearrange some directorates. We're going to create a new directorate called Information Science and Technology, which will focus us on the digitization problem. We have to position our efforts so we're comfortable with the CECOM role, comfortable with the Army's Digitization Office. Get the right private sector people to bid for these external centers. We don't want to get the usual list of defense contractors. We want to get the commercial experts, who generally don't want to play with us—don't really want to work with the Army. If you go up to Bell Labs, you won't find much enthusiasm for getting involved. So it will be a little tricky to get the right people signed on. That will be the challenge for next year.

Anyway, that's the news from here as of July 1994. I think we covered the list.

Moye: Thank you, sir.

1 November 1994

Moye: Today is the first of November. I'm Bill Moye, the historian for the Army Research Laboratory. I'm talking again this afternoon with Dr. John W. Lyons, Director of ARL. We're doing one of our quarterly updates of the activities of the laboratory.

Lyons: Okay, we're sitting here conversing in the midst of what appears to be a severe thunderstorm in November. We may or may not maintain power.

Mostly what's been going on in recent times is a continuation of earlier developments. I picked out four or five things to discuss here. In terms of downsizing, we ran an early-out, or a retirement buyout exercise, in September called VERA. We got over 250 applicants. In fact, 248, if I'm not mistaken, did take the early retirement package and have left, with a few exceptions—a very few staff members who got extensions but will go. So that's about half of the total reduction that we need in FY95 in order to meet the targets that have been given to us by the Army.

Here at Adelphi, we have decided that it's necessary to run a moderate reduction in force to help meet the targets but, more importantly, to help us get control of our overhead costs. The reduction in force here at Adelphi is almost entirely in the overhead categories, and that is, in turn, a result of a study that was conducted by a special committee that I appointed under the chairmanship of John Frasier to look at our overhead costs, both the corporate overhead—that is, the overhead associated either with the Operations Directorate or the Director's Staff—and also the local overheads, or indirect charges in the technical units.

This committee under John Frasier, which consisted of two technical directorate executives, Robin Keesee and Vito DeMonte, and two from the affected organizations, Bruce Fonoroff and Chuck Denney, supported by Kevin Kirby, looked at all categories and really scrubbed hard and made a series of recommendations for reductions. We are taking those recommendations, some modified somewhat by me, but we're accepting most modifications as written and are planning to reduce the size of the support staff. The reduction in force hits the Director's Staff and the Operations Directorate largely. We found it necessary to do a RIF only here at Adelphi. At the other sites, various other measures will suffice.

So we're entered into the reduction in force, which means, by the way, yet another VERA/VSIP window. But it looks as though we have now wrung it out and, the last I heard, we only had one applicant in the current window, which has now been open, for I think, almost two weeks. So we apparently reached the end of that.

Anyway, we think we're going to make the end strength target of minus 500 this year, based on VERA/VSIP and RIF and also the move of the Materials Directorate and some other things that are going on.

Moye: What do you say to those who may argue about the overhead study—that there's a danger there, a weakening, you might say, of the central control, thereby allowing the directors to maybe pursue their own agendas a little more? Some would say that was one of the problems of LABCOM, that you had independent laboratory directors who basically ignored, as much as possible, the central authority. Is there a danger of that in any way?

Lyons: There would be if resources weren't so scarce. We have each of the directorates on target to reduce its so-called indirect costs. While the central units are coming down, so are the directorates. So we're all under the same pressure. I don't think that the directorates can create local overheads in place of the central ones. Furthermore, we're going to be on the lookout for that. This committee that did the overhead review is a continuing committee. We will rotate the membership, but it's going to continue, and every year, we'll look at overhead. I think everybody is aware of the problem. Certainly here in the Director's Staff, we're aware of it. I think even more so now because we're running a RIF, and we're losing a lot of people. We would be very upset, having gone through all that pain, if we then found other people hiring back the same functions locally. That would just not sit well at all. I don't think that's going to be.

We have had some objections that we can pay for overhead staff because we have the option of taxing the direct base. In fact, we raise a good deal of the overhead funding by a tax or so-called "burden." So why do we have to dismiss these folks when we can always adjust the financial burden on the units? Well, the answer is simply that the units are in revolt over the size of the "burden."

As the place gets smaller, the overhead has to shrink, too. It hasn't, really. We used to be 4500 strong, with a budget of close to $800 million. Now we're sitting around $400 million, and we're sliding rapidly down toward 3000 people, and we're going to end up somewhere around 2600 or 2700. The overhead really hadn't shrunk proportionately to that change. Now we're playing a little catch up. You can't keep the overhead large with an actual lab program getting smaller. That just doesn't make sense.

We are, also—I don't want to say "victims" exactly—but some of the overhead is either fixed, or at least fixed as long as you keep a site open. Heating bills, electricity bills—probably not so much telephone, because that's a function of how many people are using them—but electricity, heating, lighting, certain kinds of maintenance, grounds crew. . . even if you let it get a little shaggy around the edges. You still have to pay for the guards.

Moye: They are the big savings you expect out of closing Watertown?

Lyons: Up at Watertown, there are almost as many people in the support staff as in the laboratory. One to one almost. That's crazy. Of course, that lab used to be much bigger, and that support staff was designed to support a much bigger facility. And there will be a staff there, even after we leave. There'll be a guard force there and some kind of minimum maintenance support, which we'll have to pay for (and hope it comes from the BRAC fund).

Anyway, there are either fixed or pseudo-fixed costs that are there as long as you're at the site, so that as you come down in total size, eventually that overhead gets to be something you can't sustain. Then you've got a problem. That's what's happening in spades up at Watertown. It could happen to us elsewhere, if we're not careful. Another way of putting it is that there's a certain minimum size operation for a site to stay open. The only site we have now where we have to worry about that is Adelphi, because this is the only place where we are by ourselves after we get out of Watertown.

Moye: Other places, we're tenants.

Lyons: We're out of Woodbridge, where we were alone. We're getting out of Watertown. At Monmouth, White Sands, and the two NASA sites, we're a small part of a much larger operation, so we don't have the same problem. Here we have to watch it. If we weren't moving people in here from Monmouth and elsewhere, we'd have a problem, I think, sustaining overhead.

So that's the overhead story. I think we've made good progress. It turns out to be extremely difficult. I started off, "Okay, we'll review overhead." And I actually took a pretty hard-nosed approach to it. In the first place, I thought it was too high, especially here in the corporate overhead. Secondly, again, an awful lot of criticism from the directorate executives: "The central overhead is too big. You have to do something about it." All right, we'll do something about it. So we had this study. We started going after the overhead and actually taking the actions to get it. At the same time, I started to say, "Well, if you're going to do that here, why don't you directorates do some pruning of your own?" I actually suggested they run a RIF at other sites. Near rebellion. Disaster would befall them, if we did any RIFs at Aberdeen. So I backed off for now.

Probably the most noteworthy development in the historical point of view is we're beginning to implement the federated laboratory concept, with an emphasis on the digital technology area. We discussed that before. In this quarter, we completed the documentation of the notion of a federated laboratory and wrote a document that describes how we propose to implement it. It's not a formal concept plan, but it's the next thing to it. It's now circulating at the upper reaches of the Army for approval. We sent it to the Under Secretary, who had asked

for it. (Maybe George Singley suggested that he ask for it.) We've gotten SARD's (Assistant Secretary of the Army for Research, Development, and Acquisition) approval; we've gotten AMC's approval. It went to the Under, and the Under sent it out for comment, so it's floating around various parts of the Army. I have no reason to think we won't get it approved, but they may call for more detail. They may want to talk about whether we have the right TDA (table of distribution and allowances) chart of where everybody fits. We can't do that until we finish this reduction in force. So it may get hung up on that account.

So we've done that document, which sets forth fairly clearly what this is all about and describes the new directorates by name, and says where the spaces and the dollars are scheduled to go. Which is, by the way, not the last word on that. What we did was, we took the various pieces of the program that we thought should be pulled out of existing directorates and put them into a new one called Information Science and Technology (IST). There was a piece from S^3I (Sensors, Signatures, Signal and Information Processing), a piece of ACIS (Advanced Computational and Information Services), a piece from EPS (Electronics and Power Sources), and a piece from BE (Battlefield Environment). Anyway, four or five of these small groups. All of that was quickly put together. And the monies that those groups had in their old function was taken with them. If a group had some mission money and some customer money, that was picked up on tables and moved into the new directorate. I'm talking about all of this, because there's a point to be made.

Anyway, we published all that in this document, a copy of which you should have. And created the new IST Directorate. Changed the names of a couple of the other ones: S^3I becomes Sensors Directorate, ACIS becomes ASHPC (Advanced Simulation and High-Performance Computing), and EPS becomes Physical Sciences and gets a broader mission, as a kind of tech base for the tech base.

Moye: Will they continue to concentrate more in the electronics area?

Lyons: They'll continue to have a division effort on electronics and a division effort on what we're calling chemical technology, but is really going to begin, at least, as batteries. It may have a biochemical or a bio-tech component at some point. We're still studying that, but held it open as a possibility. And then we'll make room for other new areas that we're not now into in any depth. For example, nanotechnology and micromachines. That is the use of electronics processing techniques for planar technology to build very, very small devices. And going below the level—size level—of electronics, which is typically, nowadays, maybe from half a micrometer all the way down to doing things with atoms. That's so-called nanotechnology, which is getting to be quite an interesting area. So we're holding those out as possibilities for Physical Sciences. The processing techniques that allow you to do those things will remain a part of it—as they are now at Monmouth.

So, anyway, that document was completed. Then we began the process of developing a broad agency announcement, a BAA, showing the way we propose to spend the money that's been set aside in FY96 for the external component of the federated laboratory. Now that process is a procurement, so we've set up the necessary committee structures to guide and steer the process, the steering group and the proposal review teams. We're not going to use contracts or grants. So we're not using the terminology of contracts. We're inventing our own labels. You have an evaluation panel of some sort. We're calling it a peer review committee. In contracts, it's called a source selection or evaluation board. Then there's a senior advisory body that kind of guides and commits us in all of this that's variously called a General Officer Steering Committee or Source Selection Advisory Committee (SSAC). We're calling it a steering group. Those bodies have now been established.

The peer review committee, which is chaired by Gerry Iafrate and vice chaired by John Frasier, has spent the last couple of months developing the details of the broad agency announcement for the program elements that will support the digitization activity. The intent is to have five major awards, to create five centers of excellence in the private sector to be connected to ARL, actually managed by components of ARL. We had to spell out all of what that means. How many awards would we make, what areas. . .

Moye: Some of this is what you're going to announce. I see the flyer out here. You've got a couple of conferences coming up.

Lyons: First of all, we announced the conferences a week ago yesterday in the *Commerce Business Daily*. Today, I think, the broad agency announcement actually went to the printers, so we expect that the broad agency announcement, which is a big document—over 50 pages—should be available later this week. So you can get your hands on that; put it in your file. The meetings are going to be on the 15th and the 17th of November, one on the East Coast and one on the West Coast. The intention of public meetings is to stimulate interest and to clarify our intent. The subject matter is all related to digitizing the battlefield, and most of that technology is technology where we judge the private sector to be ahead of the military. You can argue about various subcomponents of that, but, in general, digital telecommunications is something the private sector has been doing, and the military is just now getting interested.

So the trick here in this broad agency announcement, in this procurement, is to get those private sector folks who do this for a living—but not for the military—to bid. And it's not obvious that they will. If they don't, this whole thing is going to fizzle. So we have to get the private sector interested, pique their interest, make sure they understand so they write proposals that are good proposals.

Moye: Did you get a reaction? You were out in Portland and made a speech. It's a little different group, I guess.

Lyons: Yeah. I went out to the National Conference for the Advancement of Research, NCAR, which meets every year—really a bunch of R&D policy wonks. They talk to each other every year, have been for almost 50 years, I think. Since World War II, actually. They asked me originally to go out there and talk about R&D, sort of comparing and contrasting civilian and military R&D, since I'd spent my career on the civilian side. I now have had a year to look at the military side. Well, it turned out that the federated laboratory is kind of a combination of my two careers. It is a nice, specific example of how you can weave together the military needs and the military strengths with the strengths in the private sector. So anyway, I went out and gave them a speech on the federated laboratory. I thought it was well received. A lot of people came up to me and said it was a neat idea, and they wanted to hear more about it, and they wanted to get the BAA, and so forth.

We've been talking about this sort of informally for some time. I spoke about it publicly first, I guess, down in Atlanta in May. General Salomon had an industry conference largely about acquisition reform, but he asked me to talk about this, so I did. Now it's been six months. We've been giving the presentation mostly to the Army. I have yet to hear anybody poke a hole in it. It has some sensitive spots, but nobody has gone after it. They all think it's a good idea. Of course, the private sector thinks it's a good idea because it's steering military money into the private sector. You'll get pretty strong support for that.

Ed Brown just went down to the Industrial Research Institute's semiannual meeting in Williamsburg, where the vice presidents for R&D from quite a wide selection of companies gather to talk about common problems. These are senior executives. He talked to them about the federated laboratory. It was very well received there. So we've taken it public and gotten good reaction to date.

But the BAA will be the test, because that's where the details come out. People can look at it and see if the implementation adds up to the fanfare. So anyway, we will publish it this week, we will have public meetings in November, and then we will refine the BAA. It's actually a draft, the first one. We'll publish it final in mid-December. Then we'll ask for proposals in 90 days. We'll go into a review mode, and we hope to make the awards by early summer.

Moye: There will be five of them?

Lyons: There will be five awards, one in each of five areas, in different amounts. I'm not sure if the exact amounts are in the BAA or not, but they vary. Telecommunications, software and intelligent systems, advanced displays, advanced sensors, and advanced distributed simulation. Those five. They'll be hooked up to the directorates here. We're going to know by mid-summer whether we've got something we're going to be proud of or not.

Moye: You say that the "proof of the pudding" will be in who you get. But is what you're really looking for AT&T?

Lyons: We're looking for, yes, that caliber. We want people. . .

Moye: . . .who've been doing this. . .

Lyons: . . .who understand how to put together end-to-end systems. A lot of technology, very sophisticated. We hope to take advantage of that. Now, they may say, "The heck with you guys in the military. We're not going to tell you all of our secrets." One thing we want to do is rotate the staff. Have our staff go spend time with them and vice versa. They may not take too kindly to letting the Army people go in their inner sanctums.

Moye: Do you have a feeling whether you're more likely to get (or to want) industry as opposed to universities? Is that a consideration?

Lyons: Yes, we've said in the announcement that what we hope and expect will happen is there will be consortia formed. We require that there be a minority educational institution in each consortium, and we require that the consortium be led by an industrial entity. We encourage the inclusion of a major research university, so you have a minimum of three players. Not *required*—it could be just two. Must be a minority institution, and there must be an industrial entity. These are fairly good-sized awards, $5 to $10 million a year, so it's not going to be small businesses. A small business might be included, but I would not expect that a small business entity would be in the lead. Of course, you can't tell. They might be just the catalyst. There has to be, somewhere in there, a fairly capable, large R&D performer. We hope that the universities will be involved, because we'd like to see some of the staff rotation being made to a university. It has a lot of possibilities.

I think we talked before about this staff rotation and the culture change. We're going to set aside some money to help pay the cost of moving the ARL staff out, because it's very expensive to move. We're going to have to move families. Pay their moving expenses. Or pay TDY expenses. We're going to actually budget a fair sum of money. That's a new development. That just occurred this past week. So that's the big thing that's going on.

There's one other development that's shaping up now that has the potential, I think, to do a great deal of good. It has to do with the personnel system and how we handle people. In the Authorization Act for FY95, Congress authorized the Secretary of Defense to conduct, in the reinvention laboratories, Personnel Demonstration programs similar to that at China Lake. Well, ARL is a reinvention laboratory, so that means we're included in this authority.

It was only about two months ago, or maybe less, that that legislation was passed. We're now sorting through it with our colleagues in the

Army. There are three other reinvention laboratories. One is MICOM's RDEC; one is the Waterways Experiment Station; and I think all the medical labs rolled up together are a reinvention laboratory. So there are four components to this personnel thing, and each of those four components, I believe, is going to develop its own details. They'll have certain common principles. But they actually want the various systems to be different, so there will be experimentation going on.

We expect, during the next 12 months, beginning January 1, working with the staff, to work out the details of the new system that will have the following features: First, be very flexible in hiring, starting salary to be competitive. Find out what the market's offering and go ahead and offer it. There will be pay banding, a few bands, five or six. The staff will be organized into four or five career paths. They will be absolutely separated. In the rare case of RIFing, you can't "bump" across. There will be essentially all pay for performance and no automatic pay adjustments, with the possible exception of the President's cost-of-living adjustment.

Moye: How different is this from the initiatives under the GPRA?

Lyons: In fact, it was the centerpiece of the GPRA proposal. And we were pretty sure we weren't going to be allowed to do that. We didn't have the statutory authority to do that. And we're pretty sure that OPM would never have approved it. What's happened is that Congress has stepped in and enabled us to do that which we were proposing to do. In fact, it looks as though the program, in its details, will be a little more aggressive and bolder and experimental than I might have thought. What we originally thought about in the GPRA was to install here a system much like the one over at NIST, which was a later embodiment of China Lake that came along several years later. But now that there's been quite a lot of thought given to this at the Army level and by our colleagues at the other laboratories, other concepts are coming alive and make it even more ambitious than the GPRA proposal. But it is the same one. In fact, we'll keep riding in that vehicle, as well.

There is a summary of the personnel proposal available from Ed Brown, because it was sent up the line several months ago, an outline of what looks like the basic system. Went all the way up to the DCSPER, and the DCSPER sent back a wonderful, warm memo that says, "This is just terrific. We are pleased with everything you thought of, except we don't have the authority to do it." They were free to write glowingly about our proposal, because they knew that they couldn't approve it. Now all of a sudden, we've gotten the legal authority to do it.

Moye: It will be interesting to see. . .

Lyons: They're going to be rocked back on their heels by this. Anyway, we'll have a rather massive effort here, involving a lot of work by the staff,

because you've got to have a buy-in. People have got to have some enthusiasm. High performers will get more rewards, relatively speaking, out of this system. They will be hired in at a better salary. They will progress faster in terms of salary. Poor performers will suffer very badly in this system. And, in fact, there's some discussion about identifying the bottom "X" percent of the staff in terms of performance and doing something about that. So that will be something to watch. We'll talk about that as we go along.

What else is new? The last issue of *Focus* was almost entirely on the federated laboratory. I need to get out now and do some town meetings and talk about these two subjects, the federated laboratory and the BAA on the one hand, and the personnel business, well in advance of the implementation. So I'm going to try to schedule some meetings at the various sites.

Moye: I've heard several people speak very well of Colonel Dunn's town hall downstairs. A very difficult situation. A very good attempt to get out as good a word as you can.

Lyons: Well, you know he took Red River down by a factor of 2, in staff size. He's been through it and can speak authoritatively about the rules. Also, Colonel Dunn has got a lot going on in his mind about Total Quality Management, how to transfer to the Army Research Laboratory that which he learned at the Red River Army Depot. Red River had to come down sharply in size and budget and had to, at the same time, very much improve its operation, because it was under threats of closure.

Colonel Dunn got on to some things going on at the Saturn Corporation in Tennessee, went up there, took some of his people up there, got some ideas. Among other things, the HEARTS program, which I think has already appeared in Focus. It's a technique for building teamwork. We've decided to try to put some of that in here at Adelphi to help with teamwork, morale improvement. I think what you are reporting, the way he handled the RIF meeting, tells you something about Colonel Dunn. I'm hopeful it will take the curse off of some of the negative things that have happened and build up a much more positive approach to ARL.

Moye: I was very impressed, also, at the recent AUSA in that Synthetic Theater of War.

Lyons: Did you go in the STOW-E (Synthetic Theater of War—Europe)?

Moye: That was quite something.

Lyons: We had a couple of parts of the bigger exhibit—the so-called "Chief's exhibit," of which STOW-E was the grand climax. The very first exhibit was the "infoscope," which is a way of taking a real view from a Stinger missile or a TOW missile, or something that they were

looking through, and injecting onto that real view some synthesized scenery, so you can project onto it a picture of a tank or whatever. We had something to do with that. The Log Anchor Desk from HRED, which is entirely Rick Camden and company. There was I PORT.

[Brief interruption: telephone.]

The infoscope, and the Log Anchor Desk, and the I PORT, which is that—I don't know what you'd call it—it's a human factors device where the soldier sits on a unicycle. You simulate the resistance of the terrain so, if you're going up hill, you'd put more drag on the pedals. It's like an exercycle. And also they have a helmet-mounted display on it, and I think they have the personal weapon hooked into it somehow. That's also the HRED group up at Aberdeen.

And then all that business in the STOW-E, which is an integration of real scenes and synthesized scenes. I guess there are also physical simulators piped into that somehow, so you could be flying in a helicopter simulator. Anyway, pretty damn complicated. That sure was impressive. I think it was probably more impressive if you knew what was going on underneath. I'm not sure how much of that was real and how much was canned. But they're certainly working toward getting that to the point where it will do what we thought it could.

Moye: I guess, really, the idea is that, it's too expensive to get everybody together down at Fort Benning or wherever to do a big exercise—so the helicopter people can be doing their thing, and the infantry people can be doing their thing, and the tank people, and you end up with an integrated exercise, but everybody basically doing it on the computer without having to go to all the expense.

Lyons: Doing it now, this week. Last week, I guess, in Europe. The current exercise. They call it REFORGER, something like that. It used to be great big, real maneuvers with thousands of troops and all kinds of hardware. Now they're doing it this way. It's called STOW-E, the "E" being Europe. And they've got a mixture of real brigades in the field and entirely synthesized pieces of constructive simulation, and they've got the accurate physical simulator where people sit in tanks or whatever. They've got them all hooked together, and it all is like the exhibit that you saw that looks as though it's all seamless. It presumably is a lot cheaper than shipping over a full division of soldiers. Anyway, that seems to be the current popular way of doing it.

Moye: That's kind of the Louisiana Maneuvers and the Force XXI idea.

Lyons: It's part of that. So that's where we are, I guess.

Moye: How are we doing on the construction? I see some things in the newspaper that sound good, at least around here.

Lyons: Up at Aberdeen, the building contractor is moving on the site. I was up there last week, and the trailers were on the site. Wasn't any real construction going on. They supposedly have started, and within 21 months, they're supposed to be done. Here, they're still in design, but we got this project going again, you remember, last summer. So they're moving up in terms of percent of design completion.

We're still fussing about the parking on this site and administrative space. It looks as though the answer is to build the administrative space down at the other end of this road. You go down over the bridge and out the back gate and on down toward the Navy's gate. There's a nice knoll on the left-hand side. We're going to get 19 acres turned over to us from the Navy. Build our administration structure down there, with the attendant parking. The rest of parking will be accommodated up here, but without the need for the big multi-story garage. We haven't quite got all of the approvals we need for that, but it's close. So I think the construction program is on the way. Cross your fingers.

Moye: Anything good on the swing space?

Lyons: No, that's what that phone call was about. What happened to us is we had the perfect space located, DuPont technical center in Newark, Delaware. DuPont told us at the time we started negotiating with them that they were trying to sell the property. Well, in fact, they did. They sold it to a bank. The bank wants to level the lab space and build something else in that space. That call was to the vice chairman of the bank. I'm trying to persuade him it's in the national interest for him to let us use that space. I don't think he will.

It's a terrible problem. There are a lot of people worrying about it. We could end up with them all down in Aberdeen in offices. There's no question we could find offices for them, but they wouldn't have any place to do their lab work. That would shut them down. You can do that for a few months. You could write reports, do library work, visit around. Do what farmers do in the winter time, sharpen the plows. But after a while. . .

As I said, we're 21 months away from being able to get into that space if it all goes well. We can't just while away 21 months. We might have to stay at Watertown. That will take us till next September 30. We hadn't wanted to do that, because it costs a lot to stay there. Then we still have ten months. We've got people in different places. For example, we have a group of six—soon to be eight—people at Johns Hopkins in materials research. For that little group, they're fine. They probably wouldn't mind being there for a couple of months. We can do a little bit of that here and there, and we can stash people in some of the sister directorates. I'm sure that a few specialists can go to work in the WT facilities at Aberdeen and so forth. You can't do that with 150 people. It has been suggested that we just stay up in Watertown

until the building is ready, and that seems like a very logical thing to do. The fact is, the law says we have to be gone, and nobody wants to violate the BRAC law, because once you do, then all the other decisions of the BRAC law. . .

We could not change the date of departure at Watertown. It was decided in the BRAC '88 and BRAC '91 processes. Those things have the force of law. People say, "Oh, you should change it." Well, if you set about to change it. . . You remember Senator Specter sued the Navy in Philadelphia to try to reverse the decision. The Supreme Court upheld the BRAC law. If the Supreme Court had not upheld the BRAC law, all these base closures would have been reversed around the country, because they're so politically sensitive. So we've been reluctant to even suggest that we not leave Watertown. There is a procedure for not leaving Watertown, which is to take it to BRAC '95. That's the one way you can reverse a previous BRAC law. But BRAC '95 will not be done until late fall '95. That's too late for us. By that time, we would be illegally ensconced in Watertown. It doesn't work. We have to leave.

Moye: That seems to be about what I had on the list.

Lyons: Well, we didn't touch them all, but I think we touched just about. . .

Moye: Is this a new thing? Somebody mentioned this thing about the committee on women. Is that a sort of new thing that's ongoing?

Lyons: Yes. I formed an ad hoc committee on women at ARL to look into women's issues. I have a feeling that. . . just look at senior management meetings, and note the absence of women. And that's just management. I don't think we have any ARL Fellows who are women. (One, Mitra Dutta of EPS, has been elected this fall.) Something is wrong, since there are plenty of very well educated women scientists and engineers. Where are they here? For whatever reason, tradition has not encouraged women in the civilian side of the military. That's not just true in the labs; it's true for the whole DoD. Well, it was true for the uniformed side, as well, I think, until very recently.

On the other hand, the pipeline is full of qualified women, so we're denying ourselves a large part of the hiring pool. Also, it means that ARL staff is not representative. If you work in ARL, you're not in the same environment you'd be in if you were in other places, which is thought to be undesirable. So I decided to form a women's committee, put some of the most influential women at ARL on it, and ask them to assess, for me, the situation. What is it like to be a woman at ARL? What are some of the needs that would allow us to hire, promote, train, and to retain women? I put Glenda Griffin in charge of that; put some of the really great women on it. They've had one meeting that I know of. I expect them to give me a report with some recommendations, with some specific things that we can do to take advantage of qualified women that are out there.

Moye: Do you have a feeling that maybe some of it is a pay thing? You know, private industry can maybe offer more money? I mean, is it a competitive thing?

Lyons: Well, I think that probably is part of it. It's true for qualified black scientists and engineers, of which there are damn few. There's a real scramble for them amongst the government, the private sector, and universities. Everybody wants to hire the best of those very few candidates. And typically government laboratories lose them to the deep pockets of big companies.

That may be true for the best of the women, but because there are so many women graduating, I think it's a lot less true than it is for qualified African-Americans. There may be some of that. I think there's no role model. ARL doesn't have women in high places. And furthermore, the way we hire is kind of the "old boy" network. Well, that's why I've got a committee to hear about that.

It would be nice when I leave if I could leave a somewhat more representative structure.

Moye: I don't think, under ERADCOM or LABCOM, any of the lab directors or their assistants. . . some people at the DCS level. A few women. But there haven't been many historically within this sort of organizational structure.

Lyons: It's pretty rare. Glenda is a division chief. We have. . . I can think of one branch chief.

Moye: Thank you, sir.

1 February 1995

Moye: I'm Bill Moye, the ARL historian. I'm talking again today with Dr. John W. Lyons, the ARL Director, and we'll be doing one of his quarterly reviews. Good afternoon, sir.

Lyons: Good afternoon. We've got a number of things to update—I think they're mostly updates. One is the downsizing. We've just finished, today or yesterday, the reduction in force here at Adelphi. We started off reducing about 50 positions in the overhead functions. The last report I got was that only five people have actually gone on the street. All the rest of them. . . well, there were some people who took a voluntary retirement; I don't count that. There was one death—Jim Predham died. There were some people who were reduced in grade. All of the people that did not leave actually left the overhead functions and went out into the direct-charged technical directorates, which accomplishes what we wanted.

We were not trying to reduce the size of ARL; we were trying to get the overhead costs down. I don't think we got them down enough. We're probably going to have to do some more pruning, because the laboratory as a whole is getting smaller, and the overhead component has to at least keep pace with that, if not go a little faster. So that's downsizing.

On Friday of this week, we're saying goodbye to Clare Thornton, who has been Directorate Executive for Electronics and Power Sources and, before that, ETDL (Electronics Technology and Devices Laboratory).

Moye: Fort Monmouth.

Lyons: Yeah. Up there for, I guess, 20 years or more. Very distinguished record there. Created the so-called "open laboratory" concept at Fort Monmouth.

Moye: He just got some kind of award?

Lyons: Just got an award yesterday. I went down to the city to participate in a breakfast session that the Senior Executive Association put on, at which they honored six senior executives from around the government. Very distinguished group. Clare was one of those, so he and his wife came over. As of this Friday, he'll be gone. We'll have a directorate-executive-level dinner party for him here when we have our Q2 meeting later on in February. We'll miss him.

His creation of the "open laboratory," which was a recognition of the fast pace at which electronics moves in the private sector, and the idea of partnerships, having people come in and work with us side by side with our people in the lab, is something that, when I came here, I resonated with. It was similar to what I was used to at the National Bureau of Standards which had, for almost a century, done that kind

of thing. But it was very unusual in a defense lab to open yourself up to visitors like that. When Clare first told me about it, the results of which were a lot of cooperative R&D agreements and a lot of patent activity and so on. . . He leads (or led) the Army in those categories, per capita. I told him I thought that was just great. Then, as I went along and got into the digital battlefield business, I essentially took a page out of both the NBS book and the Clare Thornton book and got to the federated laboratory. So in some sense, Clare was a pathfinder for us in developing partnerships with industry, and we're now getting into that in a big way with the federated laboratory.

Moye: So he'll be missed up there?

Lyons: He will indeed be missed, and it will be difficult to find a replacement. We'll search high and wide, looking for qualified applicants. I hope to get a lot by conducting a worldwide search.

Moye: Did that make it easier to move people down here?

Lyons: No, I think Clare had bought off on the move. Clare resisted the move strenuously for a time. But in the past year, he's been very supportive of it. He and I had a good talk when I came. I don't think he's been resisting it since I came. But there is a lot of resistance up there. There's no question about that.

Speaking of the federated laboratory, we've had a series of meetings with the private sector about the federated laboratory, the broad agency announcement since we last talked.

Moye: It was coming up. . . We were beginning to advertise.

Lyons: We had two meetings for comments on the draft announcement, one on the East Coast and one on the West Coast. The one on the East Coast was very well attended. The one on the West Coast was rather sparsely attended in comparison to the East Coast, which is a little disappointing, because we held it in San Jose, California, right in the middle of the electronics industry, so we thought we would get a lot of response. But we got much more in Newark, probably twice as many people. Then we published the final broad agency announcement, with suitable changes responding to some of the comments we got, both in writing or e-mail, and also from the public meetings. Then we decided to hold an open house here, what's called a "site visit," so that people who were working on proposals in response to the BAA could meet our staff, see our facilities, and perhaps get a better idea of what we want. We were a little worried about that. We didn't know whether anybody would come. Suppose we held a party, and no one came, or held a war, and nobody came. And right up to the last minute, we thought we'd have just a modest showing. Well, in fact, on January 11, 1995, we had over 400 people here. The place was overrun with people from the private sector, people representing the first-rank companies and first-rank universities. A number of the ARL staff had

a chance to talk to these folks and developed a pretty clear picture that they're going to make proposals.

Moye: You said before that one of the key things was to get not just the "usual sort" of people, but get the kind of people—companies—that you want.

Lyons: That's right. We hope to reach beyond the normal circle of defense contractors out to a group of people in commercial activities, who aren't necessarily traditional suppliers to the DoD. We were worried that the reputation DoD has for being very bureaucratic, with lots of rules, would put them off. In fact, a lot of people commented. The fact that we're not doing a regular contract but a cooperative agreement—which is somewhat easier to deal with, evidently—that, plus the subject matter, plus the federation model, which everybody seems to be excited about. This is the private sector consortium that will be managed by a committee including ARL and will be an integral part of ARL's program. Everybody thinks that's a unique concept. Anyway, they seemed to be turned on by it. So now I think that we're going to have some really crackerjack proposals. By the time we talk next time, I'll be able to say whether we do or we don't. The proposals are due in on March 10th. We will spend the time between then and the end of June making the selections. So, if we talk again at the end of April, we'll know how it's going, but I won't have the answers. We'll talk again at the end of July, and we will know the answers. Anyway, it's going well. We're getting a lot of publicity.

Moye: You just had the Defense Public Affairs people today?

Lyons: They were here today. They were here as a result of the Army Chief of Staff's visit on January 5th. As far as we can tell, it's the first time the Chief of Staff of the United States Army was ever at this site. Bruce Fonoroff has been here for a long time, and he doesn't remember one. [Note: General Meyer visited ALC on 9 December 1980.] We had lined him up to come this past fall, and he canceled. That had happened off and on over the years. Never quite pulled it off. But on the 5th of January, General Gordon Sullivan did come, along with some of his staff.

We worked very hard to get ready for that. We set up some tour stops to show him half a dozen things, and also I gave him a short presentation on the federated laboratory while he was having a sandwich. The Chief was absolutely delighted. He wanted to know of his staff why he was just now discovering the Army Research Laboratory. He had no idea it even existed, I guess, nor that we were doing such interesting things. We showed him a couple of minor things that were actually very important. One was the GPS fuze that we had just successfully fired on an artillery round in December. The other was an update of our meteorological software package, along with some hardware, that had been used in the Atlantic Resolve exercise in Europe. Very successful.

So we gave him a couple of minutes on each of those things, and then longer visits on automatic target recognition (ATR) using synthetic aperture radar (SAR), which is called STARLOS. He was interested in that. And we showed him Phil Emmerman's lab and command decision things, computer processing. We had Sam Chamberlain come down from APG and talk to him about how to use computers and communications devices on the battlefield and how to get around some of the problems of communications systems by using computer power. Plus, I gave him the federated laboratory story and also had a chance to give him an overview of the whole place. It was a fast visit, but it was very, very successful.

He went on up to Fort Monmouth, and Clare Thornton had a chance to show him a couple of things in his shop. So he really had two looks at ARL, all somehow related to the digital battlefield. Then he went on to CECOM for a couple of hours and talked with the RDEC people. Afterwards, he said that he wanted to get more of his colleagues at the four-star level to come and do the same. The Commander at TRADOC, for example, is scheduled to come here in March. He wants to talk about how the technology people get together with the TRADOC people after General Hartzog visits us.

Moye: It was exciting.

Lyons: It was a smashing success. It usually is when you get a chance to show ARL, because it's a good laboratory with good people. We trot out the best. So that went well.

We've got another item to talk about, and that is the Future Technologies Institute, which is a device designed to get some people who really understand technology and technology forecasting—some of our senior people—together with senior people from TRADOC. They'll think about battlefield developments, both on the technical side and on the military science side, out pretty far, maybe 20 years. It's hard to do. We've been working on this idea for a couple of years. We broached it to TRADOC maybe a year ago, and since that time, we've been working on preparing the ground with Maj. General Lehowitz, who is in charge of the Battle Lab effort, at least the coordination and integration of the Battle Lab effort. And we decided to set up this thing we call a Future Technologies Institute. We have the lead on this in AMC. It's a conceptual thing that we hope will bring TRADOC and the Army technology program closer together.

When General Sullivan was here, we talked a lot about technology versus military science. I told him repeatedly that technology generation was almost never going to be the barrier. We've got technology generation going on all the time, and it's backing up and piling up on bookshelves and so forth. There are two problems. One is getting the budget to field the technology. The other is figuring out how that impacts the military science. And that's where TRADOC comes in.

What we need to do is to get as close with TRADOC as possible, so the two evolve together, rather than serially. It would be much better if the military science guys rethought their business at the same time that we're developing something technical, rather than we develop it and then hand them the document, and they go away and do it serially. That just wastes a lot of time.

Moye: Is the idea that our people will go to a field exercise? Or are we talking about a classroom simulation?

Lyons: Probably more of a thought experiment rather than a field exercise. By the time you can do something in the field, the technology is already mature enough for you to make a prototype. We're thinking about ideas. It's hard to do. If you have a prototype, then, okay, I can see what the prototype does. If you just have a notion. . . if somebody says, "Well, the state of the art of telecommunications 20 years ago was the following, 10 years ago the following, five years ago, and today. I know what they're going to do five years from now, and I have a fair idea of what they're going to be doing 10 years from now. A few people can tell you what very likely will happen 20 years from now. Now if that comes to pass, what would you do on the battlefield?" That's the kind of thing. You do that repeatedly for the technologies. I've noticed that when we do gaming in this kind of business, the ideas aren't much beyond today's state of the art.

Moye: The idea is to really get out there.

Lyons: Way out. Beyond Force XXI. Force XXI is already pretty well thought through. That's General Sullivan's contribution, really, to the future of the Army. Trying to think about what that Army should look like in the first decade of the next century. That is, by and large, applying what's known to be possible, at least in the private sector, to the Army. Take the most modern communications and computers that are already there someplace, already in the lab somewhere working, and apply that to the Army. That's what's going on now in the Army Digitization Office. It's what's going on in Joint Venture, which is reinventing the Army, given the impact of computers and telecom. But that's all fairly close. The question is, what happens in three or four generations of computing after that? That's what the Future Technologies Institute is supposed to do. It's going to be hard. Because you won't know precisely what you're talking about. But at any rate, General Sullivan was enthused about that and wants to get TRADOC and us together, so he's asked General Hartzog to come, the four-star who succeeded General Franks. So we'll be seeing him.

I did mention the GPS fuze. You put that on this list here. The GPS system, of course, the Global Positioning System, tells you where you are. And depending on how you handle that system, it tells you with greater or lesser accuracy. It tells you where you are within a matter of a few meters. If you put it on an artillery round and fire it, and you

can work out a technique to get signals from that round as it flies, then you know where it's going at any instant in time. And you know where it hits. You don't need a forward observer. You just know, because your communications signals tell you where it hit. If the round itself is unguided—that is, if it's utterly dumb otherwise—then you have to take it where it hit. But you know exactly where it hit, so that your second shot ought to be on target, instead of bracketing, which takes several shots. So it should save the amount of ammunition you have to fire to kill a target.

General Sullivan got very excited about that. In fact, he took away a fuze with him and went up to Carlisle Barracks to give a seminar the next morning and discussed the fuze. I told him that five years ago, nobody would have dreamed you could fire an artillery round with a GPS transponder unit so that you would know where it was every second it travels. That's how fast this technology changes. The Army's problem is how to keep up with this technology.

Moye: Is the GPS technology a military effort—is that something that we did? I know in the Gulf War, they used a lot of GPS in keeping track of the tanks, but that was from Motorola or somebody. The actual item.

Lyons: The technology, I think, is Navy. It was a joint-service effort, actually DoD. The concept of setting up several satellites and transmitting to a known position on the ground information from those several satellites, and then solving simultaneous equations to figure out where you are on the ground—if you know where the satellites are, then you can figure out where you are on the ground. You originally determine where the satellites are by inverting the process and using known locations on the ground. You can solve the equations either way. There are several satellites up there, so that you have, actually, redundant information, more information than you need. That was a scheme that was cooked up by the tri-services.

What the Army did in the case of the artillery round was to miniaturize and adapt that technique. It, of course, relies on very fast receipt of signals. See, you have to get the signals from the satellites, compute where you are, and at the same time, transmit the result. I'm not sure whether the fuze itself actually does the computation or simply gets information and relays it. It can be explained. It's not all that complicated. It's mostly trigonometry. We fired a round successfully out at Yuma Proving Ground. The Army Chief of Staff got all excited about it. He took it with him. In fact, as far as I know, he's still got it. Then he directed that we set up an exhibit on it down at the AUSA show in Orlando. So we did. We sent another fuze down there. Marian Singleton took it down in her luggage.

Speaking of AUSA, there was the winter AUSA meeting, and ARL was prominent at that meeting. We had a display on Kurt Ficke's work up at Aberdeen on injection molding. We had another one on

the federated laboratory, and another one on the high-performance computing work. Plus we had part of an exhibit that the Test and Evaluation Command (TECOM) did, representing some of White Sands. And I was on the program, and so was John Frasier, the actual technical presentation side of the program. We made quite a splash.

Moye: So that was a good response down there, too?

Lyons: Excellent. I didn't mention it under the federated laboratory business, but we did get it officially approved by the Under Secretary last week or the week before, so we're done with that. One other thing that you note here was actually done when I went to San Jose for the public meeting on the broad agency announcement. Bill Mermagen got me together with the head of the Naval Postgraduate School out there, and we signed a memorandum of understanding, confirming, I gather, a longstanding relationship between us. So we signed that.

Moye: The signing, the official part of it, was new, but the relationship was ongoing?

Lyons: We seem to have a good relationship already. I don't know if the agreement makes any difference. We were working very well without it. Sometimes it's nice to do those things.

Moye: You see these connections. Here I am, I've just been reading again about doing the proximity fuze in the first place and the problems of getting that small radio receiver and all into the small mortar shell, and here we are talking about. . . That would blow those people away.

Lyons: When I told General Sullivan that, five years ago, nobody would have dreamed that I was talking from my own experience. Over at NIST, we used GPS to disseminate time signals. Very, very high accuracy. So we knew a lot about GPS. The first small, portable GPS receivers only came out about five years ago. They were big things, like that PC station. We used to take them around and demonstrate them. The first one from industry, I think, was about that big. When I first heard we were going to fire a GPS receiver in an artillery round, I couldn't believe it. Wonders never cease.

You have an item here on business process re-engineering. I don't have anything to say on that, yet, except that people are working on it.

I can talk a little bit about the Government Performance and Results Act and the National Performance Review, which Ed Brown is leading for us. We sent in a package of proposed waivers under GPRA, and Bruce and Ed and others went to AMC last week and discussed all those. There's now a proposed meeting with Gil Decker, the Assistant Secretary for RDA (Research, Development, and Acquisition). He's expressed an interest in seeing this stuff. We're trying to figure out

how to move these waivers along, so we can get some flexibility. That's part of the re-engineering business, but I have nothing to report yet.

We're just now beginning the business of creating a demonstration personnel system. I have appointed a steering committee under John Frasier and Tom Dunn to do the creative thinking and develop details for a new personnel system. I've also created an employee committee, the Staff Members Committee (SMC), because it's very important to draw in the employees, and employee unions, as we go along. And we're trying now to get on paper what we think this system will look like. The precedent for this experimenting with the personnel system began, really, with the Navy. China Lake. Those experiments are still running. NIST ran a big experiment while I was there. We got authority for a few laboratories in the Defense Department. The so-called National Reinvention Laboratories got authority in the Defense Authorization Act that passed last fall, which gave us the authority to do this. The Army worked out the operational principles going in. I served on that committee with George Singley. Now each of the four Army reinvention laboratories is developing detailed proposals that will not necessarily be the same. In fact, they're supposed to be experimentally different. So there's a big effort going on here that will go on for a month or so to develop some materials and supporting data and send that up the line.

Finally, the building program. The building program at Aberdeen is going along. They are driving piles up there. Preparing the site in various ways. Meanwhile, Larry Johnson is getting ready to close out the operation at the Watertown Arsenal. I spoke to the Army Chief about that. I also spoke to General Salomon. I pointed out that the arsenal has been there for nearly 200 years. A lot of history is associated with it. I think there ought to be a really major ceremony at the closing. They both agreed. General Sullivan said that, if he is available, he would be glad to come. I'm afraid he may be retired before we get around to that. We got a lot of encouragement to plan a really good farewell at the Watertown Arsenal. Meanwhile. . .

Moye: Major Stiefel has been working some on that. He was thinking that he may be able to get the West Point Band.

Lyons: I should let him know. I don't know if he was told of my conversation with the two four-stars. The congressional delegation could show up. The top of the Army could show up. Who knows? Meanwhile, Larry has sent a letter to the employees informing them officially (it came out last Monday) that we are moving, and giving them ten working days to inform him whether they're going to come or not. It's called a "transfer of function" letter. We have signed a lease with DuPont for a temporary laboratory at Chestnut Run in Delaware, and Larry has been planning what to move and when to move it for the last two or three weeks. It all depends on a lot of variables, but he'd like to start making that move this spring.

Moye: Is that a pretty good building, Chestnut Run?

Lyons: Well, it needs a lot of work, but, yeah, it's a good solid building.

Moye: I've heard some concern that it was primarily office space, and people were worried. . .

Lyons: It's going to be a lot of work, partly for electrical power and partly for chemical handling. I don't know how old it is, but it's not up to code, and for what we're doing, we have to bring it up to code. Environmental aspects are always a concern. But even with all of that "fit-up" cost, it's still going to be less expensive than staying up at Watertown, which is enormously expensive to keep open. So that's starting to go. By the end of the fiscal year, the arsenal will be closed, and the folks will be gone, except for a small standby crew of operations-type people—guards and folks to help the contractors to continue to clean up.

Moye: I think they're having some kind of IPR (in-process review) this week, aren't they?

Lyons: Yeah, trying to figure out exactly what that should look like. I think probably between two and three dozen people will stay until the cleanup is finished, and the parcel is given to the city of Watertown.

As to the building program here, you can look around. You can see that we've got the addition to the chilled water and heat plant under way. They're driving piles for the high-bay experimental building for Battlefield Environment. They've started to build a little perimeter road around the north parking lot, getting ready for construction there next summer, starting next summer. And I believe we must be just about to transfer the land from the Navy to ARL for the administration building down at the end of the back road. All the building projects under BRAC are now approved and are in various stages of design and contracting.

Moye: Sounds good.

Lyons: A lot going on.

Moye: I noticed on the master calendar that they sent around that Dr. Dorman from DDR&E is expected to visit. Do you know whether that's going to be good news or bad?

Lyons: I don't read too much into that. He's going up to Aberdeen. He's been there before. He sent word he'd like to see whatever he didn't see last time. He went up there originally as a kind of afterthought. After he reviewed our Materials Directorate package for moving the Materials Directorate and building the new lab, he decided he'd better go up there and sort of walk the ground, so he did. But it was after he had already decided to support it. I didn't make that trip, so I'm not sure exactly what he saw, but this time, he wants to see some more. He's

been engaged in a lot of cross-service studies for Anita Jones. I'm told that he's not going to stay much longer, so I'm not sure why he's making this particular trip. It has something to do, probably, with BRAC '95. I think he's deeply into that now.

Moye: I noticed that the Defense Secretary is saying that it won't be quite as extensive.

Lyons: Public statement. I don't know whether he had already received all the services' proposals when he said that or not. But the timing was just about when the proposals were supposed to be sent up to the OSD people. Anyway, Dorman is in the middle of reviewing that stuff with the Secretary now. At least the lab-related stuff. I don't think Aberdeen is the subject of any closure studies, but it may be a potential place for Reliance-type work. So I don't think there's anything much. He's been very supportive of everything we're doing.

Okay? That's an update.

Moye: Thank you, sir.

30 May 1995

Moye: Today is May 30th. I'm Bill Moye, the ARL historian. I'm talking again this afternoon to Dr. Lyons, the Director of ARL. We're doing another of our regular journals. We last talked on about the first of February. There are a number of things to catch up with, to update. Good afternoon, sir.

Lyons: Good afternoon. I was trying to go back and reconstruct. February, March, April, May. That's four months worth. Quite a lot going on. Why don't I, in no particular order, bring you up to date—first of all, on the construction program. ARL, of course, was put together with the intent to consolidate geographically. That was the first of many changes, just to get into fewer locations, primarily to be based here at Adelphi and up at Aberdeen. Well, the new materials building in Aberdeen, which is part of that consolidation, is coming along to the point where, I understand just this morning, there is now something to look at, and it takes about an hour to walk. Whereas until very recently, you could pretty much look at it from the road because there was only earthwork going on. So that's going well.

Larry Johnson, the Director of Materials Directorate, has moved down to Aberdeen. He's in a trailer there, or as he puts it, he's stuck a flag in the ground.

Moye: At Aberdeen? Not Chestnut Run?

Lyons: Virtually across the street from the site at APG. He has a very nice trailer there, and he has a secretary and a few of his people with him. He's moving the bulk of the directorate to a DuPont building that we have been outfitting at Chestnut Run, Delaware. I've been up to look at that. It's going to be a very comfortable spot. But it's not Aberdeen, and it puts the staff through a double move, which is unfortunate. We've fixed it up. We've put in a new phone system and a computer network, and DuPont has acquired new office furniture. Ultimately, the building will be turned back to DuPont, so they're actually sharing a lot of the costs and charging us an appropriate rent while we're there. So the people are now leaving Watertown. I believe one branch left last week. Of course, there have been some advance parties prior to this time. There was a group that went to Aberdeen, I think in the fall of '93. There's a little group of people at Hopkins, and so on, and we'll see more of that. But the bulk of the folks will go to Chestnut Run. Then when the building is ready, they'll make that second move. Watertown Arsenal itself closes in September. We're scheduling a closing ceremony, and we'll talk about that at the end of the summer.

Here at Adelphi, the other construction program is under way. A couple of buildings are going up over on the west edge. One is an addition to the heating and cooling plant, and the other is a high-bay facility for use by the Battlefield Environment folks, who will come in

from White Sands. Those are both well under way. I understand that tomorrow we will sign a contract for the construction for a new Physical Sciences building in what is now the north parking lot. That's been, as you will recall, a very painful process, almost scotched a couple of times by various interferences. It's been redesigned more than once, but now the Corps of Engineers has got the money.

Moye: It will be a relief to get that signature on that piece of paper.

Lyons: They got the money released a couple of weeks ago. The Corps has the money in hand. They opened the bids, and they made the award decision last Friday, and I guess they actually sign the piece of paper this week. In a week or so, maybe 10 days, they will give the notice to proceed, which turns the contractor loose. Meanwhile, as you know, one of the key impacts of that is that we lose lots of parking spaces. There's been an effort here, coordinated primarily by Major Lynn Westberg, to invent a parking scheme that would take as much of the pain out of this problem as possible. She has done just a terrific job. We have over 300 carpools formed. We have relined the south parking lot, put numbers in each space, and everyone that is in a ride group will have a space. If they average, say, three people in a pool, then you've already covered the problem. There are other spaces besides the south lot. There are some spaces along the road. There is some parking down on the other side of the bridge. Anyway, that new arrangement begins next Monday, and we'll see how that goes. It will be probably a couple of days of confusion. We seem to be well under way in terms of the geographical consolidation. We just have to live through all this construction.

Moye: I remember seeing something—it was just before the announcements came out for the recommendations for BRAC '95. Even at that late date, there might be a scenario where they might take the money back or whatever.

Lyons: What they're talking about was a late hiccup, as they call it, in the BRAC '95 process, where it appeared that the BRAC Commission might put the Fort Monmouth to Adelphi move on their agenda to reconsider, because of the connection between that group and the Air Force group up at Rome Air Development Command (that's scheduled in BRAC '95 to move down to Fort Monmouth). There were a couple of questions rattling around, and we answered the questions, and that apparently has now dropped off and was not put on their agenda. As far as we know, there's no further interest on the part of the commission in any of our activities. That commission reports on July the first, so one more month, and they will be finished. There is no other BRAC scheduled. That's the last BRAC unless Congress reenacts the legislation. I think we're okay. If the commission were interested in this site here or the Fort Monmouth move, they probably would have seen to it that we did not award this contract. I think we're okay on that. So that's the physical part of the business.

The second thing is the federated laboratory, with a change in the mode of operation and also a kind of reorientation of programs. We talked about this before. Chronologically, the first thing that happened was we realized we needed to worry more about digital technology. Then we looked at how to do that, and the answer to the "how" question was that we better go where the expertise is, and that tends to be in the commercial sector. Then we conceived the idea of partnerships, whereby we have our own expertise and partner with the private sector. That's something that I think is unique, in its details anyway.

When last we talked, we were waiting for proposals. A number of proposers asked for a one-month extension, and some asked for more. We finally granted a one-month extension, so that the proposals came in on April 10th. We got good proposals, high-quality respondents, high-quality proposals themselves. They have now been reviewed by a large team, some 90 people involved in the proposal review down at the Army Research Office. They racked and stacked them. There is a senior advisory group that met and looked at that result and decided to suggest that there be site visits to the top-ranked proposals. That is being discussed with the selecting authority. I assume that we'll make site visits sometime during June and get to the final award decisions late in the summer. So that's going well. Based on what I know—and I've looked at some of these proposals—I think we're going to be in good shape in regards to who we have to work with.

Moye: You had expressed earlier some concern that. . .

Lyons: The whole thing is predicated on getting front-line groups to propose. It wasn't obvious that the top people would want to get tied up with the Pentagon for what really is not a whole lot of money, when you think about the R&D budgets of big companies and businesses. But, in fact, they did. They formed consortia and made proposals and put a lot of effort into it. So we're very pleased with the quality of the response. That wasn't really a given. That had to be shown. So by next fall. . .

There is one other variable. We're assuming that Congress appropriates the money for the federated laboratory. I have to point out for the record that SARD put money into the federated laboratory in a special set of lines, fenced so the money can't be used inside. It's fenced for outside purposes and identified as federated laboratory's appropriation. So Congress could say, "We don't want to do that," and just "X" it out, and all this last year and a half would go right down the tubes. The business of predicting what this particular Congress is going to do in appropriations is too risky for me.

We actually have, speaking of budget, two things at stake. Well, probably more than that, but two things obviously at stake. One is the funding for the federated laboratories. That could go well, or not so well. The second thing is, we have in the President's budget for next

year a large sum, $15 million, in Base Ops. That's for overhead. If we get that, we'll be okay. If we don't get that, that's a $15 million bill that the line units will have to pay by being taxed. That would be a severe problem for us next year. It's not at all obvious that we will get that, because it's sticking out there as a proposed item, and the Congress does have some concern about Base Ops. We're vulnerable in a couple of places. Then, of course, they can cut the whole business. They could cut our entire budget if they decided to.

Moye: I saw a reference to a decrement of $43 million, at some level of which we would have to. . .

Lyons: There was a bill-payer drill that went on at the OSD level to complete, I guess, the actions that they were starting with the 1995 supplemental appropriation, which was playing catch up with the bills incurred in Haiti and Somalia. In order to complete the shuffling around of accounts so as to cover all those things, they decided they had to have a bill collection of some $42 or $43 million. That came out of the S&T accounts. I don't know how much of that came out of the Army, but for us, it was something like 6 percent of unobligated balance, which turned out to be less than $5 million. But it was several million and enough to really make the shoe pinch, coming as it did after people had laid out all their spending plans. It's tough to lose money.

In fact, we thought for a while we might have to request permission for furlough, because we were going to run out of money and couldn't pay the salaries. The directors got together and decided they really didn't want to do that. That was just too negative. So they all have been scrubbing down their accounts, seeing where they can save, pinch pennies, cut back. It now looks as though we're going to make it through this year by the skin of our teeth by throttling back travel and all the things that make a rich research environment.

Next year is worse. Next year, there's a drop in scheduled appropriations. Probably the end of the programmed cuts. We've been on this downslope in number of people and appropriated money. Next year there's one more bite. That bite requires that we go down in staffing. The question is, how do we do that? We have to get the staff size in sync with the dollars. It looks as though we're going to have to run another VERA/VSIP right around the first of the fiscal year, so it would be October, to get the staff down some more. We're now writing up some plans, so next time we talk, we will know more. It looks like '96 is going to be tough.

Moye: I see also some reference that somebody has proposed moving the G&A accounts under OMA. I was just wondering if that would hurt us? It seems like OMA has been going down faster than a lot of other areas.

Lyons: Everything I know about it says it's not a very good idea. I don't know whether that's a serious proposal or not. I've seen nothing

official on that. You might ask Mike Kokinda's shop. Our Base Operations budget is 6.5 money. It's in the 6 series, so it's the same series as the rest of the RDTE. We get a pile of money that way. Our overhead comes from that appropriation, which is 6.5, at something like $50 million. The rest of it is raised by taxing the money as it goes out to the directorates. There's nothing that says we have to have any overhead appropriations. That's just a historical artifact. Other agencies don't have that concept. They take a bunch of money, they fund the line units, and they tax them according to the labor base to raise the overhead account. That is the way industry does it. It's all one color of money—customer money. What we have is kind of halfway. We have not been funded fully for G&A accounts, I think, for a number of years. It may get worse. To get back to the OMA business, we're just completely out of OMA now. We don't have any OMA money at all now.

There are some other changes that we're going through that we've talked about before, the GPRA and the NPR. This is the Government Performance and Results Act and the National Performance Review, both techniques to try to make the processes of government more efficient. The mechanism that they offer is that of waivers. You ask for a waiver from some regulation. You find out real fast who has the authority over various regulations. We put in over 50 requests. Ed Brown has shepherded these requests through and shipped them up the line. We got very good response from the AMC folks who approved those where they had the power to approve and forwarded the rest of them to Mr. Decker and SARD. Mr. Decker is very sympathetic. He wants to approve almost without looking at all these things because he's busy, just with a machete, cutting away all these rules and regs in the acquisition process. But when we get into other levels of Department of the Army and OSD, particularly in the personnel area, we run into a lot of trouble.

The personnel area is a separate one. Running that is a separate effort. We've had some interesting things happen in the Personnel Demonstration. We've talked before about the fact that Congress authorized us to do a demonstration program. John Frasier has been chairing the group developing our proposal. We've had a Staff Member Committee, which Steve Saddow is leading with a group of his colleagues from around all the different sites. And we've been trying to perfect what it is we want to demonstrate. We had some false starts. We did a couple of really dumb things early on. Got the staff all excited and angry. But that caused the Staff Member Committee under Saddow to get more deeply involved and encourage the staff to tell us what they're worried about, and that led to a whole series of very good suggestions, many of which are now in the draft of our demonstration.

Moye: The Missile Command, the Medical people, and Waterways, I guess. We're the only one who has made any attempt to get input and response and comment.

Lyons: In fact, I think somebody told me that some of those other groups deliberately held it away from the staff, for whatever reason. Well, I know the reason. I started off with a Staff Member Committee in the beginning, because when I was at NIST, that's how we did it. We had a committee of people who were not managers, who represented the working staff, and they came to all the planning meetings and got involved. Here, there's more. They are much more effective. People like Steve Saddow are working themselves to the bone. Steve travels a lot because we're so dispersed. There's a "town hall" going on here as we speak. I was just down there talking.

But I think, besides the fact that the Personnel Demo is a better proposal because of the staff suggestions, it also suggested the same technique can work for other areas where we're trying to change things. A similar result occurred with the parking. You may remember our decision that we not have a shuttle bus over to White Oak, and that just blew up in my face. The staff had gotten used to using the e-mail to tell us when we're doing something dumb, and in this case, they told me. The next morning, my computer was jammed with people telling me what a dumb idea that was. I reversed the decision within 30 minutes of coming to work. I just looked on my computer, and I could see that we had done something really stupid, and I just went around and told Major Westberg: "Forget it. We will have a shuttle bus." That was the end of that. But that shows the power, though, of involving the staff and having them understand that, if they make a good suggestion, we will take it.

Moye: You were talking, in connection with GPRA, NPR, and the Personnel Demo, about reviews at the DA and DoD level—you might say, outside the SARD zone. From what I hear, we get good support at AMC, which is nice (and somewhat unusual), and we've been getting good support in the SARD staff. But you get outside—as you say, into the manpower and into the construction (although that's separate)—where there are separate reporting channels, it's a whole separate kind of establishment.

Lyons: Of course, there are two sides to every issue. I'll take a minute and describe. There are two or three things in the Personnel Demo that we asked for. We wanted release from high-grade restrictions. We wanted to do away with manpower ceilings. We wanted relief from the Priority Placement Program (PPP). There may have been another one, but just take those three: high grades, overall ceilings, and PPP. If we're going to—with the little bit of money we have—improve the quality and maintain the quality of the staff, we just have to get around some of those controls. The counterargument that comes from M&RA (Manpower and Reserve Affairs) is that, if the Army is under tight controls—let's say, high grades—and you take these four labs with 10,000 people and let them do whatever they want with high grades, somebody else in the Army is going to pay the price, because nobody is "de-controlling" the Army. Well, AMC, it turns out, of

course, has the same problem, but they didn't have a problem with this. They were willing to let MICOM and ARL float and pay the price by controlling the rest of the Command. That's what we had hoped the Army would do, either that or set these demo labs aside and report on everything else and report separately on the demo.

The problem is, of course, that this whole business of controls came down in an executive order from the President. He said, "You will reduce by 270,000, and you will have a supervisory ratio of etc, etc," so this becomes an order from the Commander in Chief. Anyway, we ran into trouble with the M&RA people at both Army and OSD. Mr. Decker is really exercised about this. He has written a very stiff letter up channels complaining about it. We haven't seen an answer yet. Decker is an exceptional supporter. He understands that, from his experience in industry, if you can't get rid of some of these arbitrary controls. . .

Some of which, by the way, were not put in, in my opinion, for the long haul. This PPP thing makes sense for a while, but if you put it in place and leave it there for years and years and years, it means that you can't do anything. I can't promote my secretary. If I promote her, that means I have to post it, and some other secretary who has been RIFed out of some other agency can come in and take her position. It's all right for a while, if you've got a little hump to get over; but they've got this thing in place, and it looks as though it's going to be there as long as we live. It means that you can't do any intelligent, selective placement. It's particularly bad in administration and support, because with scientists, you can say, "Well, I want somebody who understands a certain subject area." You don't have the problems with hiring scientists that you do with support staff. The secretary position is worst of all because, by definition, all secretaries in a given grade are considered interchangeable. There are no distinguishing characteristics of a secretary. So, we have to do something about this.

There's one other area that I can cover before I get down. We've had here, for a couple of years now, the Technology Review Board. It used to be called the Technology Advisory Board, but we had to change the word "advisory" because of the Advisory Committee Act. The TRB is chaired by Harrison Schmitt. It is not a permanent body. What it is, is a group of independent consultants that happen to arrive at the same place at the same time and talk together. It's not a committee. It's not properly constituted. When I first came, people asked me what I thought of it, and I said, "I think it's great, but we need to institutionalize it. Give it a proper basis." So I have been in touch with the National Research Council (NRC) and asked them to make proposals to us for a peer review committee that would be permanent. We would pay the NRC to constitute such a committee and organize it and oversee its visits and writing the reports. They do this for a number of other laboratories. It looks as though this summer we'll negotiate the details and especially the money. By fall, they should be constituting a new replacement for the TRB.

That new body will give us advice on "how" goes the research climate. Do we have a well-qualified staff? Do we have the right equipment and the right computers? Are our buildings okay? If you look at our product, does it look like it's a high-class product? But not "what." If you ask them what, you're getting into program advice, and that's inappropriate. The people who will serve on these panels will not necessarily know anything about military needs, but they will know if the physics is any good, and if the EE (electronics/electrical engineering) is any good, and so on. We're getting the program advice from other sources, but I want strong peer review to keep the pressure on everybody to worry about quality. Any study in a big laboratory that has ever been made has always said you really ought to have a really first-class peer review group. Most of them do. NRL, for example. So we're getting that going.

At the same time, we need to have a somewhat more elaborate customer board. We now have the ARL Board of Directors, which was set up when ARL was set up. It's mostly technical directors from RDECs. There's a rep from TRADOC. It's chaired by two of the three principal deputies from AMC. Last year, it was Mike Fisette and Ken Oscar. This year, it will be Mike and Gary Tull, standing in for Oscar. We want to broaden it. We want to get somebody on from the Army Digitization Office. We'd like to get somebody on from the DCSOPS. Maybe from the finance shop. Maybe add Herb Fallin to represent the testing community for SLAD's interest. Maybe the two-star slot in SARD, under the military deputy. It's been MG Ron Hite, about to become a three-star. We probably should get somebody from the acquisition side. Anyway, broaden it out, so it really represents a wider constituency. We really haven't focused on that yet.

Moye: Will any of this be impacted by Mr. Singley's move into a new position?

Lyons: I'm distressed. George Singley and I got to know each other in '91, when I served on the Federal Advisory Commission on Consolidation and Conversion of Defense Research and Development Laboratories. George was the Army spokesman. The Army, in 1991, had a proposal for something called the Combat Materiel Research Laboratory (CMRL), which later became ARL. George briefed that many times to the Advisory Commission, because we kept asking questions, and he would trot back in with some more charts. The Army had the most elaborate and most far-reaching change of the three services, so we spent a lot of time on it. Anyway, I got to know George well, and when they posted this position, he let me know it had been posted, and one thing led to another. Because he was so involved in the creation of ARL, he was thought of sort of like a "godfather." He has been very strong and steadfast in his support. I'm going to miss him. What the succession is, I don't know. There's a mixed bag of candidates. It's not clear what they want. Mr. Decker has to make the decision. But there will be some turmoil, and there will probably be a

little bit of a hitch in how things go while they get organized. It's a dangerous time not to have George there.

I think I've touched on most of the points on the list. In January, we had that highly successful visit by the Chief of Staff. He's getting ready to retire in June. In fact, this is retirement season. We're losing Colonel Smith, our Command Counsel. CSM France. Colonel Blake just left Bill Mermagen's shop this week; he's going to Booz-Allen. General Prather at AMC is retiring; tonight is his dinner. Anyway, this is the time of the year when they go.

The Chief encouraged others to come to ARL for a similar visit. As you know, General Hartzog was here, the new Commander of TRADOC. He came by maybe six or seven weeks ago, and we essentially showed him the same things and sent him on up to Fort Monmouth. This week we have Under Secretary Kaminsky, the new Under Secretary for Acquisition and Technology. He's coming out, and we'll show him that particular business, and then maybe give him a little command briefing and talk about some things besides digital technology. He'll be here a couple of hours on Thursday. We have a former commander of this site, General Paige, now Assistant Secretary for C^3I. He is coming out for a visit. We'll talk with him about the federated laboratory and so on. That's not connected to the CSA visit. We have other people we're trying to get to come. We'd like to get General Reimer to come. General Salomon is working on that. We'd like to have Reimer go through the same drill.

Moye: He's the incoming?

Lyons: He's the incoming Chief of Staff. All that happens June 20th, when General Sullivan retires. Next week, we have the Board of Directors meeting. The technical directors of the RDECs are coming in. There's also a technical directors' meeting the next day, so I'll be busy. We'll see what the Board of Directors thinks about things.

We have another customer survey. I see you have that on here. Our customer surveys are looking pretty good. We've gotten high marks. In fact, our customers give us higher marks than we do. We've done some self-assessment, and we don't think as highly of our services as our customers do, which, all things considered, is better than the other way around.

Moye: Are relations pretty good, do you think, with the RDECs?

Lyons: Yeah, but there's a problem. The RDECs think that they should be our only customers, or our principal customers. But the PMs and PEOs don't necessarily agree. The model was that they would send their money to the RDECs. If some of it had to be spent with us, so be it. In fact, they don't do that. If they want us to help them, they just send money. They don't go through the RDECs. And of course, in a money-short economy, the stakes are pretty high. It's jobs. We were originally

conceived to be all mission funded. That didn't work out. We're lucky if we're 70 percent mission funded this year. The rest of the money comes from customers.

Moye: About two weeks ago, I got a phone call from a guy in the history office at AMC. They had gotten a call from somebody on General Salomon's staff. We'd been doing this drill on the most significant achievements under General Salomon. The thing had started under General Ross, and General Salomon's people decided to make it an annual thing. So, apparently General Salomon had said something, at least in passing, to somebody on his staff, I gather in this context: "Make sure that we get into the history that we moved the 6.2 money, or the 6.1 money, from the RDECs to ARL." I thought I knew what they were talking about. The comment I got from a couple of people around here was kind of laughing, "We didn't realize he had anything to do with it." But at least he did not stand in the way, so if a four-star general doesn't stand in the way, I guess he gets to claim some credit.

Lyons: That happened a year ago about this time, when they were building the budget for FY96. SARD moved money from various places, from various RDECs. Some of them lost all their 6.1, while some of them lost only part of it—and from ARL's internal directorates, into this special line for the federated laboratory. It is certainly true that AMC supported it strongly. George Singley and I briefed the federated laboratory to General Salomon first. He was the first to hear it, and he was very supportive, and he said that he trusted us to do what is right. At that time, George didn't know where he was going to get the money, whether he would find it or where it would come from. It turned out he found it within the family. That really irritated the hell out of some of the RDEC technical people. There are still some scars from that. There's so much else bad happening that I think it mostly blurs. If that had been the only thing that had happened in anybody's budget, maybe it would be better remembered, but I suspect there are so many things happening with people's budgets that you don't know who hit whom.

We did have a nice visit with Walt Hollis. You have a note here on that. Walt went up to Aberdeen, and SLAD did essentially an all-day program review with Walt and Herb Fallin and Keith Charles, the budget officer for Mr. Decker. Jack Wade and company went through the whole program with them. Had a very good day. SLAD is in a funny situation in ARL. We spent quite a lot of time the first six months I was here talking with a lot of people about what to do with SLAD. Whether they should remain in ARL, or be spun off separately, or be put together with AMSAA (Army Materiel Systems Analysis Activity) or what to do. In the end, I persuaded myself—and I think Hollis and I persuaded each other—that it ought to stay in ARL. There are strong advantages to having it associated with state-of-the-art research. But not everybody in the rest of the world is fully persuaded

of that, so there are people looking to take away part of SLAD. This exercise with Keith Charles and Herb Fallin and Walt Hollis was to cement support for keeping it, and I think it went pretty well.

Yesterday, I reviewed the second of two videos that resulted from General Salomon's visiting ARL at Aberdeen. He was up there maybe six weeks ago. We showed him a lot of things. Twice, he said, "Why don't you make me a video of that? I want to use it." Both were WT (the Weapons Technology Directorate). One was the development of the so-called sponge grenade, which is a nonlethal weapon, a soft urethane projectile that you can fire from a grenade launcher on a rifle. And up to maybe 75 yards. Anyway, it flies almost like a toy, but it has a fair amount of momentum, and if it hits you, it will knock you down. And if you're too close to it, it would probably break your ribs if it hit you in the chest. It won't kill. It's not going to penetrate, and it's not going to explode. So it's a nonlethal weapon. We made some of those and shipped them over to Somalia to help the troops evacuate. They thought they might be attacked, and it would be a bloody mess, so they wanted some nonlethal stuff. So they had some of these. It turned out they didn't need them.

The second thing he saw that impressed him was a program of automating and updating the technology in a lightweight towed howitzer. They've got a program going with Picatinny to provide some electronic packages and also some mechanical devices for a howitzer that's light enough that you could fly it around in airplanes or helicopters or whatever, as well as just pulling it with a pickup truck. We put GPS on it, some ring gyro lasers, and some other odds and ends, so it's really a much more sophisticated, quicker acting device. We put a hydraulic lift on it instead of having the soldiers crank the gun off the wheels. A lot of very self-evident things. Once you look at it, you say, "Oh, sure." Well, I'm not sure if it was obvious before. They had done some of the same things for the Paladin. The Paladin is a state-of-the-art system.

Moye: That's the self-propelled?

Lyons: That's the self-propelled. And what they did was they sort of downscoped some of these ideas and stuck them on what had been a strictly manual field piece. It *is* kind of neat. Master Sergeant Thompson showed it to General Salomon, and he liked it. He wanted to brag about it a bit to some of his friends, so we made him a fairly nice video.

There are two other topics that are on your mind-jogging list. One is that I've had a committee under Glenda Griffin looking at women's issues at ARL for some months. I guess it must be six or seven months now. They've surveyed the women on the staff, and they've done a lot of statistical studies. Jill Smith did some work on the available statistics, both here and in the civilian labor force, to show where we're

underrepresented. Of course, we are underrepresented pretty much across the board, not entirely but almost. I knew that. That's why I formed the committee. We're certainly underrepresented in the higher ranks, high grades. They made a series of recommendations. I had them both go down to Nashville where we were holding our Q3 meeting and go back over, in a condensed form, this whole briefing again for the directors. We haven't had a chance to reflect on what was said, but they had recommended that we worry about mentoring, that we change the way we think about hiring, retention, promotion, and so on. On all the issues that I asked them to look at, they had recommendations to make. It's a long-term proposition. You don't fix underrepresentation in this climate where we're doing essentially no hiring. We have a real problem. We can work with the people who are already on the staff, that's for sure. Anyway, that's a good job, and they're going to stay in business, working the problem.

I may try to extend that to minority concerns. I started with women first because I thought, quite honestly, that the pipeline of available people to hire, at least the way I'm looking at it, is certainly greatest in the female category. There are more trained scientists and mathematicians and psychologists in the female ranks than in the minority ranks. Just the chance to do something seemed to me to be greater. I think it's fairly obvious now we'll do a similar study of minorities. Probably would come out with the same recommendations. I wouldn't be surprised if we did. So that's going on at the moment.

The other thing is that the deputy director arranged for us to go down to the Saturn Corporation outside of Nashville, Tennessee, to go through a team-building kind of training exercise that he calls HEARTS. In fact, Saturn calls it the Excel Course. Colonel Dunn had tried this at Red River Army Depot and had good luck with it. He's a strong advocate for this kind of combination of physical and mental training. So we all went down there three weeks ago, I guess it was, the whole team. All of the directors were there. The senior people from here, Frasier, Fonoroff, Chuck Denney, me, Vito, and John Miller from this site. And so on. So we had 16 or 17 people. We spent four days down there. We spent one day going through the Saturn plant, which is really a modern marvel, and listening to the employees talk about their experiences. Then we spent two days out on the Excel Course, doing a combination of physical challenge and a lot of mental challenge. And talking about how it might or might not apply to the Army Research Lab. That Friday, we had our Q3 meeting down there. So we had four days together, trying to weld the group together a little more into a team. And we have some serious economic problems, financial challenges, that we started working on down there and have worked on since we came back. It seems to be paying off somewhat.

The issue with a program like HEARTS or Excel is, it is designed for team operations. Automobile manufacturing is perfect. Everything is

teamwork. The problem is, if you have an R&D environment where you have a lot of theoreticians who work solely by themselves—maybe with someone at university X and someone at university Y—the traditional way of thinking about teams doesn't translate easily into the research environment. It does in engineering. A lot of what we do is a kind of engineering, so that there are parts of the lab where you could, in fact, develop team approaches to problem solving. And certainly in the support staff. But for research itself, it's not so easy. The question we're wrestling with is, given that this kind of training, whether it be HEARTS or something else, is probably beneficial for part of the staff, can you, in fact, apply it to all the staff, including the classical man in the white coat? I don't know the answer. So we're going to work that problem and think about it. Meanwhile, I think the administrative side of the shop would really like to do more toward installing such a course here. We're looking into doing that, but we haven't actually done it. Somewhere up there in the northwest corner in the woods at Adelphi, maybe. It was an interesting couple of days. No question. Most people who do it would come back and say what I said.

Moye: I commented to somebody that it was a good time of year to do it down there—it's not July or August, when it would be so hot. But he said the pollen count was something like 380 or something like that, because all the flowers and trees were out.

Lyons: Also the rain. Right after we were there, they had tornadoes down there that tore up the state. When we went in on the first day, it cleared up. While we were out on the course, it was very nice, but very wet and lush.

6 September 1995

Moye: I have the pleasure of talking again to Dr. John Lyons, director of ARL. Good morning, sir.

Lyons: Morning. Summer of 1995. A lot of things have happened, going back to June. I think of two events in particular—one was the retirement of the Chief of Staff of the Army, General Sullivan. I was fortunate to be able to attend that ceremony at Fort Myer. Very impressive. I am a great admirer of General Sullivan's. I thought he did a terrific job as Chief. What he did in bringing modern technology to the Army led us to a whole series of things that eventually caused us to propose the federated laboratoryoratory concept that we've talked about before. All of that's attributable to General Sullivan's vision and appreciation of technology. So I'm sorry to see him go.

General Reimer has taken over as Chief of Staff. We've had a glimpse of him up at Fort Monmouth in August. Just a brief glimpse. We still hope to get him here in Adelphi for a full session, but it is going to take a while. It's early yet to see what his theme is going to be.

Also in June, there was a meeting of the AMC Command Group, which is called the ESC, the Executive Steering Committee, and at that meeting, we talked about allocating resources, most particularly allocating manpower spaces. At that time, I proposed that the ARL space allocation be dropped to its anticipated final level at the end of this decade—be dropped this year—so we give up some 250 spaces in exchange for a promise not to cut us any further.

Moye: Go ahead and take it all at once.

Lyons: Take it now, and let us get it done, and then stop bothering us, so we can plan. We were the only people who did that. I secured an agreement from the group, the MSC (major subordinate command) commanders and General Salomon. So that's now the target. The number is 2656 that we will get down to. We made that proposal because our financial situation really demanded it. We didn't see enough funding to operate at a higher level. That led, in turn, to a discussion with the directors of the directorates on how to get down to that number, and we decided to reduce our spaces through a VERA/VSIP and an abolishment of spaces, if necessary. So as we speak here in early September, we're in the middle of a VERA/VSIP window. The questions are, how many will go, and will we have to run a major reduction in force, or perhaps a minor one? We don't know the answer yet. That all started in June with this AMC meeting.

Moye: Your comment there on the funding—is that a reflection of the difficulty in the budget process? We talked about the BASEOPS situation and whether fed lab was going to be funded, with the House having one version and the Senate having another version.

Lyons: Well, no. What we were looking at were just the planned budget numbers, the President's proposals for the '96 budget. If you look at the out-years budget, we may lose additional funds. There is an additional problem that I think we may have talked about before: BASEOPS. A couple of problems with BASEOPS budgets that are even on top of that. In fact, if we don't get our BASEOPS budget problems fixed in '97, we will have another big decrement in resources, and I called that to the attention of the Commanding General of AMC. The fed lab thing is a separate item and is only in the external budget. It doesn't affect salaries. I'll come back to that.

During the summer, the House and Senate considered the budget for 1996. The House approved our budget essentially in full, in-house and the external budget (the external budget really being the federated laboratorys). They fully funded that proposal. The Senate, on the other hand, began to send us signals that they were worried about the federated laboratory. They weren't too terribly enamored of the idea of multi-year commitments and so on. At the end of July, just before the recess, the Senate Appropriations Committee passed a bill that only funded two of the five fed labs. They left three unfunded. They didn't return the money to the in-house budget, they simply cut it. So, the Department is appealing that reduction. It is very high on the list of appeals for the modernization budget. And it's being addressed now by primarily the military side of the Army. We've spent some time briefing. Yesterday, for example, I briefed the DCSOPS General Officers, who will be discussing these matters with the Committee. I personally have discussed it with both the House and Senate staff. General Salomon is gearing up to discuss it, along with Mr. Decker, Assistant Secretary for SARD, with the staff director of the Senate Appropriations Subcommittee. I would expect that Secretary West and General Reimer will eventually get into it with the chairmen of the two Appropriations Subcommittees. They will be coming together in conference sometime this month, probably pretty soon. Maybe next week.

Moye: It's nice to have that level of support.

Lyons: We've got very high-level support. I was asked yesterday how high our support went in the Pentagon—well, we briefed this program to Secretary West and the Chief of Staff [then General Sullivan]. We briefed it to Anita Jones, who is the DDR&E. We briefed it to the Under Secretary of Defense for Technology and Acquisition, Dr. Kaminsky. I sent the package along to Deputy Secretary Deutch, and he sent me back a nice note in support of it. We have briefed the military deputy of SARD, Lieutenant General Hite. We briefed the Associate Director of OPS (Associate Deputy Chief of Staff of Operations for Force Development) Major General Anderson, and he's a supporter. Of course, General Salomon was the first one we ever briefed way back in the beginning, and he supports it. So, as far as I

can see, the support is up and down. Just solid. That doesn't mean we will win the appeal, unfortunately. The concern seems to be, "Aren't you going kind of fast? Why are you making these long-term commitments, and so on, etc, etc?" It's a little hard to tell how it's going to come out. It's very important to us.

Moye: Is Senator Shelby on the Appropriations Committee?

Lyons: Yes, but I don't think he's the problem, although we know he was concerned about the source of money. Some of the money came from MICOM. Some of it came from other MSCs. And Senator Shelby, of course, represents MICOM. I can't detect that his particular concern, which had to do more with details of raising up the money than the details of the proposed contracting mechanism—that doesn't seem to be coming through, so I choose not to think that it's that problem. Anyway, we'll see. This is an "iffy" time. If we lose that money, $23 million out of the $35 million that's now up for discussion, that represents 10 percent of the Army's 6.1 money and 30 percent of ARL's 6.1 money. So, for me, it's very significant.

We had some key visitors here. Really a continuation of the parade of visitors. We had General (Retired) Paige, who is now the Assistant Secretary of Defense for C^3I. He's the one who is concerned about communications, command, control, and intelligence. Across the military. He was commander here earlier—a lot earlier, back in the early '80s—so it was kind of a homecoming. I think he enjoyed the visit very much. We showed him the same kinds of things we had shown General Sullivan back in January. He was very enthused about what we were doing.

Moye: A lot of this has to do with electronics and information. "Winning the information war." Did you see the recent *Time* magazine article?

Lyons: Oh, yes, I think I did.

Moye: Various scenarios of hackers breaking into computers and what that might mean, not only for domestic banks and such, but communications.

Lyons: In fact, that article talked about the information war as essentially that, rather than what we referred to earlier. The information war initially was conceived of, I think, by the Chief of Staff of the Army, as having your decision cycle be faster than the enemy's. Situational awareness. Knowing where everybody is. You know that quicker than the other fellow, so you can act quicker than he can because you know where your people are, and his people are, and so forth.

The information war, as described in that and other articles, is, "Well, how can I gum up the other guy's information system by well-known techniques of hacking and viruses, and deliberately inserting bad information and so forth?" There are two sides of it, as there always

are in those situations. One is, you need to learn how to do that to the other guy, so we ought to have a technical program on that. And you need to learn how to protect your system from the other guy, which means you need to do countermeasures and also close up your systems so they are not vulnerable. I have asked Jack Wade in SLAD to take on, jointly with some of the other directors, a real effort in that area. It turns out he is already working with the Army Digitization Office on that very point, on the vulnerability of the system.

I think, increasingly, we are all becoming aware that, if you depend totally on these fancy technical systems and they crash, for whatever reason, and you haven't thought about that ahead of time, you could be in trouble. But it's really no different in principle than what happens if your radios go out today. Well, you know, use semaphore, send a courier, whatever. You always have to have a fallback when you lose your front-line system. What's worse, I think, is when you can be deliberately misled by some procedure so that you think the enemy is there when he is somewhere else or even behind you. But that's misinformation, a slightly different problem than simple jamming.

Of course, jamming is one thing, or you can just shoot at all the antennas. We found, I think, in the 94/7 rotation at the National Training Center (that was the rotation in which they looked at the current communications and control technology), the opposition force just looked for antennas and shot at them. It turns out that command and control posts, with all this modern stuff, have all these antennas sticking up, so you look for a place that's got a lot of antennas sticking up and shoot them. Shoot those things and you've pretty well shot the communications. One answer to that, of course, is to put antennas on everything. Misdirect their attention. Or invent antennas you can't see readily.

We had two recent events here, actually, on the same day. Gil Decker, the Assistant Secretary for SARD, came by and spent a couple of hours doing a lab tour. Very much the same as the one General Paige took. He is a technocrat like we are, so he really appreciated that. Got into it. Had a great visit. We were glad to have him. He's a very strong supporter of everything we are trying to do. That was on a Thursday, the same day we had the ground-breaking ceremony for the new laboratory here, so he joined us at that and made one of the addresses. It was a very clear, bright, and kind of hot day, and we had a good crowd. We had Congressman Steny Hoyer here, General Salomon, and Gil Decker as the speakers. We also had Colonel Inouye from the Corps of Engineers up on the platform and Walt Gelnovatch, who is the director of the Physical Sciences Directorate, who is the ultimate beneficiary. I think everybody had a good time. We had some refreshments and some exhibits. The trucks have been running regularly. Lots of dirt has been hauled out of here. So that construction is under way.

I went up to Fort Monmouth and visited with Walt's group. Spent a good day taking a technical presentation, walking around, and so forth. I think that directorate is in good shape and Walt's doing a good job.

The very next day, after the ground breaking, we had a very high-level visit here, probably one of the highest level visits we've ever had. We got together to discuss our Personnel Demonstration program with Under Secretary of Defense Ed Dorn; Anita Jones, the DDR&E; Gil Decker; from Anita's office, George Singley; Diane Disney, the senior SES person in Dorn's office; and Carol Smith from M&RA in the Army. By the way, Fenner Milton and Walt Hollis were at the ground breaking. Mike Fisette came over for the personnel discussion. Anyway, we had a room full of very senior folks, and the question was: What difficult ies do the various DoD-level restraints in personnel cause us? Dorn expressed an interest in talking directly to the people impacted by these regulations. We were worried about high-grade ceilings, about total manpower ceilings, about the priority placement program, and some others. I met first with them and made a brief presentation of what our demo program is, what the features are, what our objectives are, and what the key issues are. Then the group met in a coffee klatch setting with eight or ten of our people—branch chiefs, division chiefs, and a few bench folks—and talked about all those things. Personal experience discussions, which went on for over an hour. Then we took them out and visited a couple of laboratories—one that John Pellegrino hosted, and the other with Steve Saddow, the chair of the employee committee. They got to see what the technical work is and also had a chance to hear more anecdotes about our personnel needs. All of this went on for about three hours. I think it was a good, open exchange, but I'm not sure it did any good. The personnel specialists are not too keen on any of our requests for waivers. So we're still fighting that discussion through.

Moye: So there hasn't been any break.

Lyons: Under Secretary Dorn didn't say, "Oh, I see now. I'll support you." I sent him a letter afterwards requesting his support, because our demo has to be approved by OPM, by law. So instead of asking him for his blessing, I asked him for his support as the document is passed up the line. I don't know whether we'll get it, and I don't know what we'll do about it if we don't. So the Personnel Demo thing is very much up in the air. I think we'll go forward with it anyway, although I have not consulted widely yet. The shift to pay bands, pay for performance, and other things that are not controversial, would, I think, help us in hiring and promoting and rewarding performance, even if we can't get the other delegation. I think we'll get something. If not complete, I would hope we would get partial.

For example, the high-grade ceiling is currently applied to all promotions to 14. The total complement of 14's and 15's is what they look at.

We can't be over that ceiling. But if you look at our high-grade population, two-thirds of them are not managers. They are so-called "Factor IV" staff. That is, they have been promoted to this level by personally increasing their technical competence. Promotions are made after a panel reviews and evaluates the technical accomplishments. It has nothing to do with the number of people supervised or number of dollars they're responsible for. That's the so-called "Factor IV" evaluation process. If they exempted those people from this high-grade control, we wouldn't have any problem. So I suggested that as a middle ground, although what we're asking for is to remove the control completely. What the Government is trying to do is reduce the number of supervisors. That's where this came from. "Factor IV" has nothing to do with it. I tried to explain that.

I mentioned the VERA/VSIP.

Construction. The construction up at Aberdeen continues on schedule. Good relationships there. I think we've developed good relationships with the new contractor down here. Colonel Dunn has worked hard on that. We have effected the land transfer from the Navy. The White Oak folks at the Navy have transferred to us the 19 or so acres of land out back, on which we propose to put an administration building. The design of that building is pretty far advanced. It's a standard office building.

The parking business at ALC started during this period. When the north parking lot was closed, we lost 700 plus parking spaces. Caused a hell of a problem here. So Colonel Dunn, Major Westberg, and others put together a process action team to address that. They developed an approach to it that involves parking off the immediate ALC site. Across the street, some folks are parking at the church. We have arrangements with the Navy at White Oak to use some of their property on the New Hampshire Avenue side. We have shuttle buses running regularly, and then the spaces here reserved for carpools, with some spaces for handicapped and visitors. The transition to that, as far as I could tell, went smooth as silk. I thought there was going to be a mess. Not so. Before the shuttle proved itself, many people jumped into car pools to get reserved spaces. It just seems to be working. We're going to live with that for another year and a half. A lot of people get credit. We worked hard, and people accepted it.

Moye: I must say, the buses have been running on time. I do that most every day.

Lyons: You ride the bus? Costs you an extra 10 or 15 minutes?

Moye: About 10.

Lyons: So, I think those are the main points. Technical work continues.

The Materials Directorate has, by and large, left Watertown. Chuck Denney was up there yesterday or the day before and said he couldn't find any people. They are packing up and moving equipment as fast as they can go. The S&E staff is, by and large, now either in Delaware, at the Chestnut Run, DuPont facility, or at Aberdeen. Or at one of the three universities that we now have cooperative agreements with. We made awards to the University of Delaware, Johns Hopkins, and University of Maryland in the materials research area. In the case of Maryland, I believe it's the Baltimore County campus, so it's not quite so far as it would be to come down here. Anyway, those three places receive funding from us, so the relationships are strong, and people can spend time in those labs. The 29th of September, we close Watertown. General Salomon is going up to do that, and I'm going up. Soon, there won't be anybody up there. A few guards. A couple of administrative people. We are going to allow the staff to travel back up for the ceremony if they wish. And we are not quite leaving, because there is still cleanup going on, so we still have a skeleton force.

So that's how it's been this summer.

Moye: Did I see Russians in the halls for the last couple of days?

Lyons: There's this group of Russians here talking about what they call "semiotics," which, in the dictionary, is the philosophy and the study of signs and symbols. Why they use that title I'm not sure. Has to do with expert systems and artificial intelligence, and it directly connects to how one does command and control. It's related to computer science. There are a lot of less fancy names for it than semiotics. It's how you take a lot of detailed information and integrate it. How you think about the big picture, the little picture, the detailed picture, and the size of the big picture. You can relate it to how the brain works. It's an interesting subject. Anyway, there are some Russians that have done some work on this, and they've been here a couple of weeks. Not here at ARL, but in this country attending some workshops.

Moye: What kind of icons you show. . .

Lyons: Well, that's only a small part of it, although that's what you think of at first. It's how you think about going from tactics to strategy, and back to tactics. At what level of detail do you think about a problem? How do you take a lot of detail problems, add them together, but somehow integrate it so you don't have to carry all the details but don't actually lose information? You might actually gain it, because you have a better picture. It is a little bit abstruse. Anyway, they are talking to some of our people and other folks from the area. The question is whether we should engage in some joint work with them. It's of interest to us in command and control. It's of interest to robotics people in manufacturing. Same kinds of problems. How to go from the task of building a car to inserting a screw at a certain spot? Very different levels of detail.

Moye: When you were up in Monmouth, did you get a feeling as to how many of those people actually might come down? You have the same kinds of rumors as with Materials transferring to Aberdeen.

Lyons: The situation is different, though. The job market in materials research wasn't very strong in Boston, so the options of the staff were somewhat limited. The job market for folks at Fort Monmouth is right there on post. CECOM is there, and CECOM is hiring. They posted 40-something jobs this past week, and they are going to fill a number of those with ARL employees, who are, of course, free to apply for a vacancy. So the issues there are how many will stay behind and go to work for CECOM, and will CECOM pick off the best of our employees? How many will want to come down here and work in a brand new building in Adelphi? So it is a different situation. I think we will lose more percentage-wise than we did at Materials. A lot of industry around Fort Monmouth. On the other hand, though, Bell Labs is downsizing. Bell Core is up for sale. I know in the movement of the Night Vision Lab from Fort Monmouth to Fort Belvoir, they lost almost everybody. You can look at that in two ways. If it was almost everybody, it means you also lose the corporate memory, but we're losing that anyway, because VERA/VSIP is taking out the old-time staff. That's the down side. You lose all that experience and memory. The up side is that eventually you start hiring back fresh blood, and you get a chance to tailor the staff. So it's not all bad, but it's hard. Materials is losing a lot of good people.

21 December 1995

Moye: It's December 21. I'm Bill Moye. I'm talking again this morning with Dr. John Lyons, Director of the Army Research Laboratory. We're doing our quarterly historical memoir, or journal. Good morning, sir.

Lyons: Good morning. We finished the fiscal year, the end of September, without an appropriation or an authorization. And we went through October and most of November without either bill being enacted. And then we went through a furlough here about a month ago. We were off for several days, along with the rest of the government. Certain emergency skills had to be supplied, so we had a small emergency crew working, but by and large, the laboratory was closed. I'm not sure whether that's the first time in its history or not, but it doesn't happen often. Normally the Defense appropriation gets passed, even if the others don't.

After the furlough, the appropriation bill was passed, but we still, as of 21 December, don't have an authorization law on the books. But the appropriation bill did become law, so we have our money, and we're beginning to move again. But the fall was pretty slow, because we were held way down in spending—to about a third—under a continuing resolution.

Moye: It held up a lot of fed lab contracting.

Lyons: It slowed up the fed lab award process. The competition, the site visits and all of that, was completed during the summer. We used the early fall months to negotiate the details with the proposed winners. During the late summer, we discussed with the Senate whether or not we could go forward with all five of our proposed areas. The decision from the Congress, really from the Appropriations Committee on the Senate side, was that we could only do three, so we went forward with three. We have now done the detailed negotiations. The final packages are now at the DA level for the final chop and approval, and I expect they will be accepted without much change. I hope so. It's reasonable to think that we will make a public announcement with suitable fanfare early in January and get the fed lab started. So that is something that has essentially come to fruition.

The other two fed lab areas, which were deferred—well, the funding was dropped from the budget, so during fiscal year '96, we will not have funds for two additional areas. We are currently rethinking what those two areas should be, given current conditions, which are somewhat different than they were a couple of years ago when we first started thinking about this. We're reshaping those ideas. We'll use this year to do it. We have persuaded the Office of the Secretary of Defense to move that money inside in '97 and beyond. That has happened. If you look at the planning years in the budget, you'll see a plus up in the inside accounts for two more efforts that will, initially,

not be true fed lab components, because the Senate is uncomfortable. They will be largely external operations. They just won't quite look like fed lab centers, and we won't call them that. It's our intention, if the first three go well, to persuade Congress to allow us to convert those other two areas to real fed lab consortia.

Moye: One has to be flexible and patient.

Lyons: Right. So that's the federated laboratory and budget story. Associated with the budget is the staffing, which around here we call the glideslope. We're still downsizing, but we're approaching and will shortly get to our plateau of 2656. In fact, we expect to sink under that a little bit and begin to do some hiring during '96, because we need to stay close to the target number. If we don't stay at it, if we go much below it, AMC will take back those authorized spaces. So we'll actually start a hiring program.

Moye: I gather we're kind of caught on a dilemma there, too. I did get to the brown bag lunch where Mr. Fonoroff was talking, and he was saying that we may not really have the money to pay all these people, but if we don't hire the slots, then AMC is going to come along and say. . .

Lyons: That's a catch whatever. I don't know if it's a "22" or not, but it certainly is a catch. We are largely being controlled by dollars here at ARL. That's really what Bruce is saying. But we have a lot of work that goes outside. We do have contracts. The problem is it's not evenly distributed, so you may have one directorate that's financially comfortable and another directorate that isn't. Some of them can easily use the authorized spaces that we give them. Others can't. I've just revisited the allocation of the spaces and made some adjustment based on our assessment of the ability to hire.

There's another problem that may have come up in that brown bag lunch: we're due to take a cut in '97 in the G&A money called BASEOPS. We've just had a high-level meeting with people from DA and AMC to talk about that. I sent a letter yesterday appealing strongly for some adjustment in the distribution in the BASEOPS account. That account largely supports the support work here at Adelphi, so it's a pretty large number. The other sites pay for overhead by responding to bills that they get from their hosts. At Aberdeen, TECOM sends us a bill, and the units up there have to budget to pay for the services billed. TECOM also gets some direct funding, BASEOPS, to pay part of the bill, so we only get a partial bill.

Right now, at this site, we are funded for our G&A expenses at Adelphi, so the units here don't pay taxes for services. Next year, they will get very large tax bills, so there's going to be a terrific impact on the units at Adelphi if we don't get some relief. It's a very strange situation. I wouldn't try to explain it in the history. Not based on my remarks, anyway. Because we have slimmed down our G&A accounts very dramatically, there's not much more we can reduce; therefore, we

have to increase the "tax" that we put on the technical programs. So a reduction in the G&A account is really a reduction in research. That point seems to be hard to get across to the higher level folks. They think they're just cutting overhead. But you have to pay the heating bill, the phone bill, the light bill at this site, janitors, the contract for the lawn mowing, and so forth. That's going to get more expensive with the new building; those accounts are going to go up. Inflation, of course, also goes up, and yet here we are getting a reduction in the amount of money, so that's a serious problem. We tried to make this point to AMC and DA.

Speaking of the new building at Adelphi, it seems to be going along all right. The blasting is finished, as far as I know. The one up at Aberdeen is now out of the ground. You can go up there and see it.

Moye: I hadn't realized how large it is. I was up there the other week, and it is really a huge operation.

Lyons: I don't know when you were up there, but I get a monthly picture. That's the latest picture—you can really see the building now. It runs from here around to here, and that's a footprint of six acres. All the foundation work and a lot of the utilities are in. Air handlers are all buried under this front piece, but they're all there. The machinery is in. The power system, the electrical transformers, and so on are back here. They're all in, and it's now under roof. You can see the roof is starting. The date of this is probably. . . well, it says December. I don't know when they took the picture, but somewhere around then. They hope to actually have it under roof before the winter is over, so they can get some temporary heating and start working inside. Anyway, that's coming along. That's 37 percent complete.

The construction program at Adelphi is going well. The Battlefield Environment high-bay structure back here is almost done. They'll be moving into that in a few months. The extension on the chilled water and boiler building is all buttoned up now. I haven't been inside there lately. I don't know whether any of the equipment has come in yet. That will be ready when we need it. I understand that the administration building engineering and permissions and so forth are on schedule.

I went to Heidelberg the first week in October. Mike Fisette at AMC held a conference with the U.S. Army, Europe, folks—General Crouch and some of his field-grade officers. We talked about technology. Bosnia was very much on everybody's minds, even though, at that point, nothing was clear. We talked about what we have, what we have coming, and what they need. It was a very good discussion. We took some things over there for a little demonstration, a show and tell sort of thing. Some of our people went with me. I talked about some short-range things, some medium-range, and some long-term. In the short range, I talked about the sponge grenade, which you noted here as a stun hand grenade. It's a soft, grenade-size (small grenade size)

thing that can be fired from an M16 rifle and will not go more than 100 m or so. It's supposed to be nonlethal. It is, unless you're at point-blank range. I talked about the automation of the M198 howitzer, which has been done by Sergeant Thompson up at APG. We showed that to General Salomon last year. That's something that we can get moving quickly. It's already been looked at down at Fort Bragg by the 18th Airborne Corps Artillery. So that's something that is available. We talked about the GPS fuze. That's not so readily available, but the technology is pretty near at hand. Log Anchor Desk is available. We demonstrated a 3-D acoustics headset that HRED has worked on. We had that at the fall AUSA meeting, also.

Then I talked about mid-term and long-term. Long-term was the second-generation digitization technology, which is what the fed lab is all about. In the mid-term, we talked about the Counter Sniper Program, a device for locating and identifying a source of concealed fire, whether it's from artillery, mortars, or rifles. We have some ideas for a multisensor approach, where one uses acoustics, infrared radiation, and millimeter-wave radiation. If you do all that right, you can not only triangulate and figure out where it's coming from, but also do some pattern recognition of the signals emanating from the projectile and identify what it is, if you've first done a lot of identification under controlled conditions. We've been doing that kind of work, measuring the signatures of different kinds of things, all the way from muzzle flash to the track of a projectile. Anyway, it was a very good meeting. We got a lot out of it.

We listened to General Crouch talk about what they need. They're very concerned about mines. Destruction of mines is the highest priority. The sniper problem, they think, is going to be a real one, as well as language translation. Over there in Yugoslavia, we'll have several different languages, and of course we're dealing with Russians and French and others. There are needs for quick translation. How you get by a sentry post, if a guy doesn't speak your language? With a reduced vocabulary. You don't need a full-blown vocabulary. You need to develop some military subset. Barbara Broome went over and did a demo with a simple version of one of these things. That caught the CINC's eye. He was very enthused about that. By the way, we have, going into Bosnia, some of the BED weather station technology that they had originally developed for Atlantic Resolve a year ago. I believe we have discussed it before. It's certainly in the DISUMs. We've been contacted, and they want to get some of those into Europe to hand off detailed mesoscale weather pictures and related decision aids to the forces on the ground in Bosnia. I don't think they'll set it up in Bosnia, though—probably in Germany.

Moye: I heard something yesterday about setting up a work station with facilities in Germany.

Lyons: I would think that, eventually, they would move it into Bosnia, but they haven't said that yet. Log Anchor Desk, I believe, is maybe going to go into Bosnia. It certainly is part of the deal. They've already used it. There was a DISUM on that, I think. Maybe that's coming. But I saw a report from Colonel Page over at AMC, who's worrying about the Log Anchor Desk. He said they had saved $2 or $3 million just the other day on some logistical train they were putting together. They thought they needed more items than the LAD said they needed, and it turned out to be a $2 or $3 million savings, so we've already paid for LAD.

Moye: Somebody said that we may be having a conference of some type, maybe, around here in a month or so, just to talk. Get the lab people together and see what we might have.

Lyons: That's been suggested. I haven't reacted to that one way or the other. There's a lot going on without stirring the pot. In fact, AMC has put a choke on this—nothing can go to Europe. People cannot travel to Europe without clearing through AMC. They're afraid that everybody is going to say, "Here, take my latest widget and go directly to Tuzla or somewhere." You can't have that. You can't harass them. So there are going to be control points. We've established a control/coordination cell here. If we're trying to persuade them to do something, that's one thing. If they ask for it. . . see, they asked for the weather equipment. It wasn't our idea. Europe said, "Hey, we saw that last year. We'd like to have a couple of copies of that." I told Don Veazey, "That's fine, but make sure you notify AMC and go through the channels, or you'll get folks upset." So whether we need a conference, or whether we've got enough going on without that, I don't know. We haven't really closed on that yet.

When you have something like Bosnia or Somalia or Desert Storm, it's a huge stimulus to the R&D community. You can be sure they'll want better batteries, which we don't have. They want to get rid of these mines. I don't think we really know how to do that or even have a really good idea. Two problems with mines: you've got to find them, and you've got to get rid of them.

Moye: It's one thing if you've got basically a flat terrain and it's desert sand and you can do one thing. If it's mountainous hillsides and gullies and ravines and things like that, it's entirely different.

Lyons: The CINC in Europe said that what he really needs is a device that you put on a road, detonating mines as it goes—on the road and on the shoulders. He wants to do that at 40 km/hr. He doesn't want to stand out there in the cold with a hand-held mine detector. He wants to go barrelling down the highway, find them, and detonate them as he goes. But nobody knows how to do that. Because if they blow up on the road, they're going to take the road, too. But that's what he wants. He wants to get rid of them. He wants to clear them out, and

he wants to do it fast. They have a set of rollers, tanks pushing big heavy rollers, which presumably could detonate something in the pavement. The Israelis have a device that's actually a huge rototiller that literally chews the ground and the mines and everything up, with flails and teeth ahead of a tank. They tell me, though, that after a few mines go off, that's pretty mangled, and they have to start over. I don't know what we're going to do about mines.

A couple other technical items that you have here: One is the Electric Gun Program, which we took over last winter from ARDEC as managers. We have built up, I think, a pretty good relationship with the University of Texas folks, the Institute for Applied Technology. We're now engaged with Army Research Office in conducting a technical review of the status, the feasibility, and the future of that program, as requested by General Salomon as a result of a discussion between General Salomon and General Hartzog of TRADOC. There have been questions raised over the last several years about the realistic aspects of that program. Is it too much of a reach? Is it too expensive? Does it make sense for the user? Is the technology going to yield solutions to problems? We're going to have a review by ARO. We'll be in the middle of that review, with other people, as well. We'll get that done, I guess, the first quarter of the calendar year. So that's E gun.

There are some studies of the future tank program. Larry Puckett is one person who has been conducting a review of the possibilities for the tanks of the future. There's an Army Science Board study under General Otis on the same questions, and General Otis asked me a couple weeks ago, when he and I were at a meeting together, if we would consult with him on essentially the same questions. What technologies can be used to address the problems we have with the current tank fleet?

Moye: He used to be the tank man, didn't he? Seems like I recognize that name.

Lyons: Yeah, he was an armor guy. He's been given this charter to take a look at the technologies available. He said: What can you do about top protection? Which is the weak point. Most of the armor is at the front of the tank, so they're vulnerable to top attack. What can you do about the weight? Increasingly, we want to be able to transport them. A tank is 70 tons, more or less. Can you get that down? Can you get it *really* down? What kinds of technologies can do that? What do we have to do? Does that make economic sense? Well, I've got Ingo May and company working up a consultant kind of response to General Otis. But Larry Puckett has spent the last couple of years doing these kinds of studies. He came in and gave us a report. It's clear there are a lot of things we can do.

What's not so clear to me is the future of armor. Heavy armor. And what is the future of manned versus unmanned vehicles? A lot of the

weight in these things is to protect the crew. If you had automatons running around the battlefield. . . let's say two out of every three tanks have no people. They might be much different. Now, the current armor people don't even want to talk about it, but General Otis was willing to talk about it. He said, "You know, your wing man could be unmanned—you have an armored, standard tank with a crew and a commander, with two unmanned wing men." That might make a big difference with cost and weight. I'm having trouble getting people to talk to me about that. We do have a program in automatons, or robots, under Chuck Shoemaker. He's just come back from running the ARPA (Advanced Research Projects Agency) program. He's back at WT, and I've asked WT to really think hard about this. I think it would give us a new paradigm, or model, if we have unmanned ground vehicles, but now they're only scouts. Very light. We have unmanned air vehicles that we use, again, for scouts, reconnaissance, sensors, flying sensors.

Moye: I think we have some of those in Albania. I gather they're flying some unmanned flights out of Albania.

Lyons: Yes. The so-called UAVs (unmanned aerial vehicles). We talk about them all the time in research committees. You say, "How many are in the field?" Not very many close in. The ones that can get down and get a lot of detail just aren't there.

I saved the worst for last, I guess. We've had an eruption here at Adelphi that requires some comments. There was a pair of TV programs a couple of weeks ago run by Channel 7 in Washington, based on interviews with some members of the Adelphi staff, current and former, who are exceptionally unhappy with management, and who found it appropriate to talk to the media rather than to management about their problems. The interviews came across as from exceptionally unhappy folks, and they painted a really terrible picture of ALC. Mostly it was racial and sexual matters, discrimination and sexual harassment. The most spectacular point was sexual harassment. It made it sound as though no woman was safe to walk the corridors of the laboratory. Not a particularly unbiased picture. It was a terrible scene, and not one that I was familiar with. Several of the people were former employees. Two or three had been terminated for cause. I think we can safely say that it was not a good sample. But the programs raised a whole raft of concerns. People here became emotional. I got a flood of e-mail from staff members, some expressing similar unhappiness, but most expressing anger at the picture given of their organization.

I was part of the TV shows. I talked to the cameras, Channel 7, for over an hour one day, going over all the allegations. They weren't all EEO related. There were a lot of other allegations about improper management behavior in contracting and procurement, safety in hazardous materials, and handling thefts. A lot of stuff. I had been

briefed on all of that and discussed it all on camera, but most of that wasn't used. The only thing that came out on the TV shows was about EEO matters.

Moye: Inflammatory.

Lyons: As a result of that, a number of things happened. AMC sent a tiger team here of about 10 subject-area specialists, led by Colonel Young from the IG's office, to meet with all of our different offices that had been accused of improper practices, to go through the files, look at the cases that were cited, and make a quick evaluation. Except for the EEO business, we could find no allegations of wrongdoing that were substantiated. So as far as I could tell, Procurement, Contracting, Risk Management, and so forth are fine. In the EEO area, of course, there are complaints. That's what it's there for. We studied the office, and studied the complaints. The picture that was painted on TV was that we had 136 complaints over 10 years and only once had we decided in favor of the complainant. It turned out that was a very misleading picture. We developed some figures.

Moye: A lot of the cases had been mutually resolved.

Lyons: They'd been settled. I showed them at a town meeting. Did you go? Do you have the hard copy of that? You might want to put it in the history. Why don't you do that? But anyway, it says some were settled, some were withdrawn, some were dismissed, and some remain active. It was a totally different picture. Settlements, by definition, mean some redress, or the person wouldn't settle. We also didn't have statistics on sexual harassment, which showed variously 11 or 13 formal complaints and none settled. Turns out that was the EEO office, but you can also go to Management/Employee Relations (MER) for those things. And the MER function often leads to some kind of settlement. We just didn't have those figures. We believe that four cases have been settled in the MER process. Informal complaints. That's a little different.

AMC's PAO (Public Affairs Officer), Tansill Johnson, was very helpful. We had a town meeting here, and I presented a lot of information, which I will give you. I described some of the things we have been doing for some time, especially in regard to women. Almost all the people on TV were women, and they were almost all minority, so I described the women's committee that Glenda Griffin has chaired for the past year, which had done a lot of things. They've done surveys, they've done statistical analyses, and they've made recommendations. Glenda is now implementing the recommendations full-time, not doing her regular job at all. That activity is a year old. So it's not that we're asleep at the switch.

We're now in the process of putting together a minorities committee to finish the job for the rest of the EEO area. We got a temporary EEO officer from AMC, because Elissa Boleen left at the end of the summer

and we have not been able to replace her. The timing couldn't have been worse. Here all this stuff blows up, and we didn't have an EEO officer in place. That competition for the job, the permanent fill of that position, is approaching completion, so we should have a permanent EEO officer in place at the end of, maybe, January. We're going to do some training on EEO and affirmative action for all managers. Perhaps for all staff. We haven't sorted that out, yet. I'm having town meetings. We have had town meetings everywhere now but Aberdeen and Cleveland.

Moye: You had one scheduled yesterday up at Aberdeen.

Lyons: Yeah, but I got iced out. The weather was bad, so we didn't do it. John Frasier took the package out to White Sands. He took it to Langley, and he took it to Fort Monmouth. I did it here, and I'm going to do it at Aberdeen. One or the other of us will probably do it at Lewis.

What I have told everybody is, first of all, it is clear and factual that we have an underrepresentation problem. Both women and minorities at senior positions. I could see that when I first came here. I went to my first senior management meeting on change-of-command day, and they were all white men. I commented on it. No women, no minorities. In the SES, when I came here, we had one minority, Bill Vault. He has since retired. So we have no women or minorities in the SES. You look at the division-chief level, and there are precious few women. I don't know. We have a very senior minority at White Sands. The biggest division in ARL is headed by a minority. But the situation is poor in that regard. So Glenda's women's committee made some recommendations as to how to handle whatever hiring we do.

I'm now working on putting into the senior managers' TAPES documents some really hard-hitting EEO objectives. I think this is a critical time for ARL in that area. Despite all the grief in the TV programs, it's a stimulus that creates an opportunity for us, and I don't think we want to miss this. So I've got to set an example. I've got to point the direction, and then, as I said in the auditorium, it's everybody's problem. It's our lab. It's not mine. It's everybody's lab. It's the Army's lab, and certainly the people who work here should take ownership of it and work to make the work environment much, much better. So I'm studying some of the cases that were cited in the broadcast. I'm strongly urging certain actions to be taken, and I think by our next conversation, I will probably report some of that.

I have these various committees going forward. There are other things that we're talking about doing, and people are coming to me and making suggestions, and my mail is full of them. I think that, overall, we'll come out of this very, very strong. Right now, it's a mess, and it hurts. I've only been here a couple of years. I can imagine how people feel who have been here 30 years.

Moye: It's awfully difficult to address this kind of thing when, one, your authorized strength and your authorized money are down. It would be one thing, if you could go hire somebody.

Lyons: If you were growing. . .

Moye: But you're basically constricted.

Lyons: A reporter called yesterday about the subsequent class-action suit filed up in Baltimore, which is really the same subject. He wanted to talk about the suit, and I said I can't. Any matter before the courts is not something I'm going to talk about. But we got to talking about the background situation, and I said, "Well, the contributing factor that you probably need to understand is the downsizing environment, when you're letting people go and sometimes you're running reductions in force. You're doing early outs. You're not hiring. On top of that, the administration's insisting on controlling high grades so that, when you do reduce in size, you don't just take it out on the low grades. They insisted on clamps on the high grades. You have a lot of staff members looking at a very bleak future in terms of promotion. Look into the complaints, and you invariably find one of the complaints is failure to promote." It's the kind of thing that's going to happen to you when you're downsizing an organization as big as the federal government. I don't think there's much attention being paid to that.

On top of that—I didn't mention it, and perhaps I should have—the Priority Placement Program is really even more responsible for the failure to promote. If we try to promote a clerical person or an administrative person, we have to put it on the wall—post it—and in the environment that we're in, we're likely to have a priority placement candidate put in there. Which does two things. One, it prevents your in-house person from getting a promotion. Two, now you've got two people where you formerly had one. You've got somebody that has been added to your staff from outside, and somebody inside is going to have to get out. The result of that is we don't post promotions. Then you start to get complaints. I don't quite know how to deal with it. I suggested that the Priority Placement Program go away. So far, that's not been well received.

That relates, by the way, to the last subject, namely, the Personnel Demo. We're ready to go with that, but we had appealed several items outside the department. Priority Placement was one. Overall manpower ceilings was the second. High grades third, the arbitrary ceiling on 14's and 15's. And the difficulties in getting people into SES led us to suggest a senior pay band for certain division chiefs, who could be paid at the SES level without going through all the hoops to get into the SES. We ran into static at the OSD level. The personnel people at OSD just didn't buy into that. They claim that they've gone outside and talked to OPM and OMB, and they don't want to deal with it. So

we have been raising cain about this. The Army says there's not much point to doing Personnel Demo, if the real obstacles aren't being addressed. I spoke to Paul Kaminski, the Undersecretary for Acquisition and Technology at Aberdeen last month. We put on a great show for him in technology. But I took that opportunity to give him a status report on personnel and told him one more time that we are just getting killed by the restrictions. We can't run a first-class laboratory with that kind of difficulty. And he said he'd try.

Moye: It's difficult.

Lyons: It's been up to the Deputy Secretary of Defense, and he sent it back down for more discussion. The personnel stovepipe is fighting it tooth and nail, and the Deputy Secretary said, "You guys have got to get your act together." He sent it back down to the two under secretaries. All I'm doing is yelling and screaming. Okay. I've got a 10:00 meeting, and I better go. I think we covered it pretty well. We didn't talk about open lab, but we'll get to that.

13 March 1996

Moye: It's the 13th of March. I'm Bill Moye. I'm talking again this afternoon with Dr. John W. Lyons, the Director of the Army Research Laboratory. We're doing our quarterly historical journal.

Lyons: Okay, there are some news items, and there are some major developments. Let me do the news items first. Since you participated in the ENIAC celebration, I'll let you write that up, but ARL did participate in the 50th anniversary of the first digital computer up at the celebration at the University of Pennsylvania and the ACM (Association for Computing Machinery) meeting in Philadelphia. I went up for that. Paul Deitz did most of the heavy work, and he's not finished with it. He's talking about having a companion celebration up at Aberdeen this summer. He and I just exchanged notes on that today. That was a big event. We made the front page of some of the newspapers. That is, the ENIAC did. *We* didn't.

General Salomon is about to retire. General Salomon is a powerful advocate for science and technology. He has been untiring in his support of ARL and what we stand for. He's been fighting a difficult battle with the budget cutters in the last several months. I'm going to come back to that as one of the big issues. But he goes in a couple of weeks, and I will personally be sorry to see him go. I've enjoyed him enormously. He's a very warm and outgoing person. Great sense of humor, as long as you're on his wavelength. If you're a Yogi Berra type.

Moye: Mr. Fonoroff made an interesting comment about General Salomon the other day. He said General Salomon is now preaching the difficulties, saying the green-suit-type officers, the real soldiers, have no idea what goes on in the research laboratories. And that you have to teach them what happens in a research laboratory. Mr. Fonoroff said he kind of sat over to the side, kind of chuckling, because when General Salomon became commander of AMC, he didn't have any idea what happened in a research laboratory. But now he's a great defender of it.

Lyons: Well, I think General Salomon, first of all, is a very smart person. You don't get to be a four-star general without some capability. He's a very quick study. He was pushed in the R&D direction by General Sullivan. When he took over AMC, he came here and sat on that couch and told me what his instructions were from the Chief of Staff of the Army. The first instruction, I guess, was to take care of technology, even though it's a modest part of AMC's portfolio. General Sullivan, of course, was very sensitive to the role of technology, very enthused about technology. He told General Salomon to take care of it and watch it. He also gave him some specific instructions about "watch outs." You know, technology can sort of overwhelm you. General Sullivan was worried

about giving too much information to the warfighter. The great danger in the digital battlefield is that you flood people with information, and they just turn off all the widgets and gadgets and ignore them. The soldiers are noted for throwing away things they don't think are adding value. In the old days, it was things that had weight and mass. Nowadays, it would be things where they've got too damn many bits and bytes buzzing in their ears or whatever, and they'll just turn it all off. So General Sullivan was worried about information overload and cautioned General Salomon. Anyhow, for whatever reasons, General Salomon has been a real strong supporter and was good for us, to the extent anybody could be in the downsizing environment.

The next several things here have to do with budget and restructuring, so I'm going to do that separately.

We have started up the federated lab centers, three of them. The end of January, we made the awards. That was written up in the January or February *Focus*. Maybe it was February. They are now running. They're having meetings, and people are coming and going from these federated lab partners. I'm hearing very good preliminary reaction. Our staff are pleased with the caliber of the people they're meeting at the partners, and vice versa. It looks like it has started well. It's too soon, of course, to say what else is going to happen, but I'm getting good vibes.

Moye: I guess the first staff rotation. . .

Lyons: The first rotator is Brint Cooper, who went off to the University of Delaware and is doing his thing. Brint is interested in things like data compression and related telecommunications kinds of things. He's having a great time. In a DISUM, he mentioned that there were possibilities of sabbaticals from the faculty up at Delaware coming into ARL as a result of this. He sounded very enthused. Cooper is a very critical person, so if he says it looks good to him, it probably is. Anyway, I think we can now say the federated laboratory is launched. We're going to have to watch over the effort for the next several years to make sure it works.

We have spent an enormous amount of time since the very harsh Channel 7 television show at the end of November (which we undoubtedly discussed last time), developing a program to put us back on the offensive and get us away from trying to fend off the criticism. I had a lot of help on that from AMC. When General Salomon was here for his last visit, I handed him a letter from me to him describing what I called my campaign plan for improving the work environment. EEO training is one of the pieces of that plan, designed to get all levels of staff of ARL more sensitized to issues that come out of the EEO arena and also to understand better what the rules of the game are. For example, hiring and promotion—what is affirmative action, what is appro-

priate, what is ruled out. We've started that. The SES contingent, the directors and I, went off to Baltimore and took two full days of intensive training—a lot of it was this sort of self-discussion, self-analysis—with help from outside the lab. That's completed, so that's one piece. The rest of the supervisors are going to get trained in the next several months, and eventually all the staff will be offered a voluntary, but nearly mandatory, couple of hours. So we will get that done.

I have appointed, I think it was in early February, a new Minorities Committee to conduct the same sort of activities that the Women's Committee did, as I'm sure I have mentioned before, under Glenda Griffin. The Minorities Committee is chaired by Annie Young, who is a GS-15 professional from SLAD at Aberdeen. It has representatives from all the sites, from all the directorates. They're asked to survey the community, review the statistics, look at the issues, and come up with recommendations by June. When that's done, we will have a program that I will assign to the new EEO officer, who will likely get selected this week or next. Interviews are occurring this week. We have some very good candidates. I'm impressed by the candidates. One of the key criteria I have for hiring an EEO officer is that it's not enough to be able to run a complaints program. He or she has got to be able to run a corporate effort aimed at making the workplace a happy and productive place and get rid of all this friction that is now there. We've got to change it, and so I'm looking for a fairly energetic and aggressive person. Good people skills.

There are other pieces of that program. One is looking at our processes for hiring and promoting to ensure fairness. That means we're going to have a lot more panels viewing people's qualifications. We're also going to do some auditing, what the personnel people call "desk audits," to see whether job performance matches job description, whether the job is properly graded, etc. A lot of the complaints are that, "I really should have been promoted, but somebody else got the promotion, and I wasn't treated fairly." In this environment of freezes and downsizing, of course, everybody thinks they should have been promoted, but almost nobody gets promoted. That's a different problem. But if there also is a perception that it's not fair when you get the rare promotion—if that isn't handled equitably, that's real poison. So we're taking steps to address that.

I have also incorporated into TAPES documents for all senior managers a much more challenging set of objectives and milestones for the annual EEO objective. Since the Civil Service Reform Act back in 1978, it's been required that senior managers carry an EEO objective, and it's fallen into a pro forma drill. Everybody writes the same objectives: Somehow hire a few more minorities, promote a few, and train a few. They write a report that says I did six of that and five of that and four of that.

Moye: There used to be a couple of lines in the questionnaire that they filled out for the Lab of the Year nomination—how many people have training for this and training for that?

Lyons: Yeah, but it hasn't done any good, because it's pro forma and not really taken seriously. So I developed a detailed instruction to the directors that looks a lot more like the instruction they have for the technical program objective, which has backup sheets and lots of different ways I can look at it and evaluate it. They have to write me a six-month and a year-end report on how they did on all these bits and pieces. That way, I can get at things. I want to know how they're doing on complaints, and what they do when a complaint arises, and how it's being handled, and we'll do a little monitoring to get it straightened out. So it's an attempt, anyway, to try to manage that aspect. I also set up a group of directorate directors to see what else should be done. So far the campaign plan is mine. The rest of the folks are going to get a chance to add some more aspects to that, if they see fit to recommend to me some items. So that group of about four directors is at work.

I would say that it's been nearly all-consuming for half of the time, half of this quarter. Probably rightly so. I think that the environment here was not good. It took the TV show to bring that out. It's a shame that that had to happen, but. . . Talking to the candidates for the EEO officer, I've discovered that we're just average. I thought so. I talked to Mae Bullock, who's been all over the DC area, because her job as a staff officer in EEO is to go visit places and be a consultant and so forth. She says there are a lot of places worse within AMC. It's just that we happened to get singled out by a TV camera. So I think we're a typical microcosm of the rest of the world. That doesn't mean it can't be improved. I think we can do much better.

Coming out of that, Bill, is an interesting thing that I've never done before, but it was called to my attention that, when an organization gets in a crisis. . . and there's no question that we were put into crisis by that television camera. But what happened after the TV show is that out of the woodwork came all sorts of issues that hadn't been brought to my attention. Came across the computer and in person, indirectly, directly, whatever. What was happening was the crisis was sort of building on itself and growing like an avalanche. One of the staff, Kevin Kirby, had occasion to see a couple of books on crisis management. There was a guy that got to be an expert on crisis management and wrote a very good book, which describes how these crises unfold and feed on themselves and get bigger and bigger, and then, "How does management respond?" One of the case histories was the Johnson and Johnson response to the Tylenol poison crisis. Johnson and Johnson did virtually everything right, recovered its business, and is still the dominant factor. Its reputation is unscathed. But not

everybody does that. Some people make all kind of mistakes. One of them was one of the movie companies, where there were suggestions of financial improprieties that eventually brought the whole business crashing down, because the CEO didn't respond properly.

So they sent me the book, and I looked at it. One of the suggestions was that the management set up some special way of dealing with the crisis. Not try to do it with your left hand, but set aside some resources to focus on it. What I did was set up what I called a "tiger team," consisting of three people. I called them in, and I said, "I'm going to detach you from your duties, and I'm going to ask you to just sit and think about this situation. I'll tell you what I'm doing and what I'm thinking, and then, I want you to tell me what you think and what might be added to the action. You do that by going around and talking to a lot of people." So Kevin Kirby, Glenda Griffin, and John Pellegrino were my choices. They've been coming in once a week for an hour or two and having very candid discussions about all sorts of things. They've made a whole raft of suggestions, some of which I've taken and some of which I haven't. The ones that fit with the broader scheme of things I've pretty much taken. The ones that run counter to what I believe or to what the Army would likely tolerate, I culled out. But they've run from personalities to structuring an organization, picking up a lot of threads that we were working with. For example, restructuring. Why don't we bring that up to the foreground? Why don't we accelerate that and get on with it? Lieutenant Colonel Pecoraro is sitting in the next office now because they recommended I should have an executive officer. The perception of how my office worked wasn't very flattering. It was overloaded, and we can't get decisions. The perception that I'm screened off from a lot of the staff.

Moye: I had somebody tell me that today, that that had been his perception.

Lyons: I guess in the middle of all that, I relieved Alan Goldman as division chief and took his division and moved it from Bruce to John Frasier and put a woman in charge of it.

Moye: I believe she's had a smile on her face every time I've seen her since then.

Lyons: She has, or she hasn't?

Moye: She has. She's had a week in the Bahamas in the meantime.

Lyons: She's having a terrible time. She tells me the grief that she's gotten into. Anyway, Cynthia Tootle is doing that. I've admired Cynthia since I came here. I like her style. When the chance came to move her up, I suggested to Frasier that we do it. She's trying to rethink

that whole area. Meanwhile, we put a stop to this terrible string of accusations against Alan; got him out of here and over to AMC. So that was a little restructuring. The tiger team worked on that.

Meanwhile, General Salomon had come by and approved a major change in the organization. In fact, in one visit, he approved a whole bunch of things that I sprang on him, but at his initiative. He had been telling me since before the TV program that he thought I needed a chief of staff type organization. We deliberately had the staff functions separated amongst three different people: Chuck Denney with a lot of staff, and Bruce with some staff, and Colonel Tom Dunn with some staff. That happened to be a style I liked. Divide up all the work. When General Salomon started to fuss about that and lean on me, I finally said to him, "Sir, we have another problem. The deputy is supposed to be a brigadier. It's authorized as a brigadier, but you don't seem to be able to get me a general officer. I put a deputy in that job and tell him to go manage all these SESers—well, it's pretty hard for an 06 to push around an SES." Well, I told him that about a year ago. At that point he said, "I'll go talk to the Chief of Staff about getting a general officer." Did that, but it didn't wash. The next time around, he said, "Maybe you're right. Maybe we ought to change that."

Anyway, when he came here. . . when was that, February? On his farewell tour, he said that he'd been talking with his folks over at headquarters, and he now felt that it was appropriate for me to appoint an SES-level deputy. Make it an all-civilian senior management, and take that position (which he thought still existed), make it an 06 and convert it into a Chief of Staff, if I would agree to get my staff functions together under one 06. So we agreed that's what we would do. He said, "Okay, I'll send some folks over here to talk to you about running that kind of an organization." Then we started checking, and it turned out that there were some problems, namely that the 07 had been taken down. There wasn't any position authorized, either an 06 or an 07. So the AMC folks are scurrying around, trying to reclaim it at an 06 level and to reauthorize it as a Chief of Staff. Meanwhile, I'm doing things like organization charts for the Chief of Staff. That's what that board is over there. Colonel Dunn retires in June. That's when we shift to Chief of Staff arrangement with an SES deputy.

Moye: Is there somebody in the pipeline for that?

Lyons: If Joe and I can get our act together, we'll write a letter to the Commanding General asking him to look around for a colonel. The way this works, apparently, is that there are 06's kicking around, leftovers from various regimes. Good ones. You get somebody who's been an exec for the Commanding General—for instance, who knows, after a year or so. . . some of those guys get

to be brigadiers. Some of them hang around, looking for another assignment. Some are on the list. They're pretty good, or they wouldn't be in that kind of a staff arrangement. So we're counting on AMC to produce a way-above-average person. That's a difficult thing we're doing. We're talking about Chuck Denney's job. I'm going to break a lot of eggs, doing what I described. I've got to find something useful because Chuck has done yeoman's service. Done a great job.

Moye: They've gone down almost about a third or a half in Operations?

Lyons: Yes. Anyway, Salomon approved that.

Then I said to him, "Well, we've been thinking around here for a year, maybe two years, about a way to structure ARL in a much smaller number of directorates. We're pretty close to closure. Let me try it on you." So I tried it on him. I think I sent you a copy of my note about the restructuring, but we proposed to go from 11 technical directorates down to 5. He looked at that, and I said, "It will sharpen our focus. It will help us maybe to reduce some overhead. It seems to me a more intelligent way to do the program." His thought was, "That will get you finally, at long last, away from LABCOM." As a historian, you'll appreciate that. He said, "I think the pieces of ARL are still too independent. You don't pull together very well. That's one of the reasons we're pushing Chief of Staff. To draw together."

Moye: That was his perception?

Lyons: Well, that's what he was getting from his people, anyway. There are still too many free agents around, too much independence. What I was proposing was exactly what he thought the answer might be. Start crossing these old gaps between the independent labs at LABCOM. For example, one of them is a directorate that's going to be called Sensors/Electronic Devices. Well, guess what? That's Harry Diamond and ETDL. Used to fight like the devil when Thornton was there. Fought all the time. They're going to be one. They're going to be moved together, and they're going to be managed together, so that should change the situation. So anyway, he liked that. Then, subsequently, as a result of budget discussions, I got word from Gil Decker, Assistant Secretary Decker: "Get on with it. Hurry up. Reorganize."

Moye: He liked that?

Lyons: He wants it done now. I'll switch into that subject in a second, restructuring. The next time we talk, I hope that all the key decisions will be done. We've been doing the paperwork, putting together this different structure.

By the way, what started all this was the defense of the two new buildings. We talked about this before. When I came here, the plan was to build these two new research laboratories, and the DoD Inspector General attacked them both, said they were a waste of money, etc, etc. Challenged all the Army's rationale for creating ARL. George Singley and I started to rebut that in talking to DDR&E level people, e.g., Anita Jones, in terms of five banners. They weren't quite the ones that I have now picked, but we were talking about armor and armaments, and that the materials program was going to fall under an armor and armaments banner, and that we needed that building up there at Aberdeen to further the weapons kinds of materials research. Down here, instead of an electronics building, we changed it to a physical sciences building, because we were being assaulted for working on electronics. It's come full circle. I'm going to use the word "electronics."

Moye: I understand this about the restructuring, and I understand that there are people with that perception. Nobody has suggested, "Well, we'll institutionally fund you so that these people will not have to go out and independently look for money." Right?

Lyons: That's right. That was the original assumption, remember.

Moye: That was the hope, I think, in bringing everybody together, that there would be one person in charge of the money.

Lyons: The concept was that we would be institutionally funded. It was never honored. So from day one, we have been short of money. Now we're at the level of a quarter of the funds coming from either RDECs, or PMs, or PEOs—various so-called "sponsors." I don't think that's bad, by the way, because if you need customer money, you tend to be more relevant. I can cite a lot of good labs that have that kind of sponsor. Of course, the British example of the DERA (Defence Evaluation and Research Agency) is all sponsors. They don't have any money at all.

Moye: They have to have customers.

Lyons: They have to have a sponsor in the MOD (Ministry of Defence). Some of the money, I think, is guaranteed, but they pretend that it's all customer money. They don't get any money unless they sell the program. I think that is probably going to give them trouble with their long-range research. I think they'll have a little more trouble maintaining the right mix of short-, medium-, and long-term work.

The last big piece—and I see I left out a couple of other news items—is the budget pressure that has come out of lots of different studies. There have been functional area analyses going on for, I guess, a year. There have been several of those. In some of them, we've been treated well. And in some of them we've been treated

terribly. There have been companion studies. The Army Science Board, for example, was asked to do a study by the Vice and Secretary West. But anyhow, everyone and their brother are studying things. I'm sitting on a DoD-level committee studying the DoD labs for the umpteenth time. A congressionally chartered study. So we're being studied to death.

There are two major developments that need to be noted in the history, and they may be critical. The Army Science Board has a committee on RDT&E under retired General Pihl. In the course of this study, they wrote letters to all the tech directors and to me asking me, in my case, to respond within five days or 10 days or whatever it was, how would I take a cut of $45 million in the S&T budget? That was a bit of a shock, because the total S&T budget here, setting aside the customer and the 6.6 analysis monies, is about $180 million, so $45 million is a really big chunk of money. Called in all the directors of the directorates, and we had a pow-wow here, in which we went through a drill and came up with a list of $25 million worth of reductions. The biggest number was $15 million out of our 6.6 base support budget. Now that's overhead, site and corporate. If you think about it, it's a lazy man's way out, because it turns out it will lead to a tax on the technical work. If you don't have an overhead appropriation, you have to apply what's called "burden" to the 6.1 and 6.2. So what we really did by pulling out $15 million there was bologna slice every work package. But at least it keeps us as flexible as we can get it. If we actually lost that money...

Moye: The hope, of course, is it was just a drill.

Lyons: The hope is it was just a drill. If you lose it, though, it's still up to you later as to what you actually cut. I mean, if you lose the money, you can absorb the impact because it's a nonspecific overhead kind of cut, which would have to be replaced with a tax. This would allow us maximum flexibility. Anyway, that was one. There was a short list of real cuts, for example, the nuclear effects, the last of the atomic age stuff.

Moye: There's a nice couple of color pictures in the *Metropolitan Times*. A story about the Aurora on its way out.

Lyons: I'd like to see that.

But anyway, we took some specific program cuts. I think only about $15 million. And we said we'll forego the rest of the federated lab money that is not yet committed. That's another $12 or $13 million. When we lost those two out of the five centers, we persuaded OSD to put that money back into the internal budget for next year. This year, it's not there at all. Next year, it's back in the POM, for next year and beyond. So we're foregoing something we really didn't have. We didn't do much damage to the program

in our response, and AMC blessed that and sent it over to SARD. So you may hear about that.

The other thing that's happened is that the Office of the Deputy Chief of Staff for Operations had been given an assignment to do what they called an "umbrella study," umbrella FAA (functional area analysis). A contractor proposed to them—and they forwarded it up to the Vice—a suggestion with three parts to it, which was a head-on assault on the Adelphi program. The way we interpreted it was that they really wanted to disestablish ARL, get rid of the corporate overhead, the director and his staff, with various suboptions of this, and ultimately to close this site. Nothing said about the Aberdeen program. In one version of it, they were going to leave the electronics folks at Fort Monmouth. In another version, that wasn't mentioned.

Well, needless to say, that caused some disturbance. It was sent around by the Vice for concurrence. Obviously, the AMC CG (Commanding General) did not concur. The DCSINT (DCS for Intelligence) did not concur. I guess the term is "nonconcurred." The DISC4 (Director for Information Systems for Command, Control, Communications, and Computers), General Guenther, nonconcurred. Mr. Hollis nonconcurred rather strenuously. I think Mr. Decker wrote back and said, "I'll do the study that you suggest, but if you want my answer now, I nonconcur." But what he asked for was, "Take this off the table, let me address the issues that you raised and come back to you very quickly." So with all those nonconcurrences, the Vice took it out of the top category for this year's budget. Decker has instructed that the SARD staff get together with ARL and AMC and prepare an analysis of all this. And gave them some fairly detailed instructions—the kinds of comparisons and benchmarks, and so forth—the basic question being, do you want a corporate laboratory? Why do you have a corporate laboratory? What's industry doing about corporate laboratories? What ratio of R&D funds are typically put into corporate labs? Stuff like that.

Moye: Many studies about that aspect.

Lyons: So we put together a draft report that will be converted to charts and briefed to Decker next week. If he likes it, he'll turn around and brief the Vice, the Vice and Mrs. Lister, the Assistant Secretary for Manpower and Reserve Affairs. Those two are running this drill. I think we've got a powerful defense. We've collected some industrial data. This morning, I just came back from the Academies, listening to the results of a study of overhead.

Moye: Is this the Roundtable?

Lyons: Yeah. I got the results. The results are most enlightening. They show, on the average, whether you're in a university or a com-

pany or a federal lab, on the average, for every two dollars in direct charges, there's a dollar of indirect. It doesn't make a damn where you are. Those are averages. There are labs that have incredibly higher or lower costs. If you're sort of in the pack with the averages, what that does is destroy a lot of conventional wisdom that costs are higher, lower, here, there, or the other.

I was impertinent, because I said I'd like to know the uncertainty in the data. As a former director of NIST, I'm interested in that. There was a lot of grumbling. I said, "If you have a few percent uncertainty, as far as I can tell, what you've got up there on the screen says they're all the same." They were busy arguing about all the details and differences.

In fact, two for one. And we're probably a little on the low side. ARL is on the low side.

Pecoraro: One to four.

Lyons: We are 22 cents out of a dollar, roughly one to four. You have to average out of that all the contracts, the fed labs, and what's inside and what's outside, and so on. It's a nightmare. I think that there's nothing interesting there. It costs about the same to run a research lab wherever you are. No big surprise to me. We'll put that in our Decker report. People love to say the defense laboratories are all high-cost operations. Lots of infrastructure.

Moye: "Make them GOCO."

Lyons: Yeah, and somehow it would be all better. So we're preparing this report. We hope Mr. Decker will prevail. He's a powerful advocate, like General Salomon. Unfortunately, we're in the fourth year of an administration. I could look up someday soon and see that Decker has taken a new job somewhere. That would be a bad thing to have Salomon gone and Decker gone.

Moye: And Singley's gone.

Lyons: George Singley is a big factor. I realize that a little more every day.

Moye: Do these various attacks—the inquiries and the drills—are these indications the Chief himself is not pleased?

Lyons: Sure. I don't want to attack the Chief, but General Reimer has a different view of the world than the previous Chief. The Chiefs are all highly individual fellows. Sullivan was, as you know, very interested in futuristics and technology, fascinated with the Tofflers, and so on. He talked about that all the time.

Moye: The Louisiana Maneuvers and the Force XXI.

Lyons: Louisiana Maneuvers is about gone. Although I think that's a natural evolution. I think General Sullivan saw it as a transition.

He set up the Digitization Office. I wouldn't be surprised to see that go either, because those are all temporaries. But I think General Reimer, in the balance of how much you're going to spend on 2015 technology versus 1996 technology, leans a little more on the current, the short-term stock. And I think he's got even more of a downsizing problem. This pressure doesn't quit. You saw the administration submit a $242 billion defense budget. That was $7 or $8 billion less than they thought they were going to see. The argument is, "Well, inflation is lower, so there are all these savings." I've never heard that argument given before in a budget presentation. In fact, they parceled out all the savings, which are actual cuts. They are actually cuts. We were handed out our budget savings—reductions—with the comment, "You don't need as many dollars. They're worth more."

Pecoraro: Bizarre.

Lyons: So I think General Reimer has a different set of problems, and he's a different person with different people around him.

Moye: Are they discussing the possibility of having ARL be a field agency, or a separate reporting agency, or something of Mr. Decker's?

Lyons: It's been discussed. Decker himself asked for the pros and cons of moving ARO and ARL into SARD. Caused a lot of fuss. AMC got very upset.

Moye: Salomon had said, "Don't ever mention those words."

Lyons: It was in the original BAST study of alternate modes, the Zracket study. It was never really discussed, because General Ross and then General Salomon just smothered it. So now it comes back again, with Decker asking the question and making AMC very fretful. A second question involves putting ARO and ARL back together. That's also come up from Decker. We're not touching either of those. They are both hot rocks I'd just as soon not touch.

Okay, that's pretty much it. The last thing is that we have established a Technical Assessment Board under contract with the National Research Council. It's our peer review mechanism. It replaces the old group that Harrison Schmidt chaired, called the TRB. A distinguished member of the Bell Labs technical staff, Louis Lanzerotti, has agreed to chair the board. Members of the board will be panelists for each of these big directorates that we are going to set up. Lanzerotti spent a day with us here and is coming back with the oversight board.

Moye: Is this the one that the National Research Council supports?

Lyons: Yes. They will meet annually to review the state of the laboratory, the state of equipment, and the state of work quality, but not the program content. In other words, how well we're doing whatever it is we're doing, but not to critique what we're doing. So it's pure peer review.

23 July 1996

Moye: Today is the 23rd of July. I'm Bill Moye. I am talking again today with Dr. Lyons, the Director of the Army Research Laboratory, doing our almost quarterly journal. Good morning, sir.

Lyons: Morning. As usual, there is a lot to talk about. You've given me an outline here. I think I'll rearrange it a little bit. Let me go back first to where we were at the last meeting, when we talked about the review with Mr. Decker, the Assistant Secretary of the Army for RDA. I think it was just a week after we talked that we were going to sit down with Mr. Decker and present to him the results of a study we did on the need for corporate laboratories and possible options for financial savings, restructuring, and the like. That was, in turn, a response to the functional area analysis that had been done by the DA DCSOPS. A lot came out of that.

We met with Mr. Decker. We told him what industry was doing with corporate laboratories. We presented the arguments for corporate laboratories, and he accepted the need for such a laboratory in the Army. We told him some of the things that we were thinking of doing to sharpen our focus and that could lead to some efficiencies. And he approved all of that and told us to get on with it—to do the restructuring, and to put the proposed efficiencies in the '98 budget. So during the spring, we went ahead and did that. We began to do the restructuring, which we had already been talking about, so it was not a new idea.

Moye: This was the consolidating into the five directorates?

Lyons: This is going from eleven directorates, which we found very difficult to present, to five. The old structure looked very diffuse, spread out too far with the declining resources. The ARL management team had been talking for at least a year about a reduced number. It all began—and you can see this in our early discussions—when we began talking about five or six labels under which to present the program for planning purposes. We've done that for a couple of years. Well, the idea was to take that one more step and go ahead and organize, and actually manage the place, the way we'd been planning. The directors got together and worked out most of the difficulties, and we began to proceed with the reorganization. In the last analysis, we decided to go to five directorates and two technical centers, which represent smaller efforts than a directorate. So we've done that now.

We've consolidated the Weapons Technology and the Materials Directorates into one, called Weapons and Materials Research, at Aberdeen. We consolidated the Sensors Directorate and the Physical Sciences Directorate into a Sensors and Electron Devices Directorate at Adelphi. We put several pieces together into the IST

Directorate, the Information Sciences and Technology Directorate. We added to that what had been the Battlefield Environment Directorate and a piece of ASHPC. In fact, about half of ASHPC. The simulation work and the work down at Georgia Tech was all put into IST. We are continuing to call that IST. HRED and SLAD were not changed. There are two new centers. One is Vehicle Technology, where we combined NASA Langley and NASA Lewis, and the other is the Corporate Information and Computing Center (CICC). The head of that will be the Corporate Information Officer. That's a combination of high-performance computing, technical computing and all the supports that go with that, and business computing.

In addition, we agreed to rearrange the staff—the administrative and support staff and the central corporate staff—under a Chief of Staff. That meant stripping from the Director's Office the Special Staff, and most of the staff under Bruce Fonoroff, and putting them under a Chief of Staff arrangement. And to abolish the Operations Directorate. We have done that recently. A full colonel 06, Colonel Ora Williams, has come on board as Chief of Staff, and she is taking hold of all of the staff arrangements, with three exceptions: The EEO officer, the IG, and the IRAC (Internal Review and Audit Compliance) will continue to report to the Director. And Bruce Fonoroff retains the long-range planning function of John Holmes and the special projects with Ed Brown. The rest of the staff go to the Chief of Staff, and that includes Mike Kokinda, the budget and program folks; the international and tech transfer people; the legal office, Colonel Lundberg's folks; and external affairs. Maybe I missed a couple, but all that is occurring now. Colonel Williams just came in, a couple of weeks ago. She's just grabbing hold of all that. All the site operations will be under her, as well, and all the things that used to be under the Director of Operations, too.

Colonel Dunn was the military deputy here. With his retirement in June, that position has gone away, and I proposed, and had General Salomon's agreement, to create an SES-level Deputy Director position. That hasn't been done yet, but it is high on my priority list of things to do. In the meantime, I have asked John Frasier to assume the duties of the Deputy, although he's not formally the Deputy. We did all of that in the spring and early summer. I think I've covered all of the reorganization.

Where we are at the moment on all of that business is in a provisional mode, whereby all serious change actions, program changes, serious personnel changes, and so forth are to be reviewed within the framework of the new structure, even though legally we are still in the old one. On October 1st, we hope to go into that new organization and to have the information systems and program structure all realigned. That's a big job. We have written a concept plan and sent it in. We have the new TDA done.

I designated the people to run the new directorates where I could. I am designating Ingo May to run the Weapons and Materials Research Directorate, and have suggested that Larry Johnson be the Deputy Director, with an additional hat as director of materials research for all of ARL. In the case of IST, Vito DeMonte continues there. In the new Sensors and Electron Devices Directorate, I have no SES in that group. Clare Thornton was there, but he retired a year and a half ago, so I have to compete the temporary position. Right now, I have Walt Gelnovatch and John Miller, as a team of two, to manage it as a team. I've asked that we post an interim position at the GS-15 level just to take it forward while we wait for a posting for an SES. We hope we'll have a deputy authorized there for electron devices. The idea is to provide a focal point for the people moving down from Fort Monmouth, so they don't think they've been abandoned. I may or may not get the deputy positions approved for anything other than an interim basis.

Talking about people, we have some key changes here. I mentioned Colonel Williams coming in as Chief of Staff. I mentioned Colonel Dunn going out, retiring as Deputy. Don Veazey retired. Don Veazey was an SESer in charge of Battlefield Environment. He went out on the 1st or 2nd of July. He refused his transfer of function letter in order to be able to take an early retirement. That's a loss. Don was the leader of the battlefield weather program.

Moye: He'd been there quite a while.

Lyons: Had a lot of memory, had been promoting the concept of "owning the weather." Had gotten very close to the DCSINT in the Pentagon. So we'll miss Don. Sorry to see him go. He made that decision right at the last minute, so we didn't have a chance to give him much of a sendoff. More recently, John Frasier has decided to retire from the Army after many years of distinguished service. That's a severe blow. John Frasier is probably the most highly respected S&E in the Army Research Laboratory. Had been a leader of the BRL before ARL was formed. Performed yeoman service for me as both Associate Director for Science and Technology and de facto Deputy in many respects.

Moye: He'll be a hard man to replace.

Lyons: Yeah. We won't be able to replace John. He has a unique combination of technical experience and personal characteristics. He just told me this, although I knew he was thinking about it. He's taken a position as division chief of S&T with the Institute for Defense Analysis. It's a change of pace, and he thinks this will be the last job that he does in his career. He's eager to take a different tack, and he's been thinking about retiring for several years. So, he's

going to do that within about 60 days. Sometime in September. So I've got to think about somebody else.

Moye: Is that something that has to be competed?

Lyons: Doesn't have to be, if I have an SESer on board I want to move in there. I wouldn't have to, because you can move SESers around if you want to without competition.

Moye: Like general officers. They can be assigned.

Lyons: If I want to move one of my existing senior people into that job, I can, but I've to get the job approved as a civilian job. Now there is nothing. There is no category. So the first job that I have to do is get the system to create an SES position.

Moye: It seems like every time you just about get it together, something happens.

Lyons: It's frustrating. And the Army's SES system is so slow. We are about two cycles out of date now.

General Salomon retired. I forget whether we had that in here. General Wilson has taken hold and has visited with us here at Adelphi. Had a good visit with him here. We're going to have him up at Aberdeen for his second quarterly visit this coming Friday.

We have something cooking with him for tomorrow. He is going to chair a new organization that we've called a Stakeholders Advisory Board, which is an attempt on our part to involve the military side of the Army more in ARL. What we've done is invite all the three-stars that have any relationship to us, and that's most of them. General Wilson invited them to come over to AMC headquarters, where we have a big display set up, and I am going to give them a pitch on what ARL is. We hope to involve them in our future, so that we won't ever again have the DCSOPS propose to abolish the corporate laboratories without even bothering to talk to us about it. So that's going to happen tomorrow. The problem we are having with it is, it's the middle of the summer, and people are on vacation, and it is going to be difficult to get the principals together. But we will do all we can.

Moye: In a way, that's kind of a follow-on to finally being able to get General Anderson over here, I guess.

Lyons: We finally did get General Anderson over here. He came with Brigadier General Rose. Spent about four hours or so, I guess. I think that had good results. You never can tell, but he seemed to get really into it at various tour stops. Got excited about some of the stops. We also had the annual meeting of the AMC tech directors, constituted as the ARL Board of Directors. We had them up at Aberdeen in June, and I thought it was a very good meeting.

Showed them some of the things at Aberdeen, including the new Materials Building. I thought they were pretty upbeat.

Moye: Is Mr. Giordano here today? I saw his name on a parking space.

Lyons: He's visiting Vito about something, but I am not sure what. He's not on my calendar.

I attended a meeting of the tech directors at the AMC level with Mike Fisette the following day, so we had pretty good follow-up sessions with the tech directors. The Army Science Conference down at Norfolk was very successful. About 500 people there. Lots of good papers. We do that every other year. We walked off with the top award. We usually do. So that was a success, and a lot of our people were involved in that. I am just back from a meeting of the AMC Executive Steering Committee. We met at Huntsville last week. Good session.

We are losing our Installation Commander here at Adelphi. Major Lynn Westberg was reassigned to OPTEC (Operational Test and Evaluation Command) and is leaving this week. I pinned a medal on her yesterday. She's been great. She has a wonderful personality. She tackled a lot of sticky issues here, including most prominently, probably, the crisis in parking that turned out not to be a crisis, mostly because of the great work that she did in sorting all that out. That went unbelievably smoothly. We'll miss her.

Moye: A very large crowd at the farewell activity.

Lyons: Yeah? I had to miss that. I was in Huntsville. Did you go?

Moye: Oh, yeah. Very nice. Big crowd.

Lyons: Well, she's not going very far. She's staying here in the area.

Another thing that occurred this spring that was disturbing came in addition to the review by Mr. Decker, which led to some reductions in program funding and was based primarily on a drill we did for the Army Science Board. Somewhat earlier, late winter, the Science Board asked us to propose some reductions, or they were going to suggest them on their own. So we suggested some $45 million in reductions, hoping that it would never happen. Well, in the Decker Study, he asked for these attrition sheets, so we offered up some of the Science Board proposals for about $32 million worth. Some of that was money that was set aside for fed lab centers that didn't happen. Some of it was BASEOPS. Tried to do it so that we didn't lose existing programs. And some small amounts of programs, some $15 million or so. Things like the nuclear effects program, which I thought was overtaken by events, and some small pieces of the materials program.

We had just finished with that when the program objective memorandum drill, the so-called POM—which is really a technique for building a five-year budget outlook for '98 to '03—came along, and that turned out to be an absolute bloody exercise. In the POM were included all of these Army Science Board cuts that I mentioned, the $32 million that I mentioned, which we had to agree to because we had already told Mr. Decker we were going to take them. But on top of that, were another—depending on how you look at it—$20 to $40 million worth of reductions that we just hadn't anticipated at all. A big chunk of that was taken out of SLAD, in the out years, not in the first year. But by the year 2000, they were proposing to take out some $16 million worth of funding from SLAD, which is about half of their directorate—6.6 funding.

The reason for that is another one of these FAA studies or Science Board studies, I forget which, probably both, on test and evaluation. They have decided to create a single evaluation function in the Army under OPTEC, and we are to be cut back severely. Initially, now, we are transferring some 37 people to OPTEC by October 1st to help the Commanding General of OPTEC put together a new evaluation team. Also, AMSAA and TECOM are sending staff to OPTEC. But it's this down-the-road $16 million reduction. I don't know where that came from. It's very controversial, and people in the building don't like it, so it may be revisited.

But there was that reduction, and there were some other reductions that, as I say, ended up, depending on how you look at it, trimming out all the growth in the out years that had been put there in previous years. Flattened out all the lines. The bottom line is that we are going to be down $50 to $70 million by the end of that POM, if it doesn't get adjusted. We are beginning to hear about some adjustments. And one of the things I am going to show the Stakeholders Advisory Board is that cut.

Moye: That's a big cut.

Lyons: It is. It's a real big cut, and it comes out of the roughly $175 million plus $30—$205 million—in direct funding for the program. That's somewhere between a quarter and a third of the total. You have to worry how long you can be viable. Here we are building two brand new, big buildings, and I have this nightmare that they open these buildings and there's nobody left. I say that to people, and they kind of wince. There are BRAC expenditures, you know, over $300 million all together, including the buildings, the moves, the equipment, and all that business. And you wonder what is going to be left to look at, if we're not careful.

Moye: Are the Vision 21 people going to decide that for us?

Lyons: Well, the Vision 21 group, on which I served for a while, spent this past spring deciding to send Congress a report (which has not yet been sent), saying they would send them another report in about a year and a half. Preliminary stuff. The Lab Consolidation Study that is called for by law, the Authorization Bill last fall, is now called Vision 21, as you say. AMC is involved in that. Mike Fisette's involved. Dick Chait's involved at SARD. I've been involved and probably will be some more.

The question is, what further efficiencies, what further consolidations, what further savings in what we call infrastructure (which I think needs to be defined) can be obtained? And the suggestion is another 20-percent reduction over and above that which has already been done. However, the question is, can you count the POM cuts as your contribution, since they are not going to occur until the year 2000? Or do you take another 20 percent on top of those? It just never stops. Seems to me that anytime anybody gets a bright idea, they write in another 20 percent. That's the magic number. Well, my feeling is that ARL, being streamlined, being lean and mean, having two brand new research facilities, is in a good position and needs to see consolidation occur, rather than be shut down. So I am going to go into that drill with the view that, if they want to consolidate, here we are. Come on over.

It's true of the Army, too. I believe that the Army is going to get smaller than the 495,000 uniformed folks in the active Army. I just don't think it's going to hold. Everything I hear says that's going to go down another two divisions. And I'm afraid we will take a proportional hit there, too. The general officers are beginning to talk about this. For the last three years, I think, the public statements have been 495,000 as the rock bottom. I am starting to hear statements to the effect that, after the election, the number is going down. They have a strategy. If that is the case, that may be why the POM budget cuts were so severe. All part of the smaller Army.

One thing that did happen, and ought to be in the history, is that when this POM went up to DDR&E's reviewers, they sent it back and said we don't accept what you did to the S&T budget. We told you to keep it at 0 percent real growth and not to cut it. We want you to revisit it. So the Army is revisiting it, so it may be that the cuts will be partially restored, but we can't count on it.

The last couple of items. . . I think we covered most of it. By the way, you mentioned the MEA, the Management Engineering Activity, the manpower study. It's going on at HRED, but as far as I know, I haven't heard any noise from there. This is part of a study that began at Fort Monmouth, up at EPSD, earlier. It's part of a deal that the AMC Commanding General reached with Manpower and Reserve Affairs at DA level to try and justify our staffing levels. It turns out to be hard to do that for a research

activity. MEA, which is a function based at Huntsville, does this kind of work and is trying to figure out a different way to do a laboratory. They tried it on a couple of places, and they think it's going to work. I think it's probably not going to be a threatening activity.

Moye: I remember when USAMARDA (U.S. Army Manpower Requirements and Documentation Agency) came through in 1987 or 1988. You feel like you spend all your time writing these reports about what you wish you were doing.

Lyons: They look at research, and they can't figure it out. The whole system is designed for production—a factory, or a place like Social Security where they process so many forms. We tell them that you go by an office and the guy is looking out the window, he's still working. Thinking about the scientific problem, etc.

Moye: How many thoughts did he have today?

Lyons: Well, they've worked out something that really depends on our having well-documented allocation of resources against projects. If we can show that we have not only approval but documentation somewhere that we've done this piece of work for that customer for that amount of money, that's all they really want. We sent them to Mike Kokinda's shop, and I think that's what they are doing up at HRED.

The Personnel Demo Project is going to be published in the *Federal Register* this fall. We had a development whereby Ed Brown got into a dialogue with the Vice President of the United States over our lack of progress on the Demo at a meeting this spring.

Moye: So, that's what the phone call was about?

Lyons: Yeah. Ed went to a meeting over at NIH because of his role in GPRA and other reinvention activities. The Vice President gave a speech, and at the end, he said, "Any questions or comments?" Ed stuck up his hand and said, "How do we get the bureaucrats out of our way so that we can do this Personnel Demonstration?" The Vice President said to his staff, "Talk to that man, and fix his problem."

The result of that was a great acceleration of part of the Personnel Demo that we had approval on, but we haven't yet gotten the important waivers fixed. The waivers were relief from priority placement and high-grade controls and an end to our freezes. We got a little relief. The Deputy Secretary of Defense has said that the PPP should be run differently, so we have some say so in who gets reassigned to us. And there is a mechanism set up for appeals. So it's a little less arbitrary than it had been. We get a small amount of relief from freezes. We get essentially a delay line built into it, so

that, if there is an Army freeze, we won't get frozen for an additional nine months. A short freeze means you wouldn't get frozen at all, and a long freeze means you just get time to get ready. On high grades, I don't think we got anywhere near what we wanted. So we are still short on those waivers. Unless the Vice President's staff can help us, I think we will have to live with what we got.

Finally, for the record, there have been some changes in our boundaries here at Adelphi. First of all, we got a little buffer around the fence. I forget how wide it is, but a little buffer zone. And then, down at the back end of the property, earlier we had received the site for the Administration Building. We got control of the road, Floral Drive, all the way down to the old Navy gate. So we have control of access to the Administration Building. Then we got access to a piece of property on the back of the Navy site for our use. I don't know that it was transferred to us, but we got use of a site down on the back end of the Naval Surface Warfare Center that we can use until such time as there's a better use for it. For field work, or storage. It's a good deal.

Moye: I ride the shuttle bus back there. You kind of lose perspective until you see the map, you know, the angles and the distances and exactly what the property looks like. It seems so far away in a way, you know, where the buildings are.

Lyons: Well, the road wanders around in a way. Until I looked at the map, I couldn't figure out what it was doing.

Moye: It looks like the Food and Drug Administration is going to be your next-door neighbor.

Lyons: I guess they are taking the front end of the property. Going to tear down the buildings and build a new set. It's going to take them years. Then they were going to build another facility in the back end, and that one, I think, has fallen through. That's why we have access to this area. Then, in the middle, there are a lot of structures. There are a lot of buildings that are going to be abandoned. But there are three or four technical facilities that are still up in the air, including a nuclear simulator called Casino.

By the way, just for the record, Aurora is gone. I noticed the other day a picture of the cutting up of the oil tanks. Remember those two gigantic oil tanks? They are gone. Somebody took them away. I think what happened is they cut them on the welds and took them somewhere else. The building is virtually empty, so it is the end of an era. You sent me some photographs.

Moye: One of the guys got an article on the AP; it was in the *Washington Times*. . .

Lyons: It had a good run. Now if you go back there, what you see from the shuttle is a lot of mud all over the street. Digging trenches, and putting in utilities for the new Administration Building. It will be ready next spring. So there will be a mass migration.

Moye: A lot going on.

Lyons: Yeah. Oh, by the way, the building at Aberdeen is ahead of schedule. The whole BRAC process is working well. We've got people coming to Adelphi from Fort Monmouth. All that seems to be coming real well. Okay? There you go.

16 January 1997

Moye: I'm Bill Moye, the ARL historian. Today is the 16th of January. It's my pleasure, again, to be talking with Dr. John W. Lyons, the Director of the Army Research Laboratory. Good afternoon, sir.

Lyons: Good afternoon. A lot has happened since we last met on 23 July 1996. There have been people changes. There has been a structural change in the laboratory itself, which we need to visit. Then there have been some serious developments in the Army leading to something called the Army After Next. I want to talk about that, because I think it provides a new framework for us in thinking about our program.

Of course, there's the continuing saga of the creation of ARL, which I maintain is at least a seven-year exercise and, in some sense, a 10-year exercise. If you go back to BRAC 88, which was the first BRAC exercise, it suggested the closing of the Materials Technology Laboratory completely. That was revisited in '91, but a lot of other things were added in '91. The establishment of ARL itself as an entity was put into that BRAC package, along with consolidations, closing of certain places, and the establishment at Aberdeen and Adelphi of a new corporate laboratory for the Army. Now, here we are in 1997, six years after BRAC 91, and we're still working it. In fact, this week, the first trucks pulled up at Fort Monmouth to begin loading the equipment for the move out of Fort Monmouth. So this is a historic occasion. The staff are distressed, of course. Some of them more than others. They continue to resist the idea, and I have a last-minute congressional inquiry that came in early this week. We went through the same phenomena at Watertown. That all came out very well, actually.

I can look out the window and see the cranes still working on the construction here. We're about a year and five months from occupying the new Physical Sciences Laboratory here, and we're a very few months away, three or four months at the most, I think, from moving into the new Materials Building at Aberdeen. We're planning a ribbon cutting this summer, a dedication ceremony. We are also about to finish the construction of the Administration Building down at the east end of the Adelphi site. That's been under construction for less than a year, but will be finished within a year of its start, so we'll be occupying that this spring. That will shift the center of gravity a little bit on this site. A lot of the support staff will move down there. It has its own parking, so the parking facilities, which are now adequate, will be more than adequate when we get that done.

We have dedicated the High-Bay Facility, into which moved part of the old Battlefield Environment Directorate. That move was

completed last summer from White Sands, the part that was coming. We also moved a group up from Fort Belvoir last fall. There was a welcoming ceremony. The rest of the Fort Belvoir contingent, plus the Fort Monmouth group, will come over the next four and a half months, I think. By June, the relocation to Maryland from New Jersey and Virginia should be complete. That's the schedule.

Moye: Space in the building. . .

Lyons: We're renting space in Gaithersburg, which is 15 miles away at the most. It's a building that was already a laboratory building for Life Sciences, a private corporation. They got too big for it and are moving to a larger laboratory. We're moving in, and for the most part, it is ready. It was already a laboratory. We have signed the agreement with them. Well, the Corps of Engineers signed the agreement. We've been recapitulating a drill that we went through a year and a half ago for the Materials folks, as they moved into Chestnut Run. So in some sense, it's déjà vu—we've been through all of this before. We now know what's going to happen next. It turns out it's fairly predictable.

I think that the BRAC exercises—which I emphasize are a continuing journey—have gone very well in recent years. It's really one of the brightest spots in ARL history, that we've managed to stick to that despite all the vicissitudes of the budget and the downsizing and everything. The BRAC process, because of the way it was created by Congress, is fireproof. It just goes ahead. So we are going to end up with these fine laboratory facilities. The relocation will occur. It's been a question of expense. We'll be in pretty good shape in Maryland, I think, at the end of the process, which I suppose theoretically is next summer, '98. As a historian, you can probably draw a line somewhere there and say it's over. I know that it will be over when the BRAC money accounts are suddenly not available. When those are cut off, then you can say it's finished. But certainly before 2000. So, those things have been happening.

I talked to a group this morning. We had the annual meeting of the NAFIC gang, NAFIC being an acronym that's easier to say than to remember what it stands for.

Moye: There was an e-mail message on that. Nonappropriated Funds Instrumentality Council. Something like that.

Lyons: That's it. Instrumentality is the one nobody can ever remember. I was talking to that group this morning and indicating the importance of concentrating our efforts on improving the climate for work here. In this case, I was talking about the need to amalgamate the folks that come from all these places like White Sands and Belvoir, and Woodbridge earlier, and Watertown and down

from Fort Monmouth. This is becoming a mixing pot of a kind. Efforts of groups like NAFIC are very important. Just the welcoming exercises they've put on. They've got all kinds of things going on.

So, as I say, that's sort of the backdrop for all the rest of these things we're going to talk about. The BRAC process rolls on. John Frasier retired. John, at the end of his time here, was essentially serving as the Deputy Director. He went out at the end of August with a suitable ceremony. He served the laboratory long and well and was very, very well liked and respected by everyone. We were sorry to see him go. I asked Vito DeMonte to take the position of Deputy Director. He has been in that job since the first of September and is doing fine. I've suggested to Vito that he just stay there and keep on doing it. We asked Jim Gantt, who is based in Atlanta but was part of the Information Science and Technology Directorate, to take over on a one-year basis the job of director of that directorate. So Jim is up here a lot more than he used to be. You see him in the cafeteria all the time. I also competed the position for one year of the director of the new consolidated Sensors and Electron Devices Directorate and selected John Pellegrino for that position. Both of those jobs, the IST job and the SEDD job, are ultimately SES jobs. The competition would go into the SES venue. Also Colonel Williams came. I believe she had come when we met on the 23rd of July, but just barely. She has taken hold as the head of operations here under the title of Chief of Staff.

We reorganized last summer on an acting basis, but on the first of October, we officially reorganized from the earlier structure of 11 technical directorates to a new, streamlined structure that was first presented to the world in the review that we did for Mr. Decker late last winter [1996]. You remember from those notes that we secured his approval to go forward with that reorganization and some downsizing. So, on the first of October, we officially put five directorates into place: the Information Science and Technology Directorate, the Sensors and Electron Devices Directorate, the Human Research and Engineering Directorate, the Weapons and Materials Research Directorate, and the Survivability and Lethality Analysis Directorate. In addition to that, we created two centers that are smaller—one center is in Vehicle Technology, which is a combination of the two NASA collocated sites at Langley and Lewis. The second is a Corporate Information and Computing Center, which rolls up into one unit the business computing, the normal scientific computing support—including network services and PC support, and the like—and all of the efforts at Aberdeen that generally come under the heading of the Major Shared Resource Center, which is a supercomputing focal point for DoD and which also includes the high-performance computing center at the University of Minnesota. All that got pushed together in something we call CICC.

I made a couple of designations. I asked Ingo May to head the WMRD and Larry Johnson to become his deputy and also to continue to have cognizance over the materials research, wherever it is in ARL. It turned out that, just after I did that, Larry was asked to take a major assignment in heading up the weapons part of the new Future Combat System. I'll come back to that under the heading of the Army After Next. But that meant that Larry was suddenly doing a really major program management job in the tech base for a brand new system that's kind of a long-term program, which is very, very tightly coordinated with TARDEC (Tank-Automotive Research, Development, and Engineering Center). Actually, Larry's reporting to the technical director of TARDEC. So we have Larry and Ingo at WMRD. I've already mentioned John Pellegrino and Jim Gantt down here at Adelphi. Robin Keesee and Jack Wade were unaffected. I asked Bill Mermagen to worry about the CICC, and he's doing that. I asked Wolf Elber to head the new Vehicle Center.

In addition to that, the rearrangement of the support staff under Colonel Williams as the Chief of Staff occurred, and that meant that we moved a lot of functions that had been in the Director's Office over to the Chief. And in particular. . . Well, it's easier to say what we didn't move. What we didn't move is the EEO office, because of the very strong emphasis on EEO in the work environment here last year. We didn't move the IRAC, the auditing function, or the IG. I kept Ed Brown in Special Projects, and I kept John Holmes in corporate planning. Those groups continue to report directly into the office of the director. Everything else was rearranged under the Chief of Staff.

Moye: You had operated, obviously, under a different system before. Does this seem to be fitting your style, as it were, as well?

Lyons: I think so. The sticky point probably has been Michael Kokinda and the budget program shop, which had been under Bruce but is now under the Chief. There is a little bit of learning going on there, adapting. As far as I'm concerned, all the staff are mine. If ever I want to talk to Mike Kokinda, I'll talk to Mike Kokinda. It doesn't matter. I think some of the structural relationships below me are still settling out, and there's probably some pulling and hauling over certain things. For example, Tech Transfer Office was moved over to the Chief. We used to have a public affairs group in the office of the director. But the big one was the Budget and Program Office. As far as I'm concerned, it doesn't matter. I meet all the time with all these people. I did say that the head of the legal office, Colonel Lundberg, reports to the Chief of Staff, but he is my legal advisor. Similarly, the head of the Public Affairs Office is my public affairs officer. So we really have a dual relationship there. Furthermore, Mike Kokinda is my budget officer. There's no getting around that. We just live with some of these anomalies.

When I was over at NIST, we had things like that. The public affairs group was under administration, but the head of it was always responsive to the director.

So anyway, we've restructured. We've been running since the first of October. It seems to be working well. Some of the technical units are bigger than they used to be. I think that gives them a certain amount of independence that's probably good and healthy.

I mentioned the Decker study. These studies of restructuring and reorganizing, downsizing, and cross-servicing continue apace. There's something called Vision 21, which is a DoD study of the laboratory structure of the whole Department of Defense. That's going forward. At the moment, it seems to be emphasizing what I call cross-servicing arrangements, which could lead to the transfer of some groups. Cross-servicing is a bit like the old Reliance program, where two services get together and say, "We'll sort of stop doing this and give you our financial support. You can go ahead and do that area for us." I think there's going to be more of that in the future. That is still a very close-held drill, and actually, the draft report, which isn't due till next fall. . . I don't even think anybody's even started to write yet. Right now, we're in the discussion, bargaining, propose, counterpropose part of it.

The FAAs, the functional area assessments, are going through another phase. We went through one phase of that last year, which led to the Decker study. There's another round going on. I don't know whether we'll have to get involved in that or not, but probably.

The various waivers and the National Performance Review and the GPRA, the Government Performance and Results Act, that Ed Brown is working—all those things sort of settled down. We're not doing very much other than the continuing planning activities called for under GPRA, which we have made part of our regular processes. But one thing that's still ahead of us that does look as though it's going to happen is the Personnel Demo Project.

Moye: They've been doing their formal publications.

Lyons: It's about to go into the public phase. It was approved clear through the Army. It's about to get cleared out of DoD to OPM for a final approval. That is in the form, among other things, of a *Federal Register* notice, which has already been circulated here. You may have a copy in your file (I think everyone was supposed to) that summarizes what the plan is, and sets us up for a series of public hearings and a comment period, followed by a final *Register* notice. Then we start. Hope to get going on it soon.

We got a little flexibility. Some of the things we wanted, we were denied. We wanted lifting of manpower controls. In other words, we wanted to manage to the budget, not be told how many of this

and how many of that we could have. We didn't get that. We got a little softening. We were worried about freezes and high-grade problems. The high-grade one is the most severe. The system has tightened up on high grades, but we made our case on the Factor IVs. We got AMC to accommodate, somewhat, our needs for that. We have a lot of Factor IVs, far more than anybody else in AMC. We got well treated on that score. We were complaining bitterly about Priority Placement, but we got a little loosening on that one. I'm not saying that's fixed, but it's better than it was.

I have heard that SARD is beginning to talk about an initiative in the hiring area. They feel that the Army labs are all being affected by not hiring. We've been so long without hiring, and people are beginning to realize the system needs new blood, needs some ability to hire. It's not clear how they would allow us to do that without, at the same time, allowing us to get bigger. That means more money, and we don't have that. But at least taking out artificial controls might help.

Moye: Is Steve Saddow, in some way, sort of an example of some of this? I don't know exactly his situation, and I know there's competition.

Lyons: No, I don't think so. I think, if you had 15 Steve Saddows all in a row, all of whom left because of the climate, we might. Every once in a while, you lose a really good person, and Steve was one of those. On the other hand, it's going to happen. The question is, can you make a good hire next week to make you feel better, or are you just losing good folks?

This move from Fort Monmouth is costing us. A lot are resigning. Most of them are going to leave and not come, because of the terrific job market in the Fort Monmouth area private sector. CECOM has some jobs. They did some hiring about a year ago. So we will only get about 35 to 40 percent yield on that move. Whereas with Watertown, we will get about 60 percent. So we will lose a lot of good people in that move. Steve won't be the only one. We're losing Art Ballato, who is not going to move. He's an ST, one of our most senior people. So it's going to hurt a lot. But there's a particular reason, and it's not just downsizing. There's the move issue. Eventually, we'll lose Walt Gelnovatch.

I don't think of Steve as leaving just because of pressure on the system. Steve found himself a good opportunity where he thought he could get funded, get support, get into teaching. Maybe he likes Mississippi. I didn't get the feeling he was leaving on a sour note. In fact, he left with the hope that he'd continue to work with us as partners, so he left on a very upbeat sort of note.

Moye: Maybe he'll do a staff rotation or something.

Lyons: Maybe after a couple of years, he'll want to come back.

Moye: I thought maybe, too, it might be an example of what you were saying about the Monmouth people. There's difficulty, I would think, between the freeze and the high-grade and whatnot, and being able to offer the salaries.

Lyons: It's certainly true that you don't get rich working for the federal government. It's a decent salary, but it's not what you might get in the private sector. I'm sure there are a lot of factors. If you were looking at a move with the government and looking at all the things that are going on in the defense budget, you might decide to go someplace else, too. How terrible it would be to go down there, and then be faced with the downsizing.

Moye: Are these some of the reasons, you think, that SARD may be. . .

Lyons: I think so. The sense permeates most of the technical. . . well, all of it. The military forces are squeezing people out. They have a system that's designed to squeeze people up or out. They just ratchet up the pressure. But laboratories don't really have a well-accepted vehicle of that kind. That leads to RIFs. It's a brutal business.

In such times, it's important to sell the program to the best of your ability, and we have been talking about that for a long time now. All the time I've been here, we've talked about how we might sell ourselves to our customers and our sponsors in a more effective way. We've done some things, and I just want to touch on a couple. One is, we hired a professional public affairs person, Judy Johnston, who had good experience at the DA level. She, in turn, brought in, first Connie, and now Randi, to run Public Affairs. She also is experienced in the public affairs business. Judy is doing a series of things to enhance the message, and I think that's going to help. Secondly, we decided before the FAA and the Decker business last winter that we wanted to try to pull together a set of very senior military officers on an annual basis to present our program and present some policy issues and get their assessment, and in the course of so doing, get them more familiar with the laboratory. We ended up briefing this to Mr. Decker, and he thought that it was a great idea. General Wilson thought it was a great idea. So we went forward with what came to be called a Stakeholders Advisory Board. We had a meeting just about the time we had our last interview.

Moye: It was going to be like the next day or the week after or something like that.

Lyons: Well, we had that meeting, and some three-stars came. More, I guess, were on vacation, but we had a general officers meeting, and we did a show and tell. We had a set of exhibits set up in what

has now come to be called the "technology room" at AMC on the tenth floor. We first used it as an ARL show and tell. We talked to them about things like balance—short-term versus long-term program balance. We tried to stay out of the details of the budget, because that's really SARD's business. It's Fenner Milton's business, the business of the committees that they have set up in DA. But I thought it was worth asking the opinion of the officers as to where we have enough or too little or too much emphasis. By and large, they thought we should be doing more long-range. Of course, I told them I thought the corporate lab ought to be doing more long-range stuff. So we got some free advice supporting the idea of a little more long-range work.

At that meeting, I presented a chart of what I call "grand challenges." Turns out that the grand challenges and the Army After Next (ANN) concepts came up more or less together. I'm not sure whether it's an accident, or whether one led to the other. The Army After Next, which we may have talked about last time (but it was very early), is a question that the Chief of Staff of the Army asked TRADOC to think really hard about. What comes after this Force XXI or Army XXI? Army XXI, you know, is the shorter term or mid-term program to outfit the fighting force with digital equipment, communications, PCs, etc. By about 2005, they're going to get a corps fitted out. The Chief said, "What comes after?" We've got a lot of stuff out there, like the Abrams tank, that can't last forever. At some point, we're going to have a major obsolescence in all the platforms. Furthermore, the whole world is changing. We probably aren't going to fight the same way. So, what is the Army after Force XXI?

We went to some meetings, and eventually, during the summer, it was decided that the Army Research Lab should be the focal point and the contact point for AMC with TRADOC on the subject. Furthermore, we were to reach out to the Medics and Corps of Engineers and the rest of the Army, so that we could actually represent the whole Army technical community. By the way, how about industry and academia? So we got the job of trying to throw a rope around all the technology community and somehow orchestrate that interface with TRADOC. TRADOC people are nontechnical, or not particularly technical. So this was a. . .

Moye: A big job.

Lyons: A big job and a difficult job, and it started off a little rocky. TRADOC didn't really want advice from a lot of techies. They wanted to keep us at arm's length. They thought they could do it themselves. They got into trouble because, early on, they started making statements that the Army in 2010 wouldn't need any fossil fuel. There are a lot of people that would like to run on hydrogen fuel, but some of us started telling them that may be so, but it is

part of 2050, not 2020. Furthermore, you've got to have the whole commercial world probably change over in order to make it feasible for the Army. Maybe you shouldn't talk about getting rid of fossil fuel. How about we just talk about using a lot less? So it came to be the fuel efficiency thrust, instead of alternate fuel. There was a series of those things. They wanted a magic battery that lasted forever without constant recharging. Again, we sort of tempered that. Eventually, we gained their trust, and sort of earned our way into the inner workings.

The AAN is a process. It's an annual cycle. General Reimer charged them with doing 10 annual cycles of work. Each year, there's a combination of war games and seminars and workshops and whatnot, leading to an annual summary for the Chief. They made the first report in June of last year, and the next one is this coming June. There's a winter war game that runs this month, January. There's a tactical war game that preceded it in November at Fort Leavenworth. There's going to be a technology workshop in March. Then a big effort to write this report. In the middle of all that, TRADOC is trying to put together an organization. We are now the technical team for the winter war game. We will be on site at Carlisle with folks to answer questions and coordinate.

What has to happen is, some of this stuff will have to go into the budget. I got into this because I wanted to explain the grand challenges. When I brought in the stakeholders, the Army After Next was lifting off the ground. The Chief had accepted the first report. TRADOC was wrestling with how to do all these things. I had distilled out of that, plus what we were doing, five major thrust areas, which have been adapted since that time to really fit the Army After Next, and they are all long term. We are proposing in the budget submitted this year to begin to take initiatives around those thrust areas.

There are five of them. The first one relates to weapons technology for the Future Combat System, which is whatever is going to replace the tank. The second one has to do with platforms being lighter, more fuel efficient. It's a comprehensive one that will fit under a number of different goals, but certainly fuel efficiency is one. It has to do with logistics, and how they relate to the platforms. The third one is to improve the commander's situational awareness. That's the digital component. The fourth one is to improve the commander's decision making, which means to try to get a better understanding of how decisions are made and, therefore, how to tailor the systems so they play to the commander's strength. The fifth one is how to protect these digital systems, because they're very vulnerable. You read in the paper all the time about people breaking into computer systems. We need to defend the equipment.

Moye: In the new *Defense News*, they mention a DSB (Defense Science Board) study on information warfare or something apparently dealing with some of these issues.

Lyons: And they're very worried, because we're very vulnerable. The more of this stuff you field, the more vulnerable you can be, so there needs to be a companion effort to make ours less vulnerable while, at the same time, learning how to get at the other fellow. So there's always the offensive as well as the defensive.

Anyway, with those five, we can get just about anything we do under one of those five. So it's turning into a powerful organizing principle for us. It's probably the best thing that's happened to this lab in a long time. When General Reimer comes here in February, we'll use that as the way to focus the visit.

Moye: So the focus of that visit would be, in essence, how what we're doing under the grand challenges fits in with the Army After Next.

Lyons: Anyway, that's some of the technical stuff. As you collect up evidence of what we've been doing, a lot of it should fit under the grand challenges.

Moye: If I could ask just one thing real quick. You mentioned Dr. Gantt in IS&T. I am not quite clear, but I hear talk about some fancy, new facility that he's putting in, video teleconferencing, something called a wall?

Lyons: He's got a double or triple lab module down on the third floor, where Phil Emmerman used to have a lab that backed up to a robotics lab up in that area. We used to take visitors there all the time and show them about battlefield visualization. Now, he's cleaned out a stack of labs, put carpet in it, put a lot of work stations along both walls. On the back wall, virtually the whole wall, not quite, is going to be a set of, I think, two or three very large projection display screens working off Silicon Graphics. The computers will be in the room behind it. So you could pretend you're in a military intelligence meeting space. They've set this up to do research, but also to talk to visitors and display what research we're doing.

I, of course, have to mention that we've celebrated the ENIAC all year long, and we had the functions in the fall that you know all about. One was the stamp issue at Aberdeen in October. We had, I guess, what was a typical Post Office (but atypical for us in the Army) ceremony issuing the stamp. Had an appropriate ceremony for the stamp collectors and so forth. Then a month or so later, we had our own symposium and called back all the living graduates of the ENIAC era, those who worked on it, including Herman Goldstine, who was the original project officer and in some sense,

the guiding light for the program. Gave him a parade and a medal.

Moye: We gave him one, and the Ordnance School gave him one.

Lyons: We had a ceremony and combined that, rather neatly, I thought, with a ribbon-cutting dedicating the new Major Shared Resource Computing Center and had a lot of talks from old and new participants in the computing business going back the whole 50 years. We had the family of John von Neumann. It was a great time. I think Paul Deitz deserves a lot of credit. I know you worked on it, Bill. Press coverage, articles. I think everybody who was involved with it had fun. I think we really did it right.

Moye: It was nice, sort of warm. . .

Lyons: It was a good job, and a lot of people get a lot of credit for it, but people tend to forget. It raises a question. People keep saying to us, "What are we getting for our investment in the technical base?" It's a lot—$1.1 billion was spent in the Army labs, 6.1, 6.2, 6.3 accounts. ARL has an annual budget of something like $400 million, if you count the customer money. So the officers, who are under incredible pressure to cut the military funding, want to know, what am I getting for the money we invest in all this lab stuff? And I say, you got the computer, for heavens sake. You ought to be satisfied for at least a century. Well, that doesn't work. We did that in WWII.

Moye: "What have you done for me lately?"

Lyons: Not only lately, because I could tell them what I did for the last 20 years, in terms of a platform like the M1 tank. We did that coffee table book, *ARL Within*, that talks about a set of platforms and the technologies that were put in all of those. You can go back and do the history of the kinetic energy penetrator to show how that started, probably 20 years ago, with the basic research phase. It sort of grew out of the ballistics family of technologies. You are able to draw out the various specific products from those sets of expertise.

More recently, we drew out of that gemische the GPS registration fuze. John Eicke, who has all sorts of background, just sort of did that. Much to the amazement of most of us. More recently, I was down there in his lab, and he was talking about countersniper devices to detect snipers using acoustical and IR devices. He's a smart buyer. He's not building anything. He's critiquing what's being offered by industry. Because he has this incredible background, he's able to steer the infantry in different directions down at Fort Benning. It's a wonderful example of the smart buyer role.

But anyway, they still say, "I really want to know, what am I going to get out of the current set of spending plans you have? What am I going to get tomorrow and the next day and the next day?" Well, the answer to that question has to be in the set of presentations marked, "For the Army After Next," and I have got to find a way to make a very persuasive tease, if you will. What I'm going to do for the Army After Next, and how, if we don't do these things, the Army After Next isn't going to exist.

I had an idea over the holidays. I came in here and said to the gang here in the office, "Suppose we did the equivalent of *It's a Wonderful Life* on the Army, and we subtracted from the history of the United States Army the Army Research Lab and all of its predecessors, what would you have?" Remember, Jimmy Stewart goes back to the town, and it isn't even the same name. . .

Moye: And they didn't save the savings and loan and various things.

Lyons: So, the first thing was, there wouldn't be any computers. This is a stretch, but if you did *It's a Wonderful Life* on the Army and you subtract out the computers, subtract out the photolithography, subtract out the penetrators and all of the armor that's on the Abrams, I think it would blow your mind. I said to Bruce or someone that it would be a lot of fun to do that. The next time somebody asks you what are you spending money on the tech base for, you show them the film. But it still wouldn't answer the question about tomorrow, and "Why can't I give you $400 million instead of $1.1 billion and still get what I need?" I'm not sure it's an answerable question.

I tried to tell the brass that the way this question has been addressed has been by a certain set of either economists or historians led by a guy named Ed Mansfield up at Penn, who has taken a look backwards and assessed how much of corporate profit making is due to investment in technology in prior years. Some industries, pharmaceuticals, for example, pour money into the tech base. There are certain others that may do less, but for a lot of industry—certainly in electronics, chemicals, pharmaceuticals—it's a very large percentage. But you have to do it over a very long time, like 20 or 30 years. Mansfield has published a lot, done a lot of analysis, and others have as well. If you get into that literature, starting with Mansfield. . .

Moye: I was just looking at a book. They did a conference of some sort down at the Brookings a year ago on this very issue.

Lyons: It's hard to do technology, because there's so much of it. Every once in a while, I'll put some in my *Focus* pieces, because I think the staff really wants to hear what the rest of the staff is doing. I don't have any way to organize it so I can get a quick summary.

I mentioned earlier, I think, the business of duplicating a military intelligence TOC, Tactical Operations Center. During the past year, we've taken down to Fort Bragg—to the 18th Airborne, an intelligence brigade down there—a set of advanced visualization software that they have incorporated into their standard operating procedures. I've been in the tent now a couple of times, and it's an interesting place to go because you see the noncomms running the different work stations. You see the officers briefing the screens for data. You see the CECOM people and the ARL people and the industry people all making sure it works. But it is an elegant presentation. The airborne guys presented it at the Joint Warfighters Interoperability Demonstration program, called JWIDS. It's the name of a show. They had it at Fort Bragg this past year. Briefed it to all the brass, including General Reimer. A lot of it is our stuff from IST by way of CECOM to Fort Bragg. It's going to end up, probably in another generation of the Force XXI, at Fort Hood. It's beyond what Fort Hood now has, but I think it's going to end up there in a year or two. So there's some nice work going on in visualization.

We got an assignment to do the weapons system for the Future Combat System. That includes the electric, as well as the electro-thermochemical, gun.

Moye: This is what Mr. Johnson. . .

Lyons: This is what Larry Johnson is heading, and he's actually doing it with TARDEC.

I have some other things. You mentioned Steve Saddow earlier, silicon carbide. That's wide bandgap semiconductors, in a general sense. A lot of applications of those, using things like silicon carbide and gallium nitride. That's coming along. That's still very much in the laboratory.

We've set up some new electro-optical facilities here. As the group came in from White Sands, we set up in the new High Bay building a set of laboratories that are really very elegant for adaptive optics, with Mischa Vorontsov and his colleagues who came here from New Mexico. We've also set up some optical tables here in the main building for the advance parties that Mitra Dutta brought here almost a year ago now. They've gotten well settled in the main building. So I think we're in pretty good shape there.

I know the other thing I wanted to say that's in the technology area: the federated lab was established in February of '96. Three consortia were set up: sensors, telecommunications, and advanced displays. During the past year, they've gotten going and done some work. We decided to have our first report out from the fed lab in January '97. That was in the form of three symposia, two days each, where the participants from ARL and from our

partners in the private sector are giving talks and poster papers and publishing them in proceedings. We've just finished the first one this week, over at the University of Maryland, and the subject was sensors. There were 150 or 200 people over there. The university handled it very well. Nice facilities. I thought there was a very lively spirit. The advantages of having people from leading universities and leading companies mixing with our people are obvious. It's just great. We have two more of these, one next week and one the following week. I hope that we'll be able to persuade the rest of the world on the advantages of this model. We'd like to do more of it, but we need to get some support before we can make any more changes. So we're entering the second year of the fed lab program.

19 May 1997

Moye: Today is the 19th of May, 1997. I'm Bill Moye, the ARL Historian. I'm talking again today with Dr. John Lyons, the Director, conducting one of our fairly regular journals. Trying to keep up to date. It's been a busy time.

Lyons: Indeed. I like to think about what we're doing here as a 10-year journey. In fact, I recently prepared a chart for the quarterly directors meeting, the third one in the year, Q3. We started this journey, I say, in 1988 with the Watertown BRAC decision, which was later modified in BRAC '91. It turns out that the playing out of all of those decisions will not be finished till pretty much the end of fiscal year '98, when the last of the new construction will be finished and moves into the new laboratory here at Adelphi will be completed. At that point, we ought to be able to say we've done all of those things. So it's a long journey. There are some indicators that suggest that we're very much still in transition, still in flux. I want to try to touch on those as we go through this session.

First, let me talk about the BRAC construction. The building at Aberdeen is really a wonderful structure, very impressive to view. It is essentially finished. They're still landscaping outside and doing some painting inside. We have been moving in there for the last month or more.

Moye: It seems to be going well.

Lyons: If you go up there, there is a parking lot and our staff are parking their cars there. But there are still construction people around. I suspect there will be some construction people there probably for six months, doing punch lists and so on. But you can pretty well walk through the whole structure and get a very good picture of it. The interior is finished, mostly. So we're now in the midst of a migration from all of the places where the materials people have been working, Chestnut Run being the biggest place. But there are some at Johns Hopkins, and some at the University of Delaware, and there are some out on Spesutie Island at Aberdeen. They were pretty well dispersed, and now they're coming back together and moving in. We'll cut that ribbon about the time we probably have our next interview, sometime in the summer. July 29th, I think, is the date. So that's one.

The second BRAC project that's just finished is the new Administration Building here at Adelphi. We're moving into that. It's essentially 99 percent complete. So there's a migration of administrative staff from the laboratory buildings at the center of the site out to the rather remote Admin Building. That frees up space for a lot of moving of staff around within the lab buildings here at Adelphi. In addition to that, a group of folks from Fort Belvoir is moving here this spring and summer.

And the Fort Monmouth laboratory officially has been closed, although some people are still up there. But they're moving down this year, despite the fact that the new laboratory building here won't be ready until next year. Sound familiar? It's exactly the same thing that happened with Materials, and it's all because of interference in the original BRAC process by the powers that be. Delayed everything a year. Yet the BRAC decision package says the move from Fort Monmouth occurs in fiscal '97, so we're doing it. We have established temporary or swing space at a leased facility in Gaithersburg, space that had been used as a laboratory by a biologically oriented company prior to our going there. That space is very serviceable, and we'll do fine for one year. So we've got people who are going there for a year and then coming over here. I think it won't require a person to move their family twice. Whereas, in the Materials case, some of the people are actually moving quite a distance from Chestnut Run to Aberdeen. Some of those people elected to get into family quarters up there and, then, move again. It turns out we have to pay that bill. It's a fair amount. So that's where the BRAC stands.

We are losing a higher percentage of people from Fort Monmouth than we did from Watertown. And we're losing some of our top people. That, I guess, was predictable. The job market is good up there. CECOM remains open at Fort Monmouth, so there's a chance to move over. Things weren't quite as easy at Watertown, so we had a higher percentage of people making the move. The job is to rebuild that expertise that we feel we absolutely have to have. That will take quite some doing.

The BRAC story is, by and large, a very good one. Once we got it launched back in '94, it's come along very well. The new Physical Sciences Lab at Adelphi here had a topping out ceremony last month. They're now beginning to close in. There's a smaller BRAC project down the road here, a nonmagnetic facility for what we call scale model work.

Originally, it was to be used by the SLAD group for modeling the effects of EMP at a very small scale. Now we're going to use it a little more for command and control protection. How do you protect the information systems on the battlefield from being deliberately upset? Defensive information warfare is another term. So we'll convert that facility to that kind of an emphasis, which is very, very important and represents a severe problem.

Incidentally, while I'm down there mentally, the big nuclear simulator facility has been emptied out. We've talked about that before, and that's Aurora, but we now have an interesting project in there. We're using the space for testing things like the effect of electromagnetic radiation on electronics, and it's turned out to be a nice facility. It's got big, thick walls, so it's not subject to either

leaking out the radiation or subject to outside ambient waves interfering, so we're using that facility.

Moye: That's the high-powered electronics or microwaves?

Lyons: Yeah. Well, there are actually two programs. One of them is open, and the other one is black.

The effect of downsizing continues to be very, very serious. We meet today as the Secretary of Defense is releasing the Quadrennial Defense Review (QDR) findings, which have been rumored now for about a week to include considerable reduction in the uniformed strength of the Defense Department and also a large additional reduction plan for civilians. That won't be final, I guess, till the end of the year, because Congress decided to set up another panel. In addition to the Congressionally mandated internal review, which has just been completed, there's now an external commission that's going to meet and review all of that and see whether they agree or not, and they don't have to report until Christmas. So we're going to wait for the next six or eight months.

Moye: I guess he's proposed two new cycles of BRAC?

Lyons: He's proposed additional BRAC processes, arguing that we still have too much infrastructure. We need to close more bases. The only way known to man to close bases is under that rigid BRAC process. So he's asking for that. That's not a surprise. I've been involved with the Vision 21 study with R&D and test and evaluation, where we're supposed to get the infrastructure costs down by 20 percent or so. The only way to do that is to have a BRAC-like authority for the labs. A lot of people have been talking about the need for BRAC. It takes legislation, of course, to do that, so we have to wait and see. But I think it's probably likely. We still have an awful lot more real estate around than we really need.

But the effect on us is a little different. ARL oscillates back and forth between control by budget and control by spaces. At any particular time, it might be one or the other, but our sources of money have been going down in parallel with the allocated ceilings for staffing strength. This year, we are just now at the end of an open window for early retirement incentives. In fact, I just reopened it for another month, so we'll have another open window for VERA/VSIP from now to the end of June. The 20th of June. The reason being that we can't carry the staff we have. We don't have enough money to pay for the staff. Originally, I thought that we might actually have to run reductions in force across the whole laboratory. Now it appears we had enough attrition, particularly at Fort Monmouth and with VERA/VSIP (we had over 100 takers for VERA/VSIP), that we may not have to have much, if any, reduction in force, except in the support areas. The support areas are still about three dozen over an acceptable

level. We've reopened the window, hoping to get some more voluntary takers, but we're probably going to have to run a RIF.

Moye: As a support person, we're trying to encourage folks to get away from using the term "burden" and to use "laboratory service share" or something that seems to be more positive.

Lyons: Yes, I noticed that at the Q3. The Chief introduced that term. "Burden" actually is a budgeter's term. I use "overhead." I've always used "overhead." I'm used to that. Overhead in the private sector. Overhead in the Commerce Department. Technically, here it's general and administrative (G&A). But "technical support services" is fine. It sounds a lot more positive than "burden," which gives a picture of Atlas with the world on his shoulders labeled "G&A." The Atlas would be the tech staff. That's not fair. The place can't run without the support staff.

One of the problems that we have—and I'm now being frank and candid—is that when people talk to you about your so-called "infrastructure" (they use that term) and say that it's too big, they put dollars on it. That comes out of another subject, namely the status of SLAD. We are getting a lot of cheap shots about the size or the number of dollars that we show in our accounting statements for the infrastructure costs. Nobody ever asks whether the quality of the support is good, bad, or indifferent. They look at the absolute number, and they've got something in their head that says it's too high. They compare the laboratory with, say, the test and evaluation programs, which are totally different. We're talking about apples and asparagus. There's no relation. Anyway, they talk about our overhead being too high and we better get it down and better keep up with the loss of technical staff, at least proportionately.

Fact of the matter is that our personnel services, right now, are broken. That's caused, in part, by the regionalization. The Army didn't get the process in sync so that they could pick up the load at the regional center, so we're left with it broken here at Adelphi till September. We just don't have enough people in personnel to service us. By the same token, procurement has gotten cut to the point where its lead times are beginning to rise. I think you can describe procurement as probably broken. Curiously, the best of the services right now happens to be DFAS (Defense Finance and Accounting Service), which we've been roundly condemning ever since it was formed. It turns out that travel vouchers are being processed really in almost instant time. It's amazing. But anyway, people don't ask you about the quality of the services. They just want to know how many dollars you're spending.

A laboratory like this is an expensive place to run, especially this one here at Adelphi, where we don't share it over a very large

population. A lot of the infrastructure costs are fixed costs here. Telephone, lighting, natural gas, all that kind of stuff is going up steadily, not spectacularly, but it's going up. So even as we're cutting down the staffing for support, these fixed costs are not only fixed but going up. So we have to run hard to stay even. These are controlled environment buildings, and they're expensive.

So anyway, probably this summer, we're going to get into a RIF mode. It won't be as large as I thought because of attrition, but there will be some reduction in force, and that's always tough. And I don't know quite where it's going to end. So that's point number two on the staffing and downsizing. Given the signal from the Secretary of Defense, who wants to reduce civilians by another tens of thousands, we assume that we will not stay steady even after this round. The question is, is it going to end before we disappear?

Moye: When ARL was being formed, there was a lot of argument about "critical mass." You needed a certain number of scientists, engineers, researchers, whatever, working together in one way or another in order to really get the synergy. We're heading for two thousand two hundred and something, and that's considerably below the figure that was being used in the discussion about critical mass.

Lyons: When I first came here about three years ago, I was asked that question. We were about 3600 when I got here. Had been over 4000. I was telling people I had studied some of the national laboratories and looked at their core work. There's something about 3000 that's typical of a government laboratory. That is, if you look at the core of even NIH, you find the central laboratory at about 3000. There are a lot more people in the clinical center and so on. NRL is not much bigger than we are. Of course, they handle a very big budget. A lot depends on the definition, but they don't get much bigger than 3000. So I thought 3000 or slightly bigger than that made sense. Well, we went by 3000 and never stopped. We got down to 2600 and thought we were going to stop there. We're now aiming at about 2250 or 60, and we're apparently not stopped there.

I think your point about the effect of having a lot of people doing a lot of different things is certainly true. You could boil ARL down to one or two subjects and end up with nothing but ballistics. Then you do lose the accidental synergies from just being in the same place with a lot of others. Now whether you lose that, sort of in proportion, as you get smaller, I don't know. It depends a little bit on whether you knock out disciplines or just numbers of people in the disciplines. If you end up with a residue of a rather few but very bright people in a particular discipline (you would

still call it a discipline), you may be able to get a lot of that synergy with the smaller group. But I don't know; we're feeling our way.

One of the frustrating things about this whole business is that there is no scorecard that tells you when you're in danger of losing. I tried to say I thought 2500 was small enough, but without my having any control over it or hardly even knowing it, the money kept shrinking. We weren't getting the money we got the previous year. Funny things were happening to the money on the way to ARL. It went somewhere else. You know, the bill payer drills. All I know is we're getting smaller, and it will be very easy to hit 2000 and maybe go lower. You can point to very fine corporate laboratories in industry that are less than 1000. I don't know if you can make anything out of that.

The question is what does a soldier need, and the soldier needs a lot of different things. He's not a single-product customer. He needs all his individual things that he gets largely through Natick. But he needs guns and bullets and a platform and so on. You can't cut that stuff out.

The one thing that has helped us is that it seems like if you look at the external component of the lab—three and a half years ago, Clare Thornton at ETDL (Electronics Technology and Devices Laboratory) had an external program that was mostly people coming in to Fort Monmouth and using his equipment. You look at the so-called open lab, and it was mostly work coming his way, people coming in to use his very good equipment. When I got here, we started to talk about the other direction. We opened the laboratories up, and we encouraged people to go out. Then the fed lab came along, and that was an organized effort to go out and, at the same time, encourage our staff to go on rotation. So some of our effort now—in fact, a fair amount—is outside. It's not here anymore. It's in fed lab. It's in the E-gun program in Texas; it's in the high-performance computing center at the University of Minnesota; it's in Clark Atlanta. It's in the two cooperative agreements with local universities. We have one in microelectronics and one in materials, plus the three big federated labs. So it was a fair chunk of work that's no longer here. I have told General Wilson that I want the new building filled. We don't want an empty floor.

Moye: One hears rumors about looking for some sort of cooperative arrangement with somebody to at least use some of the facilities.

Lyons: I think so. I told him, "No matter what, sir, I'm going to fill the building. I guarantee you Aberdeen will be filled with ARL staff, because there are plenty of folks in old buildings that we can consolidate." Down here, it may be that we want to bring in some of the partners that we have already. For example, I understand one of the partners is interested in using some of the space. That

got General Wilson's interest, and he told General Reimer about it. Now General Reimer wants regular updates and so forth. I think I frightened General Wilson by giving him the impression that there was a chance that we'd have brand new buildings and no staff. What I was doing was trying to extrapolate the downsize to zero staff. You have this wonderful infrastructure, and nobody to use it. I'm not sure he quite got my point.

When we talked in January, had we already had the symposium?

Moye: I think we had done one, and the other two were coming up. It was right at that same time.

Lyons: They were very successful, all three of them. We're going to do it again next year. We may combine them into one grand symposium sometime. I think fed lab is going well. We've got at least 20 percent of the involved staff on rotation, so I think that's successful. I went down to talk to a Senate staffer last week, and he was very interested.

In terms of the program and the things that are driving us, I'd like to spend a few minutes talking about the Army XXI. Now we have something else called Army 2010 and the Army After Next, so we really have three of them. Army XXI, which came to be called Force XXI and, then, Task Force XXI. The last named refers specifically to a brigade-sized effort. Task Force XXI is now over.

Moye: That was the operation out at Fort Irwin.

Lyons: What they did was they took a brigade out of an existing division at Fort Hood and designated it as the Experimental Force. The idea there was to take pretty much existing technology and actually bolt it onto the platforms. They called them appliques. So you took computers and things like that and bolted them onto the M1 tank and the Bradley and the helicopters. The real trick was to get an architecture for networking all of that together so the force could take advantage of it. They put all of that stuff in at Fort Hood, and we [ARL] got somewhat involved. CECOM RDEC was deeply engaged. Since this was existing technology, and our role is to develop the next generation, we weren't involved all that much. Then the Army trained with it at Fort Hood. Of course, the concept kept growing, and they kept adding stuff.

Then they took the whole kit and caboodle out to the National Training Center (NTC) and fought the Red Force with this current technology. They were out there, I guess, for a couple of weeks worth of battles. I went out with Vito DeMonte to look at it. Every general officer must have been out there at one time or another. Politicians, four-stars, retired, and so on. Every time they had a fight, they'd have an out briefing that afternoon. I sat through one of those, and the lessons are now coming out, after action studies.

A lot of detail work. OPTEC, the Operational Test and Evaluation Command, monitored all the action, and they have that on tape. There are some lessons from that, which we're incorporating in our forward-looking research. The general feeling is that it was successful—that the Blue Team, Task Force XXI, did much better than expected against the Red, because they had the advantage of knowing where everything was. Also some glitches. Those glitches, of course, attract researchers. We had specifically set up our IMETS (Integrated Meteorological System) team, the latest in weather forecasting. And IS&T had all its latest decision tools, and so forth.

Moye: Is that pretty much the same thing as in Bosnia?

Lyons: Pretty much. Yes.

SLAD had a team out there looking at vulnerabilities of the information setup. We've been working all along for electronic warfare people in the Pentagon. When this came up, we were asked to go out there, and SLAD sent a small team just to look at the vulnerabilities. They had, in fact, left by the time I got there. So they were involved.

IS&T had technology that they had been developing jointly with CECOM, testing it out at Fort Bragg for about a year and a half. That was taken out to NTC. It was not in the box, but it was set up at NTC for use by the division leadership. This was a brigade exercise, so division headquarters was outside. But as they planned each brigade battle, the brigade commander would come in and powwow with the division commander. They were using the absolute latest intel information displays (research prototypes), such as we have now in the Value Center here. They had that set up in a division tent. They had it hooked up through Edwards Air Force Base to some satellite feeds. That was very, very well thought of. It's going to be an integral part of the next exercise, which is this fall, a division exercise. So that work has been highly successful so far.

For about a year, we've been working with TRADOC on war games for the Army After Next. After you and I talked last, there was a winter war game up at Carlisle. Joe Rocchio from my staff was an integral player in the technology component, which was not actually a war game, but sort of a support function. That led, in turn, to a technology workshop that TRADOC held down at Fort Monroe. That, in turn, is leading to the drafting of a chapter in the AAN annual report to the Chief of Staff. Joe was down there Friday working on the draft report. It's led to some other ideas that he's now working on.

I would say that ARL has gotten itself very well placed in the Army After Next exercise. That's important, because the Army

After Next sets our plan for really long-range stuff. I think that has gone extremely well. Joe has worked awfully hard at it. He's involved in a lot of other things. It's not been easy, because the first thing you have to do is develop trust within TRADOC, who initially thought they could do all this themselves. So we had to build a lot of relationships, and Joe has done this.

Now, to shift gears to personnel-related things, you know that Vito DeMonte has offered his retirement papers and is leaving this week.

Moye: It will be a big loss.

Lyons: He's my deputy, my second one in eight months. John Frasier left in September 1996. These are great losses, indeed. Now we are going to advertise for a permanent deputy. The papers were perfected earlier this week. I'm going to ask General Wilson if he can't somehow get me a fast track for the deputy. We have four SES positions to fill, the Deputy Director, the head of SEDD, the head of IS&T, and the deputy of SEDD. They're all four SES positions. But of those, the one I absolutely have to get fast is the Deputy Director. I've decided not to put anybody in that office temporarily. We won't have an acting person. We'll spread the work around until we get somebody. So that's a loss. Makes us very thin in senior management.

Moye: He was such a good spokesperson, too—outside.

Lyons: Vito is a very agreeable sort. He has the right characteristics. Gets along well. So we'll miss him a lot. I'll miss him as a friend, and I'll certainly miss him on the hard problems. All the hard problems, of course, got dumped either in my lap or his. To the extent I can, I push internal issues off on the Deputy. So I'll miss that. So Bruce and the Chief and Joe Rocchio and I will have to hang on.

We're also losing this summer Jerry Iafrate from ARO. Jerry offered his retirement a few months ago, gave us a lot of notice. We're now looking at seeing if there's somebody within the Army that can replace Jerry. I don't know what's going to happen. We'd like to get closer ties to ARO. ARO is important. Jerry has been very active with us in the Army After Next exercises, very active. So we'll miss him.

Right now, we're also looking at a really large turnover in general officers all over the Army. It seems to me larger than usual. Most of the general officers in AMC are changing assignments one way or the other, except for General Benchoff and General Wilson. But the chief of staff is leaving. General Beauchamp is leaving. The TACOM commander is going there. General Brohm is going someplace, but I'm not sure where. General Glisson is moving to Huntsville. General Link down in Huntsville is coming up to be Chief of Staff at AMC.

Moye: Musical chairs.

Lyons: Musical chairs in that sense. Another retirement is General Hite out of Mr. Decker's office. Mr. Decker has left. He's gone. We don't have an Assistant Secretary for RDA at the moment. Dr. Kaminski has left the equivalent job at the DoD level, and I understand that the deputy secretary is leaving. Dr. Jones, the DDR&E, is leaving pretty soon. So there's a sweeping set of changes, which is not good. I mean you don't like not to have friends in high places. You work hard to develop these friends in high places, and all of a sudden, they're all leaving. Gil Decker was an extremely strong supporter of ARL.

Moye: He'd been out here a couple of times.

Lyons: Helped us out of tight places. Came to visit. He seemed to understand the issues affecting the laboratory far better than just about anybody else. Very warm to the corporate laboratory. So we don't know who's going to replace him. It will take time. With Decker leaving and the military deputy to Decker also leaving (General Hite is leaving in the summer), it's going to be pretty thin over there.

We're starting a second year of the Technology Assessment Board from the National Research Council. They reported formally and officially this winter on their first round. They were fairly critical. That's beginning to come back to haunt us, because people are suddenly finding that this report exists, and they're reading it and seeing the criticism. We decided we needed that kind of tough assessment in order to make sure we were working the problems in the right way and moving toward the goals at an acceptable pace. So we got some tough criticisms. Now people are saying, "Gee, maybe we ought to use that against them." So we are working, as we go into the second round, on trying to show our good things and exhibit noticeable improvement. I hope that will happen, because if we don't improve, we deserve bad reviews.

We also had, recently, a two-day visit from the Board on Army Science and Technology, another NRC committee. They spent a couple of days with us, trying to see what we are up to. I thought that went well. We have coming up now the Stakeholders Advisory Board meeting number two in early July. That will be important. That's a three-star, all-Army meeting. We're trying to build up their understanding of ARL.

The last subject I'd like to discuss is the review of SLAD that was held this spring under the auspices of AMC, General Beauchamp. The question was, what should happen to SLAD as a result of the rather substantial proposed cut in budget incurred a year ago in building the program objective memorandum? SLAD took a loss of 50 percent of direct funds over the POM. By the year 2000,

$16 million in funds are to be moved out. So the question was, how do we dig out from the difficulty that this creates for the Army? The Army took too much out. Jack Wade said, "So, we don't get the $16 million . . . here's what we don't do." A review team was put together to see if that was the best outcome.

That's when all this fussing started about our overhead rates, saying Jack is paying a lot of that money in overhead charges. If SLAD were located anyplace else, surely it would be a lot cheaper. So AMC had an integrated process team study it. There were various people who offered to take SLAD: "Isn't that nice? 375 people added, with no increase in overhead." It turns out, when they started looking closely, they backed off and said, "Yeah, we would need to increase our overhead." TECOM, AMSAA, and OPTEC, and a lot of people got involved in this study. After two different study teams, the conclusion was that the best thing to do with SLAD is to leave it in ARL and have ARL cut all the overhead it can. Get its support service budget as low as possible, and then the building people will look to see if they can find any additional money. We said we'd cut out $6 million in indirect overhead expenses in SLAD, and that's a lot.

That's why driving this current exercise in the support service budget was so important. We survived the potential loss by a lot of hard work by our people, but mostly Jack Wade, Jill Smith, and Bruce Fonoroff and his people. I got involved, and we fought off this rather strenuous effort to take SLAD out of ARL. Basically, we ended up with Walter Hollis and Herb Fallin strongly supporting leaving it alone. We carried the day, but in the Army, these things tend not to go away.

Moye: A lot of this discussion is obviously directed at costs. I guess there are different kinds. Last year, we were talking about the study that the Research Roundtable had done, which indicated that ARL was right in there and might be even a little below the industry average. Was that all kinds of research, all kinds of costs, as opposed to the specific kinds of costs of the things that SLAD does? Or am I trying to mix apples and oranges?

Lyons: In fact, I tried to use that study in the AMC drills. I don't know whether you looked at that, but the study said that we were below the average for government labs and university labs. Over in the corner was somebody with 10 percent overhead. Ours was 22 or something like that. The reaction I got when I put that study on the table was, "I can't see why you can't make 10 percent." In other words, they never looked at the average. They only looked at the outlier at 10 percent. I said, "I think that 10 percent reflects probably not really a lab, but a program manager shoveling money at somebody else. That's the only way to reach 10 percent." In other words, it didn't work.

As I indicated, our real problem is that we were being compared to the overhead at TECOM. TECOM is a vast, far-flung empire, with its test ranges and all. In fact, another problem with the overhead—and it probably belongs in the history—is that if you look at how the overhead accounts are expressed, at how TECOM expresses and charges its costs, and you look at how ARL does it, they are different. You cannot compare the two. It just makes no sense. TECOM does not show what I call a corporate G&A account. The bill for the people.

Down here, we have site and corporate. The upper-level policy folks—there's the Chief and there's my office—that's corporate overhead. TECOM has some way of charging that off to all the ranges so they don't show it. It's like being billed for two different services. They don't show any corporate G&A. That's just an artifact. It doesn't mean they operate any cheaper. It just means it doesn't show. So I tried to argue that. I said this doesn't make any sense. I finally picked on a particular item, and I said that this one is using standard double-entry bookkeeping, and this one isn't, and the two numbers are totally different. One is an increment. The other is a total. I said I think it's outrageous that you want to make a decision based on that kind of accounting. So General Beauchamp finally said that in another study they've got going here, with this so-called BASEOPS budget, that he would try to develop a single robust accounting approach to the problem. Well, he's going off to Detroit. It's a huge effort to change anyone's accounting system. So meanwhile, we're doing our technical work.

I should have mentioned this. Sergeant Major Thomas has been designated a Command Sergeant Major, and he has left us. So we're temporarily without a Sergeant Major.

We did have a ceremony at Fort Monmouth that I didn't discuss. I thought that went well, but it was rather subdued. Because the Fort wasn't being closed, there was no military ceremony like when you close a post.

Moye: Flags and bands.

Lyons: Watertown fired the cannon 21 times. There wasn't any of that. So this was a gathering of people with some speeches, and we had a nice lunch. But it wasn't something we could get a grip on.

Moye: Where are we on the continuum of becoming or developing a "one laboratory" mentality? I know it's difficult for people at Fort Monmouth who are seeing the place where they worked for 5 or 10 or 15 or 20 years changed. It's a big change in their lives, kind of disrupting. The Materials people have recently gone through some of that. I've heard some of this in connection with the new building. The people who came down from Watertown say, "They

closed the place at Watertown. Made us sit over here in Chestnut Run. Now you built this great new Materials Building, and those expletive-deleted BRL people over here are trying to take over our building." That's not the only example. Are we making some progress on that?

Lyons: I think we're making some progress, but it turns out to be slower than even I thought. I've been in this business a fairly long time, and I knew it was a challenge and that it wasn't going to be easy, but it's slower than we had anticipated. In a couple of ways. I talk about the culture of a research laboratory. There are really two different problems—one is the one you raised, which is, how do you go from seven different labs with their own loyalties and customs and so on to one? It's aggravated by the fact that they're not coming to one place. And how do you go from being a set of laboratories that were full-service, category-six places, like this place, which made fuzes sometimes in production lots, so they had 6.3, 6.4, and 6.5, back to an honest-to-God research lab? Which is probably the harder issue. In terms of getting rid of the identities of the seven original systems, I don't think we made any progress as long as we had seven sites and directorates matched closely to the original labs. Those were essentially the original pieces. ASL (Atmospheric Sciences Laboratory) became BED, but it was still ASL. And BRL was WT. When we switched last year to five directorates and two centers, I think we made a step in the right direction, and we started to break some bonds. By merging the group at Fort Monmouth with Sensors at Adelphi, we made a big change. Those groups didn't get along earlier.

Moye: I got some of that feeling up there the other day: "The people down at HDL don't quite understand what we did." As if this was HDL's idea. And this was from a guy who had worked with HDL.

Lyons: We're breaking that by the consolidation and by the restructuring we did last year. I think that's coming along, but it's going to take a while. The guy who says the GD BRL guys are coming in my building. . . that's the old way of thinking. In fact, what bothers me now is, that building is called the Materials Building when it's really a bit more than that. People don't want us to move things around, so the guy who says, "The ballisticians are here!" is right. In fact, the armor researchers—not the guns guys, but the armor guys—are really materials people. So it's perfectly obvious that we've got to take the materials researchers and the armor researchers and put them together in that building, and we're going to do it. I think it's a big enough structure to hold all the materials guys and then bring in the armor folks, too. I think that is a good thing.

The second part of your question or point I'm making. . . . in the TAB report, which I said was critical, they are using, as a standard, a research laboratory like NRL or NIST or NIH. We were something else. We're trying to become like these others. That was the challenge I was given when I was hired: "Make this place look like NRL." So I came here, I started talking about the kinds of metrics that would make you look like that: numbers of post docs, guest lecturers, publications, so forth. A lot of people who were in predecessors to what is now ARL said, "That's not what I do. I'm used to doing production work. I can't achieve those metrics, so I'm not going to get anyplace." A lot of people complained about that. They still do. I recently had a series of meetings in which I had to deal with that question after three and a half years of harping on it. I just wrote a column on that subject for *Focus*.

The TAB comes in and looks at staff and said, "Some of the work is great, and some is not so great. Some of your people don't seem to know what the rest of the technical research community is doing." Well, that's because some of our people don't do research. They do consulting; they do technical services support; they may do routine application of things we did in research years ago. I think that's okay, but our managers need to identify each piece of work. What SLAD does, technically, we don't call research. It's analysis. Except for the 6.2 computer work (Paul Deitz and his models), the big bulk of SLAD funding is not for research. That's 20 percent of ARL, and by definition, it isn't research.

Our problem is getting the rest of the other 80 percent to think of themselves as a research laboratory. I call that a culture change. To some extent, culture changes almost take a turnover of the staff. In the Army, if you want to get rid of a mind set, you almost have to move out a whole generation. I don't mean to be critical, but I was talking to people at NTC (National Training Center), and they said, "The older officers don't really trust computers. The kids do. Implicitly. Because they were raised with them." General Kern, the division commander, told me, "I can solve that either by training or by retirement." Either way, it's a turnover, and that's a 20-year kind of thing. I think it takes 10 years to build a research lab. I have told people, who have suggested that maybe we ought to take a pause in the research and go buy some trucks and come back, that it would take 10 years to restore a laboratory once cut. We're learning it's a long, slow process. Just when you think you've got it fixed, all of a sudden, here comes another eruption of complaints and fussing. So we have a ways to go. Are we nine-tenths of the way through a 10-year process? No, I don't think so. We're probably better than halfway through the process in terms of the cost of change, but I don't think we're 90 percent of the way home yet.

How's that for a stopping point?

25 September 1997

Moye: Today is the 25th of September, 1997. It's my pleasure again today to be talking with Dr. John Lyons, the Director of the Army Research Laboratory. We're doing one of our quarterly historical reviews. Good morning, sir.

Lyons: Good morning.

Moye: We last talked, I guess, in May.

Lyons: Yes. In fact, I just edited that product, finished it up on a trip that I took earlier this week. So I do remember pretty much what we had to say back then. A lot has happened, as usual, since May. I've been overseas twice in that period. I went to Korea in June. More recently, I'm just back from a trip to Israel. So I'll comment on those two as they relate in general to ARL. Also during this period, we've dedicated the new materials building at Aberdeen, which was a historic event. We have gotten involved with various studies involving our resources and our organization and our mission, culminating in a very serious discussion of what the Army wants to do in R&D arising from the pressures caused by the Quadrennial Defense Review, which is referred to as the QDR. That's another in a whole series of resource crises. I don't know whether we can put all that business in perspective, but I'll try.

We are now in the middle of a series of reductions in force. I have to say a series because each one of them is different in each site. Tomorrow is the last day of a reduction in force at this site at Adelphi. The one at Aberdeen runs a little longer, and the one at White Sands also runs a little longer. We're in the middle of that. It's painful. We don't necessarily get to pick and choose the people we retain because of the rules for seniority and bumping, so unhappy things occur. Unanticipated things occur.

Moye: The landscape will be different come a week or two from now, when all these people have done their bumping and retreating. There will be a whole new setup.

Lyons: In fact, maybe next week. The RIF here has finished, and the termination date is tomorrow.

Speaking of the landscape, the landscape here is literally changing, because they're building a parking lot out by the front gate. Taking out a lot of timber. That will be, I think, the last BRAC-related project on this site. It completes a rearrangement of parking that was necessitated by the construction of the Physical Sciences Laboratory behind the main buildings here. That eliminated, I think, 700 or so parking spaces. We have recreated those spaces in different places. We built a new parking lot across the bridge. We expanded the south parking lot, essentially rebuilt that.

Now we're creating a new parking lot on the other side of Floral Drive up by the gate. We will now have very adequate parking. I suspect the lot we built across the bridge will not be fully utilized except during a conference. I say that because the staffing at this site is going down. If we had it to do over again, we might not handle the parking quite the same way that we did. But in any case, it will be very comfortable for people to come and see us. Shouldn't have any trouble parking.

An interesting aside, speaking of the front gate, is the current controversy that's raging on the e-mail using the "Ask Dr. Ed" mechanism. People are complaining about a new traffic bump that was installed at the front gate, which is not the usual one. Evidently there are all kinds of traffic barriers or bumps. Some of them are very wide and very gradual. We're seeing some of those being built in Montgomery County, and they're 10 feet wide. They're just little gentle rises in the road. Then there's the kind of standard of traffic bump that you can go over. That's about a foot or so wide and is round. I find that a bump at 10 or 15 mph will not really cause the car a problem because of the shocks and suspension. If you like to experiment, you can find just how fast you can hit that without bothering you.

Then there's the one at the front gate, which is neither. It's at right angles to the traffic, because it's in fact two bumps and it's angled toward you as you come in so that the front part of these bumps is closer to your car. I mean the central part. And angled like wings. Furthermore, it's square, and it must be in the order of six or eight inches high. What you learn rather quickly is you better stop and crawl over it. And this has nothing to do with ARL history, but the staff are beginning to find that's a pain in the neck, and furthermore, they're complaining that it is such a bump that it has potential to damage the front end. I think most speed bumps do have the potential to knock it out of alignment. And so there's this debate about how severe it is and whether it is justified and whether we'll be able to change it. I find it amusing, and it gives the staff something to worry about besides these awful budget reviews. I see by your reaction that you're reading this correspondence.

Moye: It's interesting. . . it's a measure of something about the work force. It's a humorous diversion.

Lyons: There was another one about the new parking lot across the bridge. Last year, there was this big discussion about. . . what was it? The landscaping, planting of trees, or something?

Moye: There was landscaping in it. There was also something about the gravel, because as you walk up the sidewalk, I guess, you cross some of the construction area, and I think some of the people were having some problems.

Lyons: It took about six months to finish the sidewalk adjustments. I think they moved a light pole, and all kinds of business, all of which was lengthily debated on the e-mail. But that's okay. In fact, I think that's probably healthy.

Let me begin with a couple of meetings of clients, or stakeholders. The first one was in June, when we had the annual meeting here of what we call the Board of Directors, which is a misnomer. It is made up of the technical directors at the RDECs, plus selected others of about that same level, for whom we work directly. With the tech directors, we execute formal mini-contracts covering about half of the mission-funded work at ARL. That was part of the original construct, and I suspect we've talked about it before. These are called Technology Program Annexes. They're negotiated during the winter/spring months between the operating levels of the RDECs and the lab. There's also a master TPA with the test and evaluation community executed with Dr. Herb Fallin. And TRADOC sits in. They always send a representative. This is chaired by Mike Fisette, the principal deputy for technology at AMC.

We give a status report on ARL, we talk about the Technology Program Annexes, and we also normally present a result of a customer survey that we take just before that meeting. This year, for the first time, there were some negatives. The Sensors and Electron Devices Directorate was in turmoil during much of the year, as Fort Monmouth activities were shut down, and the group was moved down to the Adelphi area and put in various different temporary quarters waiting for the new building. That disrupted some work. But more importantly, what disrupted the work was that key people left because of the move. They either left the Army completely, or they moved over to CECOM or went some place. So they left the customers in the lurch, in some sense.

Customers aren't very sympathetic to our problems. They just know that their work was delayed, and they were counting on us. So there were complaints in the customer survey, some of them pretty intolerant, but some others understanding. So the marks for SEDD were down, which brought the overall average down. In the other parts of ARL, the marks were good. Anyway, that was discussed and, I think, appreciated. Otherwise, it was a good meeting, and they did not recommend any changes in the procedure.

There was some talk about whether the 50-percent number that was agreed to back in 1991 or so is still valid. The impact of the federated lab—does that get added to the computation or not? After some fairly brief discussion, it was decided to leave everything as is. We still believe that is a valid and useful tool to tie us to the RDECs.

Moye: The work that we do for the RD&E Centers has been and is supposed to be in the neighborhood of 50 percent.

Lyons: Of the mission money. For the purpose of this calculation, the mission money is all the 6.1, 6.2, and 6.3 plus SLAD, not 50 percent of the total. We have customer money that's not calculated. Of course, customer money is controlled by customers, anyway. Then there's the 6.6 money that goes to SLAD, which is more or less controlled by Walt Hollis and Herb Fallin. If you calculate that money plus the customer money plus half the mission money, you can see that short-term interests have an awful lot to say about what ARL does.

That is a concern that we raised with the second group that met for its second time, namely the Stakeholders Advisory Board, which first met a year ago. The second group had worried last year, really at our request, about the balance of the program as between short- and long-term work. They had expressed an interest in seeing more long-term work and had indicated that the Army After Next might be the vehicle to stimulate more long-term effort. I had told them last year that I thought there was too much short-term work. I still feel that way.

We didn't get into that so deeply this time. Instead, I talked to the Stakeholders group. I remind you that is a three-star panel chaired by General Wilson, who is a four-star, and it represents most of the Deputy Chiefs of Staff for the Army, plus the military deputy to the Assistant Secretary for RDA, Walt Hollis, and perhaps one or two others. It's meant to represent the people who ought to have and ought to recognize a stake in the long-term research program, and maybe don't. We thought that if they came together and heard the ARL story, and also were able to deliberate on some of the problems, that might increase the support for ARL. So in some sense, it's a marketing effort. At the same time, it's an information presentation vehicle.

So, for example, Lieutenant General Kennedy, the Deputy Chief of Staff for Intelligence, came for the first time, and she has a stake in our weather forecasting technology, as well as other things related to intelligence. She's very interested in all the sensors programs. She's interested in our work on the Tactical Operations Centers, especially the ones to be designed for intel people. She has a very substantial stake in that kind of work. She had come here before the Stakeholders meeting. Spent the day with us and saw a lot of technical work and then came back for the Stakeholders meeting and was very supportive. That's the whole point.

Moye: By "stake" and by "support," are we having any luck? Lieutenant General Kennedy, is she able to give us money to do the work? In other words, that example of weather—my understanding is a lot of that money and funding actually comes from the Corps of Engineers, at least some of it.

Lyons: Some money has come to us from her directly; for example, SLAD has been studying the vulnerability of the new digital communications in battlefield systems. That work has received money. I'm not sure of the source, but it was sponsored by a triad of the DCSINT, the DISC4, and probably DCSOPS.

The three of them decided the vulnerabilities of digital systems are considerable and are generally considered to be greater, probably because of the greater dependence on the system than was the case for the old analog technology. So those three groups got together and decided that they needed to do a lot of red teaming, and SLAD was asked to do some studies, and they did so. I think I probably mentioned last time that SLAD went off to the NTC—the National Training Center—and set up and did evaluations of vulnerabilities during the brigade exercise last February or March. So the answer is yes, the Deputy Chiefs of Staff can influence funding, either directly or by requesting that somebody else provide the funds.

Anyway, the Stakeholders met in July, and I presented to them the impacts of the QDR. Made a special presentation out of that. General Wilson sat through that. There was some discussion of the values of the corporate lab: Should we have a corporate lab, how big should it be, and what should be the target mission? I found that very encouraging. Those three-star-level people believe that we need a long-term technology program, that ARL is a key player, and that it ought not to be severely impacted by the QDR. They told General Wilson that. In fact, they suggested to him other targets of opportunity for budget cuts, apart from ARL. So that was a fairly uplifting experience for all of our directors who were listening to that discussion. General Wilson took that in and took it to heart. I know that, because he's fed some of that back to me since. I would say both of those meetings were positive events for ARL at a time when we really need such positive events.

Speaking of outside activities, the Technology Assessment Board that we set up with the National Academies has had its second round of visits and is now preparing its report. I haven't got the feedback yet on that, but I'm certainly hopeful that they will have a more positive view of our activities this year than last. We propose to continue doing that every year, so it's a regular event and shouldn't be considered to be a crisis, as it sort of was the first time. I think we're the only DoD laboratory that has that kind of detailed review, section by section.

In July, we dedicated the Rodman Materials Research Laboratory. It was a great day for the Army and for the Army Research Laboratory, and certainly for Aberdeen Proving Ground. We had an excellent turnout. We dedicated it to the memory of Brigadier General Rodman, who was at the Watertown Arsenal around 1860

or so and later moved out to Rock Island. He had command of Watertown which, of course, is the ancestor of the materials lab. He also did things in metallurgy and gun manufacture that made him well known. In fact, there was a gun named after him that was manufactured, and you can still see them in various places. I periodically hear reports from people who have been someplace and have seen the Rodman gun. Now there's a monument of some sort.

He was a remarkable, colorful sort of character. You run into his legacy at a place like Rock Island, for example. I think he designed many of the arsenal buildings there, and, of course, he built the Quarters One, which is still a spectacular residential structure. He got in trouble with Congress over some of his construction activity, but he built bigger structures as he moved westward. Unfortunately, he died out at Rock Island just before his Quarters were finished, so he never lived in the building. Anyway, he was a real character, and we named the building after him.

Then we ran down his descendants, and we had an interesting collection of them at the dedication, including a great-granddaughter, a 90-year-old lady who came. She was, in fact, very vigorous, and she engaged us in lengthy correspondence. I have I don't know how many letters from her about the dedication.

Moye: I thought we might include some of that correspondence. . .

Lyons: In this? Fine. I don't know where it all is. [Some of the correspondence is now in the glass case outside the technical library in the Rodman Building.] She remembered that the family had a copy of a book that he had written, in detail, on the design and manufacture of the Rodman gun. She had given it to West Point. She thought we ought to find that a suitable place at the Materials Building. So we went on a treasure hunt to try to find this book. I don't think we did ever find it at West Point, but we ran down a couple of copies at Carlisle Barracks. Now we have a copy at Aberdeen. It's been taken down to the National Archives, looked at for preservation purposes, and judged to be in good shape as it is, except for a little polishing up on the outside. [The book is also on display in the Rodman Building, alongside the correspondence mentioned above.]

I went up and looked at it, and it's a remarkable book. I don't know whether you've had a chance to see it yet. It is just packed full of graphs and charts and tables and data. It would be a great credit to any researcher here at any time. Just loaded with stuff. It is, in fact, not only a full discussion of all his explorations, but also a recipe for manufacturing. So they're going to put it in a glass case, and I'm told that Louise LeTendre, the librarian, plans to turn a page every day. So if the staff wants to, they can read it over a period of many years. It's a big book, so it would take a long

time. That maybe also has to do with the preservation of the pages. You don't want one or two pages exposed to too much light. Anyway, that's an interesting story.

The building is phenomenal. Everybody that walks through it comes away with a very positive impression. It really puts us on the map in the materials research business. It replaces, of course, a whole slew of buildings at Watertown, all of which were old and not really designed for a research environment. This is a very impressive addition to the Department of Defense research capabilities.

Recently, in fact, Tuesday of this week, which would be the 23rd, Aberdeen was visited by a committee from DoD looking into the Vision 21 business, which we may have discussed earlier. Vision 21 is a mandated study of the RDTE activities in the Defense Department. In doing this study, which is both congressionally mandated and White House mandated (two separate activities were merged), we were supposed to take 20 percent out of the RDTE infrastructure. Now, what infrastructure means is open to debate, but there has been a committee going around visiting sites just to inform themselves. Originally, I was on that committee, but I got off it, because I didn't think it was very productive. But the Army has members on it. Dick Chait is on it. I think Mike Fisette is on it.

At any rate, they came here last year, and we showed them around, and we showed them the building under construction. Then, after a long hiatus, they decided to go up to Aberdeen. So they went, and we took them around. It was a combination of TECOM and ARL. We got together with TECOM and showed them the ranges and the various buildings and ended at the Rodman Building. We finished with the presentation there and let them sort of soak up the building's capabilities. The whole idea being, if they're going to recommend some kind of shrinkage, we'd like to end up in places like Adelphi and Aberdeen, given that we have brand new investments. That went very well.

All I know about Vision 21 is that that committee is still making these visits. The rest of their activity has been on hold ever since the QDR started. Presumably, whatever comes out of QDR will merge with the Vision 21. That is, they're not going to go around and cut everything twice, so they have to get it merged together somehow.

Moye: Somebody was saying. . . I guess they had the AMC commanders' conference not long ago, where people were asking General Wilson what was going to happen with some of this. He apparently is unable to say publicly.

Lyons: That brings us to the whole question of the QDR. We've been doing a lot of things relating to resources and efficiencies, but the Quadrennial Defense Review was conducted internally by the military in the winter and early spring. They came to a set of conclusions. For the Army, the conclusions were that the Army will be allowed to maintain 10 combat-ready divisions, which was General Reimer's highest priority. That's the current level. So there will be no cut in war-fighting capabilities, although there was a modest cut in troop strength related to expected efficiencies from the Army XXI activities. So it didn't affect the number of divisions, but there's a fairly substantial cut—I think 16,000 or so—in civilians. The DA staff took that and converted it into assignments to the major commands. General Wilson got an assignment to reduce his military by 2,000 and his civilians by 8,500. In other words, we get half the civilian cuts, indicating that the Army thinks that AMC can get a whole lot smaller still.

We learned that at the AUSA June meeting in Los Angeles, when General Wilson told us what our assigned numbers are. So this summer was spent talking about how to do that. The first thing the general did was work the military reductions. That went fairly smoothly. For us, it started off with a proposal to zero out the military in ARL. Then, as I understand it, Mike Fisette made a rather emotional appeal. And in the end, General Wilson protected most of them. We got a modest reduction, the argument being that the military play a key role in helping us understand the requirements and helping us understand what makes sense and what doesn't make sense for a war fighter. Also, they protected special military staff. We're supposed to have a military IG again. That had traditionally been a military slot, but it had been civilianized. Most of the cuts were out in the directorates, so that one came out pretty well. I think we lost 17 military positions.

The civilian reductions were worked first by Mike Sandusky, who has been the man on BRAC for all these years at AMC. Mike has been in charge of the base closing assessments, as well as maintaining an eye on the implementation of those decisions over the years. So he's followed BRAC 91 all this time. He developed a scheme for taking the civilian reductions. And it's the details of this that General Wilson has not been able to communicate to the field. I'm going to tell you for the history, but I think that all I can give you is a snapshot of where it stands now, since it's not finished. A major point of this discussion is it won't be changed, perhaps for years.

But the story goes as follows. The Army staff suggested how General Wilson should take the cuts and sent him what he considered a very high-handed exercise to resolve things where they were not well informed, and there were a lot of questionable things. So Mike Sandusky was sent into that discussion, and he

developed an alternative scheme. His reasoning was this: First of all, there are certain staff people that are not going to be allowed to be cut because of the special laws regarding the hiring and firing. The depot staffs are protected by these rules. There is a statutory requirement that we do a certain percentage of Army maintenance in house rather than contract out. So that's a statutory requirement.

We have repeatedly asked for relief from that. They're debating again this year whether or not to change it from a 40/60 split to a 50/50, but that's the best it's going to be. I can't explain the details. But anyway, you set aside a certain number of folks out of the AMC population and say they're protected, so the cuts are going to come out of everybody else.

Moye: Magnifies the impact.

Lyons: So you get sort of the logistics people being protected. Then he argued that, if you contracted out everything except for certain intrinsic, inherent government functions, such as contracting officers. . . if you contract out the maximum you can, you need to retain a few thousand people to oversee all of that and to do the contracting kinds of functions. Everything else can be contracted out. We will then take a 20-percent savings with that, because people like the Defense Science Board say it's 20 percent cheaper to do work in the private sector. So the Pentagon budget people are going to take a 20-percent savings anyway. If you do that, you end up with the civilian cuts you need. The 20-percent savings converted into spaces ends up giving the 8,500 that they need. That did include certain eliminations—1,500 people, I think—representing functions that just plain would stop.

Moye: The concept is to contract out pretty much everything that's not legally mandated for.

Lyons: If we are contracted out, I'd like to take the whole thing out. In other words, convert us to a private laboratory and not just try to set up a bunch of unrelated contracts. I'd like an institution, people with expertise and corporate knowledge, maybe GOCO or some other arrangement. General Wilson said, "That sounds like a good idea. Why don't you explore it?" So that was the beginning of our long, hot summer. So we remembered that the Board on Army Science and Technology (BAST) had, several years ago, studied various modes of operation. They did consider the GOCO option and rejected it. They considered other things, some of which looked sort of like us now.

So Mike Fisette, I think it was, suggested, "Why not reconvene the BAST to revisit their report?" But the real reason was to discuss the whole issue. So we did that. The BAST arranged the meeting, chaired by Bud Forster, Lieutenant General (Retired) at the time,

and we said to them, "The excuse for your doing this is to revisit your earlier report. What we want to do is tell you about this QDR business and what it means and ask you your opinion about the value of retaining the corporate lab, because an option would be to just send us back from whence we came and cut out a lot of it. Tell us what you think now about the GOCO option and consider anything else."

So they met. I think it was the first of August. I went down. Bruce went down. Mike Fisette went down. John Holmes went. Renata Price was there. Also Tom Killion.

Moye: Is he still with the DCSPER?

Lyons: No, he's with DCSOPS.

And we invited, besides various BAST members who came—there's a summary of this you might want to get ahold of from John Holmes. I don't think there will be a BAST report. We asked them not to because we didn't want it public. We invited Robert Galvin to this. Bob Galvin is a retired CEO of Motorola. He had studied the DOE National Labs for Secretary O'Leary, a similar study of what to do with these labs, what their mission should be, what their management structure should be, and so on. They are all GOCOs. So we invited him in as a GOCO expert. They talked for a day. They agreed that the corporate laboratory is a necessary effort in the Army. The Army should keep its lab. They believed that the GOCO option is a nonstarter. Galvin said that, as long as the Congress micromanages things and the bureaucrats are bureaucrats, we're going to have the problems that the DOE labs have, which is micromanagement. Too many bosses. Sort of a life of misery. Just doesn't make any sense to him to consider that kind of a GOCO arrangement.

They analyzed the problem, and they said, Your real problem is, you don't have a champion at the top of the Army who is willing to protect you and the R&D labs, and your type need that. You're going to be at risk as long as you don't have a proponent at the top. Somebody ought to pump up the senior leadership. They offered to do it.

I went and told General Wilson all of this (along with Mike Fisette), and I told him that they were willing to make representations to the senior leadership. He said that wouldn't be so bad. So that may be happening. We passed the word back. And there are some retired four-stars, General Sullivan, of course, is one who is very interested in the technology. General Otis is another. General Otis is a retired CINC who was chair of the BAST, the most recent chair. He's very informed. So people like that may be making some contact.

They concluded that probably the best thing we can do is keep slugging, look to see if there's more federated lab kinds of partnering opportunities, but not to go GOCO. Stay in the Army. They thought that it might be a good idea if we reported to the Assistant Secretary of the Army.

Moye: So they brought that back up?

Lyons: Brought that up. They think that we're drowning in logistics. Told General Wilson that, too. You know, he knows that. I've complained to him when we have these commanders meetings that I sit through hour after hour after hour of logistics. I don't even know what they're talking about. It's all jargon. I don't much care about the logistics. I fussed at the last full meeting. I wanted to hear some technology, because that's supposed to be one of the principal pillars of this operation. So I understand he's going to give me a lot of time at the next meeting, probably more than I can handle.

I don't think that they're going to move us out, although the Navy model is that NRL reports through ONR (Office of Naval Research) directly into the Assistant Secretary, and they are not in the logistics or commodities areas. Because NRL has been there so long, they're pretty solid and stable. In fact, I talked to Tim Coffey and his budget chief. Their 6.1 and 6.2 have been flat through all these crises. They haven't been hit.

Moye: They do have one advantage over us, too. There's a law. I don't know how much of a cover it provides, but there's a law that establishes them.

Lyons: What you call an organic act. It's true. Of course, NIST had one of the first such laws. I never found in Commerce that it was particularly effective to argue that. Lots of agencies have organic laws. The difference at NIST, of course, was that the director was also a presidential appointee and had access to congressional committees and so on. None of which we have. Also, NRL doesn't have that. They don't have a political appointee at the head. I'm not so sure it's a good idea. They don't even have a civilian in charge. Dr. Timothy P. Coffey may run the place, but technically he reports to a Captain. It seems to work, unless you get a particularly aggressive Captain on that. That has happened at least once in Tim's tenure. When it happens, it drives him crazy.

Anyway, I don't think that anything is going to come of that, and it would remove us from our customers somewhat. We'd be out of the loop with the RDECs. You can argue it both ways. While Mr. Decker was there as Assistant Secretary, he was probably our strongest champion and promoter. He stepped in at least once, if you remember, about a year and a half ago, during the FAA business. Right now, we don't have an assistant secretary. In fact,

right now, we don't have anybody between us and the White House that's technical. If you look up from where I sit, you look through General Wilson, who's a logistician. Over in SARD, there's an Acting Assistant Secretary, Mr. Walker, who's certainly not technical. There's no DDR&E, no permanent DDR&E. The Under Secretary for Acquisition and Technology is not yet confirmed, so that slot is empty. And both the Deputy Secretary and the Secretary are nontechnical, Mr. Hamre and Mr. Cohen. Whereas, a few months ago, it was Perry, John White, Kaminsky, Anita Jones, Mr. Decker. So all of a sudden, there aren't any technical umbrellas. George Singley is acting, and he is, of course, a strong advocate of ARL. In some sense, he's the godfather of ARL. But we have precious little cover.

Moye: It's a lot better than having somebody who's antagonistic, but it's not the same thing has having a confirmed person.

Lyons: Fenner Milton is in place as the Army S&T executive, and he's supportive. But when it comes to push and shove and arguing with four-stars, you need an assistant secretary at least. What you really need and what protected us all during the first Clinton administration was, starting with John Deutsch and his colleagues, and later Kaminsky and Anita Jones, they mandated that 6.1 be protected. When it wasn't, they could reach in and put it back. I know they did that.

Moye: There's nobody of that stature. There's nobody in place.

Lyons: There's nobody who cares, who would mandate that. I'm not sure what's going to happen with the next Under Secretary of Defense, Mr. Jacques Gansler.

So the QDR exercise is very difficult. In the middle of this business, in the last six weeks or so, Walt Hollis and Mike Fisette both proposed something that will protect ARL. On the other side of that, John McCarthy, director of AMSAA, has suggested a new analysis center, which would take SLAD out of ARL and put it in this new analysis center, along with some other—I made a presentation in a special AMC ESC (executive steering committee) meeting at Aberdeen on September 18th, where I said that if all the proposals that I knew about were to be put into effect, we would be reduced to about 1400 people. I termed that ruinous, and I said we can't do the AAN mission. I put up a chart with the five grand challenges with a big circle with a diagonal line through it and sat down. I'm told that General Wilson took that to heart, and I know that Mr. Hollis has spoken up. I hope that these retired generals will speak up, and we will be allowed to stabilize at something over 2000 people. I don't know.

What I do know is that General Wilson did intend to state to the staff at AMC—everybody, all the employees—some kind of status

report, and the DA staff told him to cool it. He actually had communications packages at Aberdeen to pass out. They asked him to hold off for a week or two. So that's where we are now. We're on hold. I think that we will be able to say something to the staff early next month, October. I'm told that.

The timetable is that in December we're supposed to propose the new budget numbers that will flow into what becomes the POM build, program objective memorandum, which will be submitted by AMC in late December and be adjusted by the DA staff during the winter and early spring. Then it goes up to OSD and is fussed over, and eventually is converted into a Presidential budget proposal in the summer. Then Congress gets a look at that the following year. So about a year and four or five months from now, we might have a public document that the Congress will react to. I'm hopeful that we will not suffer the personnel cuts, and the proposal to privatize the whole RDT&E enterprise will not be accepted, and we'll be allowed to do our business more or less the way we are.

I've also told General Wilson that with a cut like that—to, say, 1400—this site [Adelphi] would become untenable. The only way to fix that would be to seek major site tenants. We've thought about that. In fact, we're now engaged in discussions with NSA about coming into the new building. It turns out they need a place, clean space, to do semiconductor work. John Pellegrino has been negotiating with them about actually upgrading more space in that building to please them. If you recall, that building originally had a lot of clean space. Then we were forced by the DoD IG's review to squeeze down. Now NSA is talking about spending something like $15 million to rebuild clean space. They haven't approved it yet, and they don't have the $15 million, and they don't know how they're going to get it, so it may all fall through.

But if that doesn't work, we did have an announcement in the *Commerce Business Daily* saying that we are going to have this fine, brand new laboratory space, and we are interested in people coming in and making use of that space, preferably people working in the same areas we are. And there are a lot of schemes that we've talked about, such as advertising a new fed lab, where the condition of award would be that you come work here. That's one way to do it. None of this is too serious if we don't have to do something large. If you have to find, say, 500 people, that's a totally different scenario. In fact, that's so many people that we spoke to AMC and said, "Why don't you get out of your rented facilities and come up here?"

One other topic—Jack Wade being out there reminds me we've had several studies at SLAD.

Moye: I was going to say, you mentioned John McCarthy a while ago—I gather he's getting Paul Deitz.

Lyons: That's an unfortunate development. In downsizing the SES corps, Paul has to get out of his division chief job. AMSAA had an opening. So AMC decided to make sure he moved. I guess that's going to happen. It hasn't happened, yet.

During the past eight months, I guess, there have been two different integrated process teams, one at AMC internally and one involving players in the Pentagon and other agencies, looking at SLAD because of the proposed cuts in the POM that occurred a year and a half ago.

Moye: These are the out-year cuts, $15 or $20 million.

Lyons: Big cuts. The question was raised: Can we do the analysis that the Army needs with that big a reduction in budget? That led to these teams who looked at SLAD and who looked at the overhead burden they carry from us. A lot of cheap shots were taken. But the final result of the second, which was held in the Pentagon—Walt Hollis was the senior person present. There was also the Commanding General of OPTEC, General Lehowicz. The CG of TECOM was present, General Longhouser. The CG of CBDCOM, General Friel, was there. I was there. All kinds of people were there. The conclusion was to leave SLAD where it is. Tell Lyons to cut his overhead as much as he can and leave it alone. That was the conclusion. Then McCarthy comes along with this new proposal, which would take SLAD out of ARL. There's a constant battle, and there has been ever since I came here, to keep SLAD.

Moye: They're up on the 6.5 or 6.6?

Lyons: A lot of it is 6.6. A little bit of 6.2, but not as much. Mostly 6.6. And customer. They get a lot of money from project managers for a pot of customer money, but they had $32 million worth of 6.6 for analysis, and that was cut in half. I think they're going to restore a lot of it.

You mentioned Paul Deitz. I have four openings in the SES. Four authorized.

Moye: Looks like you have announcements out.

Lyons: I have two on the street, one for the Deputy Director of ARL. We changed the qualifications for the deputy to match the qualifications for the Director. The deputy director's position qualifications were changed to match the Director so that General Wilson could participate in the selection on the presumption that I will probably retire next year, and this deputy would be hired with the necessary qualifications to move up. Otherwise there will be a gap of a

year, year and a half, of an acting Director. So I spoke to General Wilson about that, and he thought that was a good idea. He said, "I can't tie the hands of my successor if he wants to get somebody else, but at least we can set up somebody who's well respected and qualified and who's now got a leg up by having that experience." So that's going to close in about three weeks. There will be panels. Maybe we'll get an offer out.

We have the Director of Sensors and Electron Devices. That's about to be posted. I don't think it is, yet. The Director for IS&T is posted. The last one would be the deputy director of SEDD. I haven't heard anything about that, so that's far out. But the IS&T position will close, I think, about the same time as the deputy director's slot, so maybe we'll have a team again in a few months.

One of the really serious what I would call material weaknesses—that's a logistics term—in the Army is its inability to replace SES employees.

Moye: By the time you get a team in place, something always happens.

Lyons: Breaks it up. I had DeMonte and Frasier, and all that fell apart. So we're in a recruiting mode for SESes. I'll lose Paul Deitz, and I think that's too bad. We'll probably lose Charlie Murphy, who's also an SES in a division chief slot. He's 70 years old, and I think he will probably retire rather than take a reassignment.

The last thing, you have a couple of items here that I'll just touch. The Major Shared Resource Center, the supercomputing center at Aberdeen,154 has now installed all of its new machines. If you go up there, you'll be absolutely astonished at the number of supercomputers on the floor, and almost all of them brand new. I think we have four Cray machines this size.

Moye: The number figure is staggering. The dollars.

Lyons: The computer power up there is probably only matched at Los Alamos, including classified capabilities as well as unclassified. The issue now is getting the use up, filling them up. That will happen, but it will take a while. We have to do more outreach. We have to do more marketing and tell people about it. We started by telling the MSC commanders at the last ESC.

Moye: I know we're trying to get them into the AUSA exhibit that is coming up.

Lyons: Now the other thing is this business about *20/20*. Why don't we wait on that until we see what happens? That is potentially a very serious episode. I think it would be better to wait and see what the television people do. They were going to do a show tomorrow night, and at the last minute, they postponed it indefinitely.

Moye: I didn't realize it was that imminent.

Lyons: Just yesterday, I got two messages from Judy Johnston. First she said, "*20/20* is going to do a show on supercomputing and Iraq tomorrow night." So I put out a notice to my directors, and then, not a half hour later, she came back and said, "*20/20* just announced they have postponed indefinitely."

Moye: I was noticing you mentioned Charlie Murphy. Just sort of as an aside, but in going through the Fellows brochure and updating that, about half his biography is talking about his work on the HARP project back in the 1960s. In this atmosphere, I would think he might want to change his biography.

Lyons: I need to tell you that story at some point. Probably before I tell you, I need to know the outcome, and it's still in the air. Maybe next time.

Moye: Thank you very much.

17 March 1998

Moye: It's 17 March 1998, St. Patrick's Day. I'm Bill Moye, the historian of the Army Research Laboratory. I'm talking this morning with Dr. John W. Lyons, the Director of ARL. We're doing one of our regular historical updates. It's the first time in several months we've done one, so we've probably got a lot to talk about. Good morning, sir.

Lyons: Good morning. Let the record show there's not much green on Bill this morning. More on his pants than anywhere else. On the other hand, my wife purchased a special tie for St. Patrick's Day.

It's been about six months—not quite, but almost six months—since we talked, and quite a lot has happened, some good and some not so good. I'll try to touch on all of that. In the six months, we've had two AUSA meetings; we've had a formal ESC, that's the Executive Steering Committee of AMC, out at White Sands. I had, I guess, been to Israel just before we talked last time. And also covered, in that period a visit to Korea. So I haven't done quite such spectacular traveling since.

The major things that have occurred during this period are the Quadrennial Defense Review implementation at AMC. We talked quite a good deal all through the fall, which led to some fairly serious actions across AMC that, in turn, have led us to think about, perhaps, new strategies for the laboratory, which we're still putting on paper. I'll try to cover that. I think that's of most interest, probably, to this history.

We've continued to work on the Personnel Demo, and we have finished it. Finally. That is, the last *Federal Register* notice came out a week or so back. Today, it's happenstance that we're having a town meeting to discuss the details of that, as we now go to implementation, which will occur early in June. I don't think that will be terribly disruptive. I think the staff may be a little nervous about it. I've been through this before at the Bureau of Standards. I don't recall much of any disruption there when we shifted to the experiment.

Moye: I was at a meeting last week, and several of the people had gotten their copy of the *Federal Register* in the mail. There was considerable discussion about some of the issues.

Lyons: I think probably the biggest issue is probably pay for performance. You're not going to get automatic within grades anymore. You have to earn them. There will be some who will get rewarded somewhat better because they performed better than others who, perhaps, don't perform quite as well. That will be something to adjust to as we go ahead.

We also change everyone's designation from a particular grade and step to a smaller number of pay bands that are quite wide. That won't hurt anybody. It's designed so that salaries are not going to be decremented in any case. Primarily what it does is it transfers the responsibility for managing personnel to the manager. It converts the personnelists into subject-matter experts, auditors, and post-action reviewers, which is sort of an industrial approach. That's the way it is mostly in the private sector. The idea is to improve the staff quality by improving the hiring process and making it quicker and more responsive and by improving the salary administration process to reward performance.

I hope that all of that will enable us to attain and retain the best possible staff. That will fit our vision, which says that we depend on an outstanding staff. This is something that I set forth as a priority when I first came. Your notes will show that we first started with the Government Performance and Results Act. We had hoped that that would allow us to do an experiment. It turned out that wasn't the case, but fortunately, the Congress authorized these experiments the following fall, and we've been struggling ever since to get our experiment approved.

We fought very hard battles over about half a dozen enablers that we wanted, most of which we didn't get. This has taken so long because we had these long arguments. We wanted, for example, to get rid of managing to manpower ceilings, to get rid of high-grade ceilings, to either get rid of or strongly change the priority placement system, and there were. . . I think I wrote down six of those that we're going to talk about this afternoon. We didn't get most of those. We did get a pay band five, which is above GS-15, which we hope eventually will allow us to move most of our senior managers out of SES and into that pay band because it has salaries that match up to SES level four. That's just to get out of the terrible bureaucratic problems we have getting SES jobs approved. As you know, we've carried a lot of vacancies in the SES for a long time.

We did get pay band five, but it comes encrusted with regulations and restraints. Still, it's a start.

Moye: The bureaucrats hate to give up their. . . .

Lyons: They're afraid to experiment, even though the whole point of this is to experiment. But we did get that. We just got it substantially restricted.

Moye: Have the missile people actually put their system into action?

Lyons: They've been running since last spring. A couple of our people are going to go down next week, I think, and see how that's going. They were accelerated because of the merger and the move of the AVCOM group from St. Louis to Huntsville. They timed that so

that the people, when they moved, went into the new system. So they are started.

Moye: So the system actually applies to both Mr. McCorkle's and Mr. House's people?

Lyons: Yes. They're together, and as I understand it, those two RDECs are going to get merged anyway, eventually. That experiment is different, or slightly different, from ours. There are detailed differences in different experiments.

That is, I think, good news, certainly from my point of view after struggling with it for over four years.

Another piece of good news, I believe, is the progress of the federated lab, which is now just a little over two years old. We had our second get-together of the fed lab people, in what we call "symposium format." We spent an entire week with the different fed labs coming in, presenting their materials, having poster sessions and demo exhibits. I was over there, off and on, for the whole week. So were a lot of other people.

This time, we saw clear indications of work across the different organizations that have participated, whereas, last year, people were pretty much doing what they had been doing before they were brought together in these consortia. The test of the success is that there is some kind of synergism. That is, you see the different participants beginning to talk to each other and collaborate and benefit from each other's experience and knowledge. We saw that, I think, more clearly in the presentations this year. So I was pleased with that.

We had the NRC review board, the TAB, come in and listen to those presentations and then meet with the presenters afterwards as part of the annual NRC review. I think that went pretty well, too.

A brief mention about senior personnel. I think things are looking up a little bit. I have now interviewed the candidates for the deputy director's position, Deputy Director of ARL, which is now an SES position. I made my selection and sent it forward. General Wilson has approved it, and it's been sent up now to DA. I also interviewed candidates for director of IS&T, and the same has happened to that. It is now at DA. That won't happen quickly, because both of the selections are not now in the SES, so they have to be separately qualified, which is a different track. But I don't think there will be any trouble. They're both senior people. As of May 27, 1998, Dr. Joe Rocchio is Deputy Director, ARL, and Dr. Jim Gantt is Director, IS&T. Both are officially members of the SES.

I am about to go through this process with the SEDD director's job and deputy's job. In that case, there are two openings, Director and Deputy Director. I understand that the certificate is about ready, and I will do those interviews probably in the next couple of weeks, so that will be perhaps a month or month and a half behind the other two.

Moye: Those are major appointments.

Lyons: Well, they've sat around here for a long time. Clare Thornton, I guess, left two years ago. I couldn't get anything to happen. That was because AMC couldn't get anything to happen, because they had too many people in the SES. AMC has now reduced the numbers of people in the SES considerably. Now the Army is not giving them the same resistance that they were before. Plus we've had two senior people in the Army who are involved with this process leave. One was Sara Lister, the Assistant Secretary for M&RA (Manpower and Reserve Affairs). The other was the Secretary himself, who is now the Secretary for Veterans' Affairs. They spent a lot of time studying every SES case personally, and that slowed the process.

Moye: I would think so, considerably.

Lyons: Because they're very busy people. In addition to that, we succeeded in getting a promotion for Ed Poindexter to ST (Scientific and Technical) level 5, which makes him one of the few in the Army and the only one at ARL. This is quite an honor for him. So I guess, if you look at all of that, you could say personnel is looking up.

Also the CPOC (Civilian Personnel Operations Center), which is the new regional personnel center up at Aberdeen that we now rely on for personnel actions, is doing reasonably well. They had start-up trouble. They were a little thin on staff and so on, but I don't hear a lot of complaints about personnel actions. I would say that personnel is a plus for us at the moment. It's not always the case.

Moye: Are we recommending anybody else in addition to Poindexter?

Lyons: No, that particular drill is over. I think that maybe two or three were made in the Army.

We did lose Paul Deitz during this period. Paul Deitz was an SES-level division chief, the last of the division chiefs at that level. The Army has decided not to have—and I had agreed with this—not to have SESes in positions of division chief level. He was transferred over to AMSAA to head an effort there. Jill Smith, who just competed for the division chief position, has gone into it. She had been serving as one of two deputies to Jack Wade.

Moye: I understand that Dr. Deitz may end up as the enemy, so to speak. He may end up as chief over at AMSAA.

Lyons: He didn't. There were two SESes there, and the other one, Shaffer, was picked to be director of AMSAA. So that didn't happen.

Let's talk about the QDR, which is a statutory, every-four-year review of the military posture covering everything. It was followed by another review of the review by an external panel. The QDR is done primarily by military people inside. Then there was another review board appointed by, I guess, the Secretary and mandated by the Congress that was private-sector folk looking at what the QDR people did. All of that led to a decision to downsize AMC very substantially. AMC is going to go down over the next five years from about 60,000 to about 48,000 civilians. It's losing two-thirds of its military. It's going to accomplish a budget savings by emphasizing outsourcing and privatization of activities.

In the case of ARL, we will, in the years 2003 and 2004, lose another 415 or so positions in addition to any that are already scheduled from proposed budget cuts in SLAD and other actions. We're sitting at the moment authorized around 2,600, but we're only staffed with about 2,200. That's for financial reasons. We can't afford to pay any more than 2,200, even though we have authority to pay.

Moye: I remember not too long ago—it's been several months, but within the last three—John Holmes called, and he said, "What was the largest number, how big was HDL at its largest?" I looked back in some old reports, and at one point, right in the early 1970s, at the end of the Vietnam War, HDL hit about 1,750, not quite 1,800, which sounded, at that point, a lot like the number of S&Es that we had and about where we might be hitting.

Lyons: And that's just HDL. Now we are seven laboratories, and we're approaching that size. I think what John was interested in was, how many people can you cram onto this site? Probably not all of those were here. Some of them were at Woodbridge, some of them were at Blossom Point, and so on.

Moye: Well, actually, probably in the early 1970s, there might have been a few out here. They would have really been scattered around, because they would have still been primarily downtown.

Lyons: There might have been two sites.

Moye: That may have been his issue.

Lyons: That's another issue that's related to this QDR business: if we're going to dip below 2,000 paid staff, and it looks like we might, split roughly half and half here and Aberdeen, but still with a

contingent at White Sands and a very small group of folks at two NASA sites. The problem here is, if we have less than 1,000 people on this site, with the fixed costs that we have here and the increase in fixed costs that we'll have with the new physical sciences laboratory, there just won't be enough overhead generated by those people to pay the bills. We don't get enough appropriations to cover the overhead. Never have and probably never will. Right now, we're only getting about 50 cents on the dollar for our overhead costs at Adelphi. We have to raise the rest of it by taxing the research money. When you convert that to costs per S&E, it goes right through the roof, as you keep laying this burden on the research lab. So that's not healthy, and our strategic thinking has to deal with the problem here at ALC.

We don't have that problem at Aberdeen, or at least not as bad, because Aberdeen is a big post, and you have a lot of other people there, and the overhead costs tend to get laid off over the whole population. But even at Aberdeen, we're failing to get full appropriations for the support of the base.

Moye: They're doing some things, basically closing down on a lot of Fridays or at least encouraging people. . .

Lyons: They're doing a lot of things. They're also going to close a lot of old buildings, as they get out of them. One of the advantages at Aberdeen is there's a lot of old structures you can get out of and tear down and reduce the cost. We are doing that with TECOM as we go forward.

Moye: Plus, I gather they're doing a big competition for outsourcing. The whole garrison structure will compete, apparently, as a whole—from what somebody was telling me, anyway—in one of these A-76 studies.

Lyons: Whether you're outsourced or inside, it still costs money.

The assumption is it's cheaper outside, and I'm not sure about that. There's a lot of high-flown talk about doing things in the private sector. We'll see. Anyway, we're going to have a smaller staff. We are going to have a problem here at Adelphi, and a smaller problem at Aberdeen, simply bearing the fixed costs of the sites. So that's part of the backdrop for our strategic thinking.

We also know that the Army After Next effort that's going on in the Training and Doctrine Command, which looks out about 25 years, is made to order for ARL. We have crafted our programs to address the likely needs of that Army. We talk about it all the time; we present our programs in that format. So as we looked at the strategy, we looked at it in different pieces—program, facilities, staffing, outsourcing, and so on. The first thing we said was, we're going to continue to focus our program on the long term.

That's what a corporate lab ought to do. So we'll continue to work on the Army After Next business and keep shifting our programs and try to get them sharply focused on what the Army wants us to do.

Secondly, in terms of staffing, because of the uncertainties, we are going to try to get away from being fully staffed with civil servants. It turns out that's a dangerous strategy, because if you drop your budget a little bit, you're immediately into a RIF. You don't have any room. So what we'd like to do is have some fraction of the staff as civil servants. That you could call the core, the long-term core. Then we're going to try to use other authorities, either temporary and term appointments in the civil service or things like outside workers, beginning with the use of the IPA authority, Intergovernmental Personnel Exchange Act, which allows you to bring in people from universities and other governmental and quasi-governmental bodies. They don't come in as civil servants. They are handled virtually like contract workers. They tend to be senior folk, but don't have to be.

We'd also like to continue to emphasize guest workers and post docs and other folks who are not on the permanent payroll. That's now going to be a strategy. It has been, since I came here, our strategy to encourage post docs and guest workers. The idea of using IPAs in a substantial manner is a new idea. The idea of using term and temporary appointments is a new idea.

Moye: That would be more flexible. If you lose some budget money or whatever, you would be in a more flexible situation without having to do a RIF and go through all of that.

Lyons: That's right, I think. Flexibility. To some extent, it will probably improve our ability to hire outstanding people, if we're going to bring them in as IPAs. There is a little more salary flexibility. You can pay more or cause their sponsors to pay them more. It depends on who's paying. But other agencies do that. NSF (National Science Foundation) uses a lot of IPAs; DARPA uses IPAs. We find that our colleagues in the RDECs and elsewhere use IPAs more than we do. So we're going to look at that. That will be written into our strategy.

We, of course, have two new buildings—big ones—plus some other smaller ones that we're supposed to keep fully occupied. I have told the Commanding General that it would be nice at Adelphi if we could fill up the new laboratory and the site with Army researchers and, therefore, get the most out of them for the soldier, even if it means bringing in other parts of the Army research establishment as tenants. It seemed to me that was the best bet. If not that, then we at least ought to have tenants here who come from DoD, so that it's benefitting the agency. A poor third choice would be to have tenants from industry or local folk.

We are talking now to two parts of NSA with the potential to bring in a couple hundred people in the long term. That might do it. On the other hand, it's iffy whether or not NSA will bite on either one of the proposals. But NSA has common interests with us, particularly now that computer security has gotten very prominent. NSA has a large responsibility in that area. That could be very helpful, if they come. The people we're talking to are part of that. At Aberdeen, as I think I already said, our strategy is to draw people out of old buildings and fill up the Rodman Building. So the new building should be full of people. That's taking maximum advantage of the investment.

I mentioned the NRC's Technology Assessment Board. We now have the second annual report, and it looks much like the first one. That is, it reviews the programs, and it offers constructive criticisms. This time, it has not been well received at AMC. Last year, when the first report came out, which was fairly harsh, AMC was very understanding and said, "Yeah, we understand you need to do this. It's a good idea to have peer review, and if you do have peer review, you have to be prepared to take the good with the bad." Or the bad with the good. Whatever.

This year, they looked at it, and because there were some media extracts printed, which were all negative, even though they weren't leading journals (they were weekly, local journals), the Commanding General said to me he didn't want any more of those NRC reports. Well, that kind of pulls out one of the legs of our peer review, quality-control models. He didn't say not to do NRC reviews. He said he didn't want any more of these published reports full of criticism. Well, it turns out the NRC has looked at that and said, "We can't do the review without the report. It's an integral part of how we operate because, otherwise, you wouldn't get any internal quality control from the NRC."

So we're still in conversations with them about whether or not there's any way that they can provide the peer review that we need. If they can't, then I've got to invent it some other way. I can go back to the old days of the external rump group that we had when I came here. You remember that, the so-called TRB that Dick Vitali established, which we disbanded because we were wary of the Advisory Committee Act. We could go to an internal review by DoD-wide senior technologists, such as the STs. We're going to think about this, and we're going to talk to everybody we can find at Department of the Army and DDR&E, and see what happens. It's an unfortunate development. We may have to drop the whole process.

I think these peer reviews keep you on your toes. You get to feeling complacent of how great you are. These folks come in and say, "You're not that smart. Take a look at how they're doing it over at this lab." It's very healthy.

Moye: How would you characterize overall the thrust of the report? I saw a copy of the *Defense News*, where the guy had all the negative. . . .

Lyons: It's easy to do that. As a reporter, you look for that and leave out the rest.

What they say is, first of all, they're supportive of the concept. They do not agree that defense labs are not needed. There's a school of thought that you keep hearing from places. . .

Moye: All you need basically is contract jockeys. Martin Marietta or someone will do it all.

Lyons: Outside contracts. Let the private sector do it all, and shut down the defense labs and save all that. You won't save it, of course. You're going to put the money somewhere else.

The TAB argues in the report this year why they feel you do need a strong inside system, for reasons that have been enunciated in the past. Repeatedly. We agree with that. So the first thing is, they say that, and they want to preserve this lab. Secondly, they say we're better than we were a year ago. The vector is in the right direction, and we improved in this, that, and the other area. We do a lot of very good things, excellent things. They mention a few.

Then they say, "Oh, by the way, you still have some insularity compared to what we're used to." That one's hard for us to understand, because we travel all the time, and we're always talking to people. They feel that we still are not quite well enough plugged into the non-Defense side of science and technology. That's the kind of stuff that was picked up in the press report. In some cases, they repeated criticisms from the first report. Things like the lack of statistical experimental design practices. The need for more formal career development programs. I think we got probably a "B." Got a "C" last year. Got a long ways to go to get an "A," but you don't change a place like this overnight. Particularly since we can't hire, it's hard to move the staff.

Anyway, I had actually had the TAB report in the good news section in my last discussion with General Wilson, but he corrected me. He didn't think it was good news. What that tells me is that AMC is very fragile now. It doesn't feel it can stand a lot of heat.

Moye: It was the negative publicity, really, more than. . .

Lyons: With the Army calling. Of course, everybody gets to see these things in the Early Bird.

Moye: I had the opportunity to go last week. I was told to go to this congressional seminar thing up at APG, because Steve Proctor

couldn't go because he's working on the thing for tomorrow. This was Larry Korb and Ken Duberstein. . . it was kind of like *McNeil/Lehrer* eight hours a day. But a lot of what they talked about was QDR and NDP, and a lot of the feeling—or some of the thrust of it—was the continuing, ongoing, eternal dynamic within the Army: Is it going to be readiness, or is it going to be modernization and research for the future? Of course, AMC gets kind of drawn both ways. If it's going to be readiness, then it loses on its research side. If it's going to be research, it loses on the readiness. But there's also some feeling in some of this that the Chief, General Reimer, and his people are maybe not as sympathetic or supportive of the research-modernization-future side. They're more concerned with the readiness and upgrade what we already have.

Lyons: I see that all the time. I guess that's one of the hardest jobs for the Chief of Staff, to balance those today and tomorrow kinds of issues. He's very up front about it. It probably swings. General Sullivan, toward the end of his term, was very interested in tomorrow, in the digitization of the Army, and the technology, and so on. By the way, he's now the Chief Executive of the AUSA. So those views are going to come through from him as he does that job. He's very aggressive in that job. But General Reimer, during the QDR, fought hard to maintain 10 divisions against people who thought we didn't need that many. There is a school of thought outside that said we don't need probably half that many. He felt that we needed 10 divisions to do our mission, and that put heavy pressure on the other parts of the budget. Now that he's got that sort of accepted, the speech that he made down at AUSA in February was, I thought, pretty strong on technology and modernization and the needs of the future. So he's moving back and forth across that ground. It's a tough balancing act.

We, of course, want to see modernization, particularly research for the Army After Next. General Reimer's the one who established the Army After Next, so we can't fault him for not thinking about that. General Hartzog is very strong in supporting the AAN effort. That's been the great thing for us. Oh, by the way, we had a visit here by the Deputy Commanding General of TRADOC a couple of weeks ago—General John Abrams, son of Creighton Abrams, who is pretty obviously going to be the next commander of TRADOC. That's what everybody says, anyway. He was quite pleased with what he saw here and what he heard, and he added an interesting concept. He said, "I would like to think of you, ARL, as the navigator for TRADOC as we consider various technical options for the Army of tomorrow. We're going to make a series of decisions in the early part of the next decade, and there are going to be a lot of technical proposals floating around. I think the Army Research Laboratory could be a helpful navigator as we work our way through all of those decisions among very hard options." Interest-

ing concept. He was very pleased with us, and he told the boss that.

Speaking of that, one of those options is going to be the electromagnetic gun. I went down to Texas to visit that project last fall. We had a lot of trouble with the power supply for the electromagnetic gun. We're working at a small-scale version of the power supply, and we're having trouble getting it up to speed. Every time we crank it up, something goes wrong. We're spinning it up again this week. It should get to a critical velocity by Friday. Last time it did that, something failed. Yet this is only a fraction of the size we ultimately need. So it's a very, very high-risk program. That's one of the things that may still be on the table early next century.

There are lots of other technologies for lethality. One of them is the electrothermal chemical gun, which is a much less risky venture that I think is going to be a recommendation to the Army to do for a somewhat shorter term application. That one's going to work. That's coming out of WMRD, as well.

The whole business of partnerships—of which the federated lab is the principal, most visible aspect—is getting more and more attention. We're approaching 50 percent of our work in partnerships. If you include in that the electromagnetic gun program, which is almost $20 million a year down in Texas. . .

Moye: The operation in Austin in hypervelocity.

Lyons: Both hypervelocity physics and power sources—6.1 in the first case and 6.2 in the second case. About $8 million apiece, I think. Then there are two centers that we established locally here for universities—one in materials and one in electronics, two or three million dollars each per year for five years. There's the AHPCRC, the Army High Performance Computing Research Center at the University of Minnesota, which is now a consortium of universities. There's the investment we have directly at Clark Atlanta University. All of these are bigger than single investigators. They're centers. So there's quite an array of those things. I believe that we'll see more and more of them as we go forward, until we get to around 50 percent in outside partnerships.

In addition to that, in the QDR, General Wilson decided to add the Army Research Office to the Army Research Laboratory. Merge them together. I spent some time in December and January developing a memo of understanding with the acting director of ARO, Bob Singleton, and Andy Crowse, in which we hammered out terms of reference for the merger. This was really driven by General Benchoff, the Deputy Commanding General at AMC, who sort of told us what he wanted. The concept is that, possibly as early as this fall, the Army Research Office will be joined to the

Army Research Laboratory organization. It will stay down in North Carolina; its mode of operation, at least initially, will not be changed. That is, its programs will not be merged and distributed to the different directorates here. They will be kept together. In the budget, it will be separate. It will be in a different line. The director of ARO will become also a deputy director for basic science at ARL. With that hat on, he will oversee and have cognizance of the 6.1 in all of ARL and, perhaps, across AMC. There isn't much 6.1 anywhere else anyway, but he will have cognizance of the 6.1 in AMC. I'd better check that.

[Pause.]

I misspoke. As of now, the ARO director and deputy for basic science at ARL will only have cognizance over the 6.1 work in ARL.

The intent of this, I think, is two- or three-fold. One is to get better coordination of the 6.1 effort. ARO and ARL have been separate and free-standing, actually reporting through different chains. I report to the four-star, where ARO has, in the past, reported to the three-star over there. So the coordination has been strictly voluntary and sort of bottoms up, and hasn't always been tightly coordinated. We've seen one or the other start something off without the other's knowledge.

Secondly, it cleans up a little bit the AMC organization chart. The ARO was a separate reporting activity, and now that drops off the screen. That's a good thing to do. I think it shows some movement on General Wilson's part, and I think he wanted to do that.

From my own personal point of view, it has the affect of adding about $150 million to the budget of ARL at a time when we're in decline. I think it has what I call a bulking-up effect, sort of a weightlifter's point of view. We'll make that combination a force to be reckoned with, I think, in the S&T community. Of that $150 million, only $50 million is direct mission money for single-investigator grants. The other $100 million is a variety of special programs that come through DoD and OSD offices, the centers of excellence of various kinds.

ARO also manages the Small Business Innovation Research (SBIR) program. It manages the ACT II (Advanced Concepts and Technology) effort for fielding new technology with TRADOC. It oversees the HBCU (Historically Black Colleges and Universities) programs. A whole host of different things they do is outlined in these documents. If you would get those right back to me, I'd appreciate it.

The other thing I didn't cover in the strategy—and we might want to cut this back into the text—is outsourcing.

Moye: I thought we were calling that competitive sourcing.

Lyons: There's a new name for it that's gentler, but I forget what it is. It came to me in the QDR as outsourcing. Part of the recommendations from the QDR were to do as much of that as possible. AMC was urged to do that. AMC, in turn, urged the major subordinate commands to do as much, as quickly, as possible in outsourcing, either by A-76 procedures or whatever other ones you could think of.

We've been thinking about it ever since we first heard about this last June, when the first QDR decisions came down. We have recently started a formal program to see what can be done in the way of outsourcing. We've appointed Cynthia Tootle as a program manager, at least in the interim, to get this started. We have hired some consultants who are expert in this business, very senior folks who have operated at the upper levels of DoD in the past or on the Hill. We have defined all jobs that are not S&Es, or even S&Es that are not in S&E units, as on the table for study. That even includes all of the indirect-funded jobs. So that means, first of all, that all of the support staff positions are on the table for study. It also means that all of the clerical positions—secretaries—are on the table. It means that a job like mine will be on the table. We have counted up some 730 or so such jobs. That's about one third of the total. There are a few exceptions. There's a congressional exemption for guards and firefighters, so our guard force will not be studied.

Moye: I hear discussion these days on what's an inherently government function.

Lyons: I guess that's the first thing that Cynthia's going to have to do. By the way, she'll have some support. She'll have an amplified Staff Member Committee invented for the Personnel Demo to work with her as a communication link to the staff. She'll have these consultants. She'll have anybody she needs. The first thing you have to do is decide which of the positions should come off the table right away because they're inherently governmental. That's a phrase that I guess is from the legal folks. Probably the Director of ARL is inherently governmental. Not necessarily true. If we were GOCO, that would not be true. But you have to have, I should think, maybe at least one lawyer on the payroll. And probably two or three procurement people on the payroll. You go through that, and you check the legalities.

Moye: Get a minimum number.

Lyons: You have to have somebody who's a contracting officer, who can commit money. That person, I believe, has to be on the payroll.

One of those, two of those, three of those, whatever. Now we have 20 or 30 people doing procurement.

Moye: There are a wide range of procurements.

Lyons: It's not obvious, and if you ask the people in the function, they will tell you, "Of course, we're inherently governmental." I understand Ed Korte has declared that all of his lawyers are inherently governmental over at AMC headquarters. So Cynthia has got to work her way through that, and she'll get a lot of help. She'll probably get a lot of friction, too. We start off by saying everybody is going to start on the table, now how many of you hop off? By the way, the AMC Historian argues that all of his historians are inherently governmental just because there's statutory language about historians. I have sort of a sardonic view of that. Everybody is authorized somewhere. That doesn't mean they're inherently governmental. So we'll see. But that's going to go along. General Wilson wants us to get that through the first stage by summer, which means Cynthia has really got to get cracking.

Now all that first stage is, is a declaration to Congress that we are now officially entering an A-76 effort. Now we may decide we're not going to do an A-76. We went up to Frederick, Maryland, to visit the National Cancer Institute's research center up there. They are largely private sector without ever having done an A-76. The history of that center is that it used to be an Army outfit, it was terminated as an Army outfit, and then it started up again as an NCI entity. A lot of the former Army staff is in this NCI effort. But I think there was a break in service someplace, so it's not a good model for us. But they have some civil servants, and they have five different contractors, the biggest of which is SAIC (Science Applications International Corporation). They seem to be doing a lot of things that are creative. Of course, there's the GOCO model, where you take the whole business outside. We'll see.

Now the government's going to say that, whether we do it or not, you're going to save 20 percent. So they'll take it out of the budget, the argument being that it's cheaper in the private sector. I don't think that's necessarily the case. The important exception here is the S&Es, because S&Es can be privatized or outsourced or whatever without an A-76. It's an exemption in the A-76 regulations. Research is exempt. In other words, if I decide to do a federated lab, to create an outside partnership, I can run a reduction in force for the equivalent amount of money without an A-76. Kind of a shocker. That's why they're not on the table. They don't have to be. I think they are still included in some of the protections. For example, if you get outsourced, the in-house staff has, I think, the right of first refusal on the contract. So if you did a GOCO, the in-house staff. . .

Moye: Probably just transfer our staff over. . .

Lyons: I think a lot of that happens. It's not guaranteed.

The other things that we've listed here: The *20/20* show ran finally. That's the ABC program with Barbara Walters and Hugh Downs. They ran a segment on Kurt Ficke's allegations about potential wrongdoing at Aberdeen years ago, around 1989 or so. Didn't have any documented evidence, just a lot of allegations, but it got a lot of publicity, and it made us look terrible. The accusations are that we somehow transferred information to Iraq that would improve the performance of SCUD missiles. The FBI has been looking into that. I am told they have finished their investigation. I am told they haven't found anything. They haven't yet said that, but they are supposed to be going public with such a statement. That's something we would really appreciate, essentially a clean bill of health.

But that's been a difficult situation for a couple of years, ever since we terminated Ficke. He's been saying such evil things about his former employers. It's a very hard situation and not much we can do. We haven't been able to go public very much. But we may be coming to the end of that episode, and it's going to come out all right for ARL. I hope I don't have to change that assessment next time. I don't expect Kurt Ficke is going to go away, but he's not going to get support in his allegations. Nothing has been found in the two years of looking.

Tomorrow we're going to do something interesting. I'll probably not talk to you about it next time, so I'll do it now. The Subcommittee on Military Research and Development of the House National Security Committee had planned to come here to visit earlier this month, bringing in a number of elected members and some staff. They were going to come in for a half-day and have presentations and a walk-around at Adelphi as part of a series of such visits that they had planned to various federal laboratories. They had already made some visits out west to DOE laboratories. Then they decided that, since they're now in session, they couldn't do that, so would we bring a show to the Hill? So we have put together a traveling show organized around the five grand challenges that we derived from the Army After Next reasoning. This afternoon, we're going to go down and set up in a hearing room. Tomorrow morning at 8:00, we'll have this sort of open-house-like affair with that subcommittee, from eight to nine. We hope that the members and the staff will be able to find the time to attend that. We'll see. But it's a good show. I've looked at it.

Moye: There was quite a crowd yesterday afternoon.

Lyons: Part of the trouble is, we have at least two people at each of these five, actually six, stations. That's a dozen. Then there are hangers

on like me, and it gets up to 15 or so. There aren't likely to be any more than that from the congressional side. It's not a very big group. It's going to be busy, noisy. I'll give a short presentation, and then they'll just mill around. It will be fun. It'll be a very good exhibit.

We haven't done this on the Hill before. I have done it before. I have done it a couple times in previous incarnations. It usually works, but my experience was that you don't get too many members, because they often get three or four conflicting appointments on their card at the same time. So they have to zip in and out. Staff will come and spend time. So that's going to happen tomorrow as part of our marketing effort. [Editor's note: The open house was a resounding success, with lots of members and staff. We were asked to stay four additional hours.]

Also the next AUSA meeting is in June in Pasadena, California. I'm on the program, and ARL is taking the lead on the AMC exhibit. It's AMC's AUSA meeting. So we're going to be fairly prominent in all of that. Plus, the Vice Chief of Staff of the Army is going to show up in a couple of weeks at Aberdeen. We have a couple of hours on that. There's a lot going on with that kind of stuff. Unfortunately, General Reimer was supposed to be here last week. He canceled. He canceled it with no indication when he might be able to make it.

So that's a quick look at the last six months. Okay? Happy St. Paddy's Day.

18 August 1998

Moye: I'm Bill Moye, the ARL Historian. It is Tuesday, the 18th of August. I'm talking again this afternoon with Dr. John Lyons, the Director of the Army Research Laboratory. Good afternoon, sir.

Lyons: Good afternoon. We are nearing the end of the fifth year in the reign of Emperor Lyons. For the record, the last time we met was March of 1998.

I thought I would divide my remarks into three segments—good news, bad news, and some personal things. There's lots of good news, and some bad news. And this is personal because it's the end of my planned five-year sojourn as Director of ARL. So there will be some things in the nature of summing up. Later we will have, as I understand, another session where we'll try to do an overall summing up.

There is, in fact, a lot of good news about ARL as we complete what is almost six years of history. I've been here for five of those years. In some ways, the most significant were comments made to us by members, first, of the ARL Board of Directors, which is made up primarily of technical directors from the Research, Development, and Engineering Centers of AMC and some other folks as well, and then, members of the Stakeholders Advisory Board, which is either the three-stars from the Army staff or their representatives or equivalents.

Both of those groups met in June/July. The Board of Directors of ARL first. At the end of the Board of Directors meeting, they went around the table to get comments from the members, and unanimously, they all said they were very pleased with ARL's evolution, they thought that ARL was well placed and doing what they needed to have done, and they were quite satisfied.

Now contrast that with about five and a half years ago, when there was a set of interviews, conducted under Dick Vitali, of what were called the "stakeholders" then. There were all kinds of complaints about the fact that it looked as though ARL was overlapping and duplicating the work in the RDECs. A lot of unhappiness. In fact, as you know and history will show, there was a lot of resistance to the idea of creating ARL. It took a very long time to get over that. But I think, at the end of my sojourn here, it's very pleasing to me to report that the ARL Board of Directors was very happy and satisfied with the positioning and the role and the work quality. I was pleasantly surprised and delighted with those remarks. They really were unanimous.

Then two or three weeks later, we had the Stakeholders Advisory Board with a similar lack of criticism and more or less warmth and praise for what we are doing. Walt Hollis, in particular, the

Deputy Under Secretary of the Army for Operations Research, who was present at the creation of ARL, said in his closing remarks that he was very pleased to see that ARL had become exactly what the founders anticipated. It was a similar kind of feeling for me—after all the ups and downs of the last five years, to have our customers and our stakeholders feel that way. . . It was really a very positive signal for the work of everybody.

Similarly, in the peer review that we have done by the National Research Council—which is rough and critical and intended to be constructive by telling us where we have shortcomings—this year's report was better than last year's. It was still difficult to read in some places, but it did indicate that they thought that we had made noticeable progress in one year. We will see more of that in the current report that's being drafted. So I think that's pleasing.

I heard this morning, indirectly, from a staff member who's working in one of the directorates, that it was really a pleasure to work in ARL the last five years. In other words, that particular person liked the tech base research organization. Not everybody shares that view, of course.

Moye: Not to change the subject too much, but you mentioned the TAB. Have we got it worked out? Are they going to be able to continue it here?

Lyons: Yes. The problem with the TAB was never that they weren't doing what I wanted them to do. It was more that they were emphasizing the criticisms, which is, of course, what they were focused on. They didn't spend enough time telling us how good we are. Furthermore, they kind of lumped all the criticisms together in one place where a journalist could pick it up and copy it and make it look like we were terrible. That caused a reaction at AMC headquarters.

There's been a series of discussions about how to fix that problem, discussions between the Commanding General of AMC and the vice president of the National Research Council, Bill Wulf. I've been involved in those discussions. I think we know how to accommodate the concerns of the Commanding General and continue. And he has given permission to continue, provided that I can avoid the negative publicity that some of those comments had stirred up. So we're going forward. We're doing another round this year. If it doesn't get any better next winter, then I'm afraid there will be trouble. We're not going to get any more chances. But I think the National Research Council understands what they need to do to avoid getting us in hot water with the Army and the public and so on.

I'm hopeful that the TAB mechanism will continue, because I believe that a laboratory can keep its quality very, very high only if it's constantly prodded by peers who come in and say, "That's not quite as good as it could be, and here's what we think you ought to do to improve it." That's absolutely necessary. You tend to kid yourself. Your customers don't know enough to tell you you're not doing top-quality work. It takes your peers to do that.

The Personnel Demonstration System, which I think we've mentioned here off and on, which we started to work on about four years ago, finally started up this June. We didn't get all of the provisions there that we wanted, and we keep running into little glitches that were inserted by either the Pentagon or the OPM people. But nonetheless, we do have a system that is more flexible, that has a few pay bands rather than 15 grades, and that has pay for performance provisions, which is a major piece of that.

We have yet, of course, to exercise that. It's going to be complex to administer the pay for performance. It's inherently more controversial, because it's more judgmental. You don't get a raise just because you spend so many years in the step. In this system, you have to demonstrate performance. Your supervisor has to agree with that. You compete with others as to how good your performance was. It's going to be a problem to administer. We'll go through that. We'll do a mock payout first to see how it goes before we do a real payout. A real payout can't come until next year. I think there's a payout in January.

Anyway, we got the Personnel Demo, and we worked very hard on that. Lots and lots of people worked very hard on that. I think there's good acceptance because we had so many people involved in it. It's not to say that we won't have problems and there won't be some unhappiness. But I hope that it would loosen up the personnel system.

Speaking of personnel, we've had some new appointments in senior management. We now have an SES Deputy Director here. Dr. Rocchio was appointed during this last period. We have a permanent SES director of the Information Science and Technology Directorate. Dr. Gantt was made permanent SES this past reporting period. We've been competing the Director and Deputy Director of the Sensors and Electron Devices Directorate. Those competitions are over, and the selections are up in the Department of the Army. So we should soon have, I hope, two permanent leaders in that area.

We've also made two ST appointments. One is Dr. Schmidt, who has been running the electric gun program the last several years in the Weapons and Materials Research Directorate. I'll have to look it up. I believe there were two ST appointments.

Also, related to personnel, we've talked before about the work environment here, and you remember, in the fall of 1995, we went through the painful episode of the Channel 7 broadcast. At that time, we had a women's committee already at work on women's issues. Subsequently, I set up a minorities committee. Both of those committees have completed their work, and we've undertaken a number of initiatives. But in order to make that permanent, we are establishing a diversity board with members drawn from all over ARL. I just finished reading the charter and the vision and the goals for that board and also the proposed members. We hope to actually start the board up in September. It will be a permanent advisory group and sounding board for all work environment issues, with an emphasis on the diversity, women's and minorities' kinds of issues. But also any issue that affects the workplace environment. That will be a cross section of the staff. It will advise me, and it will advise the EEO office.

Another issue is a policy on ethics. I just read a draft of that, which was prepared by the ARL Fellows. I had asked them to do that last year, and they've now sent me a draft. In fact, I was sort of partway through it when you came in. The reason for this is, first of all, there are general ethics provisions for all civil servants. They are pretty well codified and don't need additions from me. These have to do with general conflict of interest rules, what you can and cannot accept as gratuities from the private sector and so forth. A lot of rules like that. They are stiffer for senior members. SES rules are much more strict. We're not addressing that.

We're addressing, instead, the special issues that go with doing research. They've been highlighted in recent years by a number of very difficult controversies over research ethics involving government funding of universities. The famous Baltimore case in which it was, in fact, not David Baltimore but an associate of his who was accused of fabricating data. Ended up costing him his position. So the NIH has worked on ethics for research under their grants program. Others have thought about it. NASA has drafted a set of ethics for their research groups. We got hold of some of these documents, and I met with the Fellows and talked about it.

Certainly, fabricating data is an ethics breach. But more subtle things, like who is a valid author of a paper? Just because you're the branch chief, are you entitled to be a coauthor of a paper? I say no, unless the contribution you make is a real one. A lot of managers tend to press their names onto papers as a way of building their curriculum vitae without really being justified. Those are a couple of examples. So anyway, we're drafting this. This will become an ARL policy document, something that all the staff should be familiar with. And I think that's a good thing. I put that on the good side.

The BRAC process, which began in 1988 up at Watertown, is almost over. At least the BRAC 91 process, which is the principal one that established ARL. The effort up at Aberdeen for the materials transfer from Watertown is essentially complete. We still have some arguments with the Corps of Engineers and the contractors about details on the building. But the building is fully occupied. We are, in fact, talking about some extensions to the building to accommodate additional people.

The one here, the building for the group that came down from Fort Monmouth and up from Fort Belvoir, is still not complete. It should have been by now, or just about complete. But it's not. It's late, and it's over budget. We will, nonetheless, have a really first-class building, but we ran into some trouble the very first winter with bad weather and also some rocks that we encountered in the excavations. That set us back several months to begin with.

Then it turns out there was a glitch in the design of the building that left out the cost of some very expensive piping that was necessary to install equipment. That was a mandatory item, and we had to find a lot of new money. Fortunately, General Sinn, who has been overseeing the work for the Corps of Engineers for the last year, is a former RM (resource management) officer, and he knew just where to go find some extra money. So he found several millions of dollars for us. Basically, it's a Corps of Engineers problem anyway, because they are in charge of construction, not ARL. That building will be ready next spring, perhaps some occupancy earlier than that, but by next spring, they will go ahead and occupy it fully. That will be the end of the BRAC process.

Yesterday, George Singley was here. George Singley was, in some sense, the parent of the ARL concept and also the BRAC proposals. I remember being on the outside in 1991, serving on a commission hearing the Army's proposals for the Combat Materiel Research Laboratory. George was the spokesman for the Army. We had long discussions about how to do this. But he was here yesterday, and we went to lunch and talked about things. He's now retired. So I drove him down to the administration building, which had originally been proposed as the new facade to this building. I showed him the parking lots, which were originally going to be a five-story parking structure. I showed him the new electronics building and told him that we are nearing the end of this process.

Unfortunately, I probably won't be here when it's finally done, because it looks like it will be next April or May. I wasn't here, actually, when it started, but I was in fairly soon after that. But I think we can all be proud of the BRAC process and the fact that, without it, we certainly wouldn't be here.

One other item related to the infrastructure, and that is that the occupancy level at Adelphi is low. With all the downsizing we've been through, there are now 2,100 or so total staff on the payroll, compared to 3,600, I think, when I came five years ago. And 4,000 and something earlier. We're a little bit loose in the socket here at ALC. We're not fully occupied. The real figure will come when the new building is finished and we bring in the staff who are now over in Gaithersburg or parked around the countryside someplace. We have been saying that we'll be able to absorb maybe 300 additional people. There are different ways to figure that out. How many parking spaces do you have? There are rules about that.

So we've been looking for tenants. We have to fill the Adelphi site up in order to generate the overhead to pay the fixed support costs, so we have been looking for people to come work with us. There have really been two different developments. One was that the National Security Agency is very interested in electronics. They make their own chips for the various cryptological devices that they use over there at Fort Meade, and they have research at different places besides Fort Meade. They have a group in Columbia and another group over here at the University of Maryland complex working on chip technology. They have to leave the Columbia space. They've converted the research program there into a production line. They heard that we were a little bit light on staff here at this building. We brought them over here, and it turns out they want to come and join us, about 35 people. And actually build another clean room. They've got some $6 million set aside so far for that project. So we'll have an NSA electronics group in the research lab.

Later, NSA came back to us and said, "We are very interested in information security, information assurance, network security, and we're going to put together a program jointly with industry. We're looking for a place to do that that's not behind the wire at Fort Meade." We said, "Well, we're interested in the same subjects. In fact, we're very interested." One of the key technical developments of the past year is the ARL information assurance effort.

So they came and looked over some of the space here, and they decided, much to my distress, that they wanted to use some of the space in the Della Whittaker Administration Building. Initially about a quarter of the space. So after I said no two or three times, they persuaded me that they were serious and they wouldn't come if they couldn't do that. So we've cleared out a quarter of the space. Moved the procurement staff back here from down there just this past week. They are now in temporary quarters over in the two portable buildings over by the wooden building that sort of looks like a portable, too. They are now set in there, and I went and looked at that this morning, and they're going to be okay.

The morale is reasonably good, and some of them like being back up here where the cafeteria is. As I say, NSA may grow that group from a quarter of that building to the whole building, which could be as many as 200 people. That could go a long way to solving our problems.

In addition to that, there are other groups in the information assurance business in the Pentagon, either in the Army or at the OSD level, who are also interested in perhaps setting up shop here and creating a multi-component center of excellence on information assurance. That would be very exciting. I should come back to that in the technical section.

But anyway, we're working on tenants here, and it looks as though we're going to be able to fill the site up with DoD people, which would make it a lot simpler than other agencies or the private sector. So I think that's a good news report. For a long time, we knew we had the problem, but we didn't know the answer. General Wilson was getting very nervous about it. Now we've told him where we are, and he seems to be very pleased.

Speaking of General Wilson, he asked us to do the exhibits for the AUSA show in Pasadena. We did that very well. Ron Mihalcin in Judy Johnston's area took the lead on that. They liked it enough at AMC that they then asked us to do the fall AUSA exhibit for AMC here in Washington. We reviewed the plan that Ron put together with General Wilson a week or so back, and the General liked that so much, he has now asked us to do the Orlando AUSA exhibit. So we may be getting to be the permanent exhibit designers for AMC for the AUSA shows. The advantage to that, quite confidentially, is we get to put more ARL things in the exhibits that way. In fact, the Pasadena show was dominated by ARL. I think that's a piece of good news.

In the technical program area, very briefly. . . I'm not going to go into details. You can do that through various channels.

The development of information assurance is something that's not a surprise exactly, but it's a delight. We've discovered that we at ARL know as much, if not more, about monitoring and protecting networks than anybody in the military. Why is that? Because we have a lot of brilliant computer people at Aberdeen. Have had since the 1940s. It turns out that they were able to design devices to put on the networks to monitor, to detect intrusion, to alarm, and so forth. So we actually were protecting our networks with homemade stuff before this became a big issue. It became a big issue in the last year. In particular, last February, there was a celebrated break-in. It got the Deputy Secretary of Defense involved and concerned for Pentagon computers. We also have had a lot of other attempted break-ins, some of them very serious ones

that came from other countries. That led to some involvement with the FBI and the State Department and all kinds of stuff.

Anyway, it turns out that we were discovered, sort of, by the Army's three-star for C4I. Lieutenant General Campbell came out here and was really impressed by our presentation. AMC discovered us. The Vice Chief of Staff, who is reporting directly to the Deputy Secretary of Defense, has been issuing instructions to people to install devices and take certain steps to prevent access to hackers. We find ourselves not only in the middle of this, but sort of out in front technically, which is why we have groups interested in collocating here.

Moye: Would be a good fit.

Lyons: It's a nice fit. It's a positive activity, protecting things. I'd say that's a really good story.

The ARL Annual Review is just out, as you know. I signed all your transmittals yesterday. A good job. If anything, perhaps too good. We may get criticized for putting out too fancy a document. It looks like a NASA document. Can't win.

Ed Brown has a landmark document out that you've seen on our reinvention activities, which is a very nice thing. You can stick that straight into the history. He calls it a special report. It's almost an HRA, an historical report. So I think that probably fits in the history.

Another high-visibility technical program is the electromagnetic gun program down at the University of Texas, which we've been responsible for for several years and which is a very high-risk, very challenging program. It hasn't been going terribly well. Progress is slipping from milestone to milestone. So far from the original goal, which was to build a weapon for a tank. Turns out, from what we know now, we probably cannot make an electric gun light enough for the projected lighter combat vehicle. Fort Knox people don't accept that. I think most other folks think that the electric gun may succeed but probably for very heavy artillery, such as for a naval gun or something. So although I don't think we'll get out of electric gun research, I think the time frame and the defined requirements will change. That may happen next month when we do a review.

Switch gears for a minute. I'm just thinking here. The other thing that. . .

Moye: You haven't mention the Hammer Awards.

Lyons: Ah, yes. Two recognitions from the Office of the Vice President, called Hammer Awards, which literally are hammers and which are supposed to remind you of the expensive hammers and toilet

seats and other things that got the Vice President interested in the reinvention business. Anyway, at a ceremony in the auditorium here at Adelphi with General Wilson hosting and the new Assistant Secretary for RDA in the Army, Paul Hoeper, participating, Robert Stone from the Vice President's office came out and awarded us two hammers. One was for the federated laboratory, which I accepted on behalf of the team. The team included George Singley, John Frasier, Vito DeMonte, and others. The second one was for the turbine engine diagnostic software and application. It's a very nice job of expert programming and transfer into the Ordnance School, and from the Ordnance School out into the field. You may recall we had a turbine engine set up here one time. I'm trying to think who that was for, but we had sort of an open house, and we had the engine set up, and we demonstrated the program. Anyway, that was a team from Aberdeen that came down and was recognized with a second hammer. So that's pretty good. They've given out a lot of hammers, but it was nice to get two in one day.

And we had shared in the hammer for the Personnel Demonstration system for the Army. It was actually awarded to a group including our people, but chaired by Bob Rhode from the DA staff. So we really got in some sense three hammers in one year. So we do get some recognition.

Now for the bad news. We've talked in prior discussions about the Quadrennial Defense Review, which led to a severe reduction in staffing for AMC, way out of proportion to their role in the Army. Because of the limits on reductions at the Army depots and to guards and fire fighters, the RDA part of the business is taking pretty heavy hits. In addition to that, the Secretary of Defense, last winter, set up the Defense Review Initiatives, what's called the DRID series. Number 20 has to do with spaces, a review of what's inherently governmental and what's potentially commercial activity. So that's another round of pain.

In this past round, which is still in process, not only are they being pretty severe as to what you could call inherently governmental in the business process and the facilities and support areas, but they are also putting most of the S&Es on the list to be reviewed for potential outsourcing. We resisted vigorously, but they've now got a proposal from AMC, which says that AMC is willing to review all junior S&E positions. [Editors note: This proposal has since been rescinded.] That's another pressure added for outsourcing. Outsourcing is now one of the biggest activities.

The pressure to move jobs into the private sector comes not just from the budget side of the shop, but it seems to me it's an ideological pressure. In other words, whether or not you've got the dollars, if you can, do the job outside. The assumption there is

partly budget, in that there's a conventional wisdom that says that most jobs can be done less expensively in the private sector, because companies have a profit motive, and companies don't need to have deputies in every major position and follow so many rules and regulations. They don't have so many cross pressures and reporting requirements and whatnot. There's an assumption that you can do lots of jobs cheaper in the private sector. There are some kinds of jobs where that's probably true. Most people agree. We have done it for a long time with grass cutting and janitorial. Most agencies have done some of that, but when they start talking about outsourcing the research and telling you that's cheaper, we just say, "Tilt. We have salary surveys that show it would cost you more." The higher grade people are underpaid in comparison to the private sector.

Anyway, I have been directed by General Wilson to conduct studies of outsourcing. When he was here in March, we got permission from him to study options beyond just doing commercial activities reviews under the OMB circular A-76. We didn't really want to use A-76 if there was a better way. So we studied a series of options. We had Cynthia Tootle take on the job of program manager for outsourcing. We told her we wanted her to look beyond A-76. She came across ESOP, the employee stock option plan approach, which is a way to involve employees with a stake in the effort. Most people don't really understand ESOP, so we have a big job to explain ESOP to our staff. But the point is, they would have a stake in the business, have stock in their name. It turns out that, in most ESOPs, that stock is actually in the pension fund.

We found an example in the Office of Personnel Management in the U.S. Investigative Service (USIS). We know there are 15,000 ESOP companies out there in the private sector. There are lots of them. This is a very common way of doing business. So we have gone back to General Wilson and said we think that there are really many advantages to an ESOP, most of which involve the retention of the key employees and the retention of a quality set of services. We'd rather try that than the A-76 study, which tends to be a low-cost, low-bidder approach. A-76 takes a long time and has mixed results.

There are a couple of down sides. One is, to go ESOP means that you are agreeing in advance to go private. Secondly, our consultants tell us that this path probably requires a sole source contract, i.e., not competitive. It also seems to require that we define what we're doing as privatization rather than just simply purchasing a service. That's a legal difference that has to do with just how much distance there would be between the ESOP and ARL, and that legal difference right now has us hung up. It's not clear whether we can get permission to do this. So at this juncture, we don't

have permission to go ahead. We have permission to try to clear up some of the uncertainty and see if we can get permission. We are talking to OMB about it. If we get permission, we'll try to do an employee stock option/privatization for a large number of the support group staff, including the business operations. That would leave the management free to concentrate on the technical side.

Moye: You didn't get to go because of your surgery, but Mr. Fonoroff and Dr. Rocchio went to England three or four weeks ago to study and talk to the folks over there about what they've been doing. I guess the Defence Research Establishment spun off their. . .

Lyons: The DERA, the Defence Evaluation and Research Agency, of course, operates in a different legal context. For example, when they did that, they spun off all their support work. The government required that all the employees receive the same salaries and benefits that they had before. We don't do that on an A-76. It's up to the private contractor what kind of salaries and benefits you get. We can't even do that probably in an ESOP, but we've got a better chance. They did do that, and it seems to be working pretty well. But it wasn't done the way we have to do it. The process was different. It's too soon to tell whether they are going to maintain high quality or even good quality. What they have done is they've got a contract, I think it's for five years, with this company that is primarily populated by former DERA employees. They've told them, "You will reduce your charges to us 5 percent a year. We don't care how you do it." I'm not sure whether that company is free to pick up outside business or not. One way to make it viable is to broaden the business base.

In the case of the U.S. Investigative Service, we understand that, because they're now a private ESOP company, they are free to pick up investigative security checks, anywhere, not just for the government. It turns out most companies do the same security checks, so the USIS business base is growing and broadening. I'm not sure they're increasing their staff, but they're able to reduce their charges to the government accordingly. In fact, we're told by our consultant that this could happen here.

So, outsourcing is going on. The studies are going on. The staff is well aware of it. We're trying to communicate, but we're doing it with one hand tied behind our back, because we cannot make public statements about any decisions until the Congress has been notified. That's the rule. So we have to say, "Well, we're thinking about this, and we're thinking about that, and we're willing to have dialogue with the staff about it." Even if we had a final decision from General Wilson, we're not free to discuss it until we notify the Congress. Fact is, we have limited go-ahead from General Wilson to begin to discuss the ESOP approach with a

variety of people, and we have been briefing around, including congressional staff, but that's not the same as an official notification. So we're still at that stage. We'd like to get beyond that. We'd like to find out whether we are or we aren't going to be allowed to do an Employee Stock Option kind of effort.

Moye: This would be for the support staff?

Lyons: It would be for as much of the support staff as we can define as not inherently governmental.

Moye: It still leaves the issue of the S&E's.

Lyons: Right. We've kept the research piece separate. I told you that the AMC submission on DRID 20 includes the junior staff of research. So if that holds, we will have to study the feasibility of outsourcing research itself. Of course, we're doing a lot of that. We do it now in the fed lab. We have lots of grants and individual contracts. Right now, it's a mix. We're about 40 percent outside now. When ARO comes in, we'll suddenly bounce up to a much higher number. But we'll probably be required to do some more study. General Wilson also wants us to study again the question of outsourcing the laboratory as an entity.

Moye: GOCO or something like that?

Lyons: GOCO, or FFRDC (federally funded research and development center), or university-affiliated research center, or whatever.

You remember the Board on Army Science and Technology of the NRC looked at that. That was with General Ross in 1992 or so. In their report, they said that they had looked at GOCO, and they had looked at two or three other options and decided that some hybrid like the federated lab approach that we ultimately took would really be the best. I regard that BAST report as prescient in the sense that we have since come along sort of an independent path to a similar answer. That is, some out and some in, various modes mixed up together, as about where we probably ought to be.

I don't believe personally that taking the whole laboratory outside makes any sense, but we will dutifully consider that (and have). We gave a preliminary report last week in which we said, in the first place, the people we talk to think it's a bad idea, so that the receptivity of that outside is not good. Secondly, we have a number of concerns, such as distance from the user. Now, we're a part of the Army. This is an Army post. All of a sudden, it becomes a private sector entity. I'm not sure how that all plays.

Moye: It seems like, over the years, we've had a hard enough time relating to and cultivating support from the green-suit Army.

Lyons: But we're all part of the same family.

Moye: To really make a division there really increases that separation.

Lyons: On the other hand, we went up to Lincoln Lab, which, for a long time, was a contract lab run by MIT for the Air Force. More recently, it has switched and now reports to OSD. And that has often been cited as an example of how to do defense research. Joe Rocchio, at my request, went by there and spent half a day talking to the managers. They're mostly 6.2/6.3. Very little 6.1. Lots of things didn't quite fit with the conventional picture. There's no question they do good work up there. Probably being associated with MIT doesn't hurt.

Anyway, outsourcing is a subject I regard as not necessarily very bad news, but it doesn't help to be pushed so hard. We are being pushed.

In terms of budget, not only is there budget pressure, but the pressure also puts pressure on the authorized positions. I told you the positions are down from numbers in the 3,000s to 2,100, and we're probably going to dip below 2,000. The budget hasn't crashed quite that hard, although if you go way back, the budget for predecessors of ARL was something like $800 million. I think it's been at $400 million or so since I got here. Now it's probably $350 million.

But there is pressure on the dollars, and the committees, in appropriating money for '99, took some money out of our 6.1 account and caused us no little amount of grief. We've been fighting with SARD over where to take that cut, because it wasn't specified.

Okay, so the budget is continually a problem. I don't see the downsizing stopping. You read the newspapers, and you see the occasional voice raised now that the Army and the Navy and the Air Force are subcritical and are starting to lose readiness. We continue to look, though, for ways to get some more support to stabilize the employee level.

I've told General Wilson. I said, "If you want to do all this outsourcing, fine, but if you can't guarantee stability in the budget, none of it works. If we don't have a certain critical size for this ESOP, for example, it doesn't work. We can't mint money." I said, "I know you can't guarantee me budget stability, but it is the key problem."

Okay, just a couple of personal notes. I gave a talk at Johns Hopkins last May. It was an invited lecture. I think I sent you a copy. I talked about partnerships. I also talked about the classical model of funding research, starting with basic and going to applied and on. That isn't the way it really works. That model and

the basis for policy development in Congress is all wrapped around the axle, because 6.1 is believed to precede 6.2, and you should have a certain amount of 6.1 and 6.2, and you should protect them, and you can't cross the category lines without permission. It's all crazy.

So anyway, I gave this lecture up at Johns Hopkins. That gave me a chance to sum up, to think about where I'd been since I started in the policy area at NIST years ago when it was NBS. I've submitted that to *Science* magazine, and they suggested that maybe I could condense it for a policy paper. So I'll probably do that. It takes a swipe at how the Defense Department handles the budget. You might want to look at that.

The other thing I did by way of summing up was Congressional testimony that I think we did in March. It was about the time of our last discussion, so I may have already included that. It was before Senator Santorum and the Senate Armed Services Subcommittee on Acquisition and Technology. You might want to get hold of that testimony to put in your records. George Singley testified the same day on related matters.

When we come together next time, we will do that, think about where we've been, where we are, and where we might be going.

The last thing I should say is that I'm now beginning to think about wrapping up. I have notified General Wilson that 31 December is my last day. I would hope to have a change of command ceremony a couple of weeks ahead of that. I have been telling him for over a year that I was going to retire sometime this year, trying to get the focus on the need not to have a gap. He has selected my successor. My successor is already in the Army, is already in the SES, so it was fairly straightforward. He is not in AMC. General Wilson would like to have an overlap so that, for some period of time, we might travel around to the different parts of ARL. I can tell him what I think he needs to know. Whether that will work or not, I don't know, but we've already sent a lot of stuff to him. Lots of reports and stuff, trying to get him up to speed. He's a very experienced R&D administrator. So if we work that out, I think we'll have a very smooth transition. The great fear I had was that we'd go a year without a permanent director. Meanwhile, the budget would get absolutely butchered. I just thought we were much too fragile to have a gap. Assuming that that selection is approved. . . the Secretary of the Army hasn't approved it. If he approves it, we're in for a very smooth transition. Next time, we'll know.

Okay?

Moye: Thank you.

7 December 1998

Moye: It's December 7, 1998, Pearl Harbor Day. I'm Bill Moye, the Historian for the Army Research Laboratory. I'm talking this afternoon with Dr. John W. Lyons, who for about two weeks will still be the Director of the Army Research Laboratory. We're conducting the last of our historical updates, sort of his exit interview before his change of command. Good afternoon, sir.

Lyons: Good afternoon. According to your note, we last talked on 18 August. We've had three months plus elapse since that time. I've spent a lot of this time thinking back over the past five years. In fact, I made a series of visits to the outlying sites. I went to White Sands. I went to Langley, and I went to Lewis (the two NASA sites), and gave them each a review of the state of the laboratory. I've been doing that also in the *Focus*, in an article that was published in the current issue, and I'm going to do the other half of that with Dave Davison this week, which adds up to a kind of an overview of where we've been and ends with a little bit of a look forward. I'm going to do that also today, probably a lot briefer than I've done in *Focus*.

First, what's gone on the last quarter besides the traveling around and generally getting ready? A long time ago, about a year ago, I went to see General Wilson about my successor and told him that I thought it was very important that he designate my successor formally before I leave, so there wouldn't be a gap. In the normal SES appointment process, there's often a gap of a year and a half or two years. I thought that would be very dangerous for ARL because of the times we live in.

So he and I worked on this all year long. He made a selection, finally got it approved despite a lot of typical bureaucratic delays. Got it approved, and we've been able to announce it, and we will be able to have an official change of command ceremony on 17 December because of his taking that matter seriously. Dr. Robert Whalin of Waterways Experiment Station in Vicksburg is coming here to succeed me. Robert has a lot of really good experience managing a large, complex laboratory operation, so I think that he is eminently well qualified for the position. He has a Ph.D. in a combination of subjects, physics and mathematics being two of them, which fits him for the subject matter. We've been sending him lots of reading material. We've had him up here several times. He's now building a house up here. He's been attending certain meetings. I think it's going to be very smooth transition.

Moye: Was he down at the Fellows meeting?

Lyons: He was down at the ARL Fellows meeting. They met at ARO last week, and he was there. Later in the week, he was at the Board on Army Science and Technology meeting for a half-day session and then later met with me and George Singley and a couple of George's

associates to talk about a contract where George is going to attempt to help us get our message out. So that's one thing that's happened, and that sort of came to a head during this past quarter.

Secondly, the result of a study of a couple of years ago under something called Vision 21 led to a decision by AMC to move the Army Research Office from its separate reporting activity status to a full-fledged member of ARL. On October the first, that became official. At the same time, we selected a new director of ARO, namely Dr. Jim Chang, who had been in the Air Force Office of Scientific Research. He succeeds Jerry Iafrate. Now, Jerry—just to reinforce the earlier point—Jerry left in the middle of the summer of 1997, and we only got Dr. Chang installed at the end of September 1998. So that's a typical SES replacement, which is why we couldn't do it that way for my job. So General Wilson and I and Joe Rocchio went down to the Army Research Office, and General Wilson installed Dr. Chang as the new director. He has two titles: one is Director of the Army Research Office, and the other. . . I think we did this last time, if I'm not mistaken.

Moye: Deputy Director of ARL for Basic Science.

Lyons: Deputy Director of ARL for Basic Science. So he's a full deputy and equivalent to Dr. Rocchio. Anyway, he is now installed. He spends some time here and most of his time down in North Carolina.

Moye: One of their folks said his understanding was that, originally, Dr. Chang thought he might spend most of his time up here and travel down there occasionally, but he changed his mind.

Lyons: It hasn't worked so far. He appeared up here this morning, and he's going to be here three days next week. But for the last month or so, he's spent most of his time there. Of course, he's moving there. He's getting set up there in a house that he's bought down there. So he's obviously pretty busy. He also has to get to know his staff.

We've had a couple of personnel developments. We've now finished all of our SES appointments, with one exception. That is Bill Mermagen's replacement. That process is in the works. The others have all been completed. The last one was John Miller, who became Deputy Director of SEDD at the SES level. That just happened a couple of weeks ago. Just today, there is an announcement that Dr. Walter Morrison, Rick Morrison, of WMRD has been appointed to the SES to succeed Dr. Richard Chait at the ASARDA office. Dick Chait was in charge of lab management and basic research for the Army in the SARDA office. Rick Morrison is going to take that assignment. So we lose Rick, who was a key division chief at WMRD.

The outsourcing that I believe we talked about in August continues. We have made a specific proposal at General Wilson's request. He asked me to put in writing a proposal that would include our

outsourcing activity. We tied our proposal to a section in the current Authorization Act, Section 246, which describes a pilot program for certain defense laboratories and T&E facilities to take advantage of innovative new ways of doing business. It discusses in considerable detail what they had in mind. We responded to that by preparing a proposal that describes three significant initiatives. One is the outsourcing proposal, namely our Employee Stock Option Plan idea.

Secondly, we propose program initiatives in three areas, in external partnership activities similar to the federated labs. Those three areas are robotics on the battlefield; fuel efficiency for battlefield combat vehicles, primarily tanks, armored personnel carriers, and helicopters; and finally, information assurance or network security, whatever you want to call it. Defensive information warfare. Those three as initiatives, and we've said that we think that either there is money available in some other account, for example, at OSD for information assurance, or that the program is much too ambitious to reprogram internal resources. For example, fuel efficiency may require a billion dollars over 20 years, just in the tech base, because it's redesigning the entire fleet of combat vehicles.

So anyway, we need the resources to do these things. We're hoping that that proposal will be the vehicle that will at least stabilize our budget, if not turn it around. So I hold out a lot of hope that that may have the effect of stopping the hemorrhaging of resources.

Moye: This is the proposal that's just gone forward.

Lyons: Yes. The third part is, we would like to have a working capital fund of some sort, so that we can accumulate funds in accounts to do things like depreciate equipment and so forth. It's something that everybody in the private sector does without thinking about—this particular finance tool that gives you flexibility.

So we put these three things in a proposal that went to General Wilson and will go up to the Department of the Army, and if we're lucky, it will go from there to the Secretary and will be approved as a pilot program under that provision. That won't be the end of it, however. The ESOP piece of it is going to have to get through some hoops in OMB. It's not clear that it's going to make it.

Moye: At one level, it would seem like it would be a natural fit. At first blush, it sounds like, "Let's do more of the fed lab kind of thing."

Lyons: That's part of it, except that I think we need money, because we can't generate cash to go outside without another massive RIF inside, and we can't stand any more massive RIFs. So somebody has got to find the funding to do that. These are really big initiatives. This may not be the right time in this century or maybe the next, but if you don't ask, you don't know. Nothing ventured, nothing gained. We'll see.

Anyway, the problem with the ESOP is that the only way we've been advised that we can do this is as a "sole source" and as a waiver to set aside the competitive version, which is known as A-76. That's the OMB circular that describes outsourcing. The White House is said to have agreed with the national unions to do outsourcing only competitively, to give the workforce a chance to win the competition and keep the work. Our proposal is to make a decision up front to set up an ESOP as a company, so there is no inside/outside competition. That's controversial. So this has been going on.

We hosted an Executive Steering Committee meeting. That's the two-star-level AMC Major Subordinate Command commanders and includes the Director of ARL. I've been going to those things for five years, and I figure I must have been to 20 of them. This one was held at the Sheraton up at Aberdeen. We had an evening reception in the Rodman Building. Gave people tours of the laboratory. It went off very well. Our support staff just did wonderful work putting that together and making sure it ran smoothly. A lot of stuff goes on behind the scenes in a meeting like that. I think we did it and did ourselves proud.

We did have a high-level meeting for the new Assistant Secretary for RD&A, namely Paul Hoeper, who spent some hours with us at Aberdeen, mostly with the weapons group. Walked through the Rodman Building, stopped in a number of laboratories, had a briefing on the Abrams tank, an "ARL within" talk. I thought it was very, very useful. I managed to make a very good personal contact with him. It turns out he could be critical in things like this pilot proposal, since he might have to get behind it and push.

So that's a little bit about the last quarter. What I'd like to do now is turn to some notes I've made as reflections on my directorship. We may want to do more, but this will be kind of a summary. Just thinking back on what's happened since September of 1993, what we've been doing, what we think is significant, what the good things are, what the not-so-good things are, and then a little bit of a look forward by way of predicting.

The first—running through all of this is implementing the decisions made in BRAC 91. That was the enabling structure, the decision structure, putting together what we now think of as ARL, and it involved an awful lot of things. We've talked about those. But it involved consolidating sites, shutting down some places, getting out of other places that weren't shut down, building new structures—among them two beautiful new research laboratories, but some other buildings as well, several buildings built. Moving people around. At the same time, we were downsizing. That process is still going on.

The last major piece of it is the research building that's behind us here at Adelphi for physical sciences research, primarily electronics. That is almost done. Go over there now, and you'll see them painting. We'll

start moving in at the end of the winter. By the end of the summer, we should have even the last piece (which is the clean room) finished, and there's a dedication planned for September.

Moye: I got a message about a meeting about that.

Lyons: Well over a year late and over budget. The Rodman Building was early and under budget, so this one makes up for it. There are good reasons why that happened.

Anyway, when the Corps of Engineers finishes out back here with the PSL, that process will be over with. If you consider that it probably started with BRAC 88 and the decisions about Watertown, we've been at this for 10 years, and it will be 11 by the time it's really finished. So it's quite a long, very difficult, very expensive, very trying process.

On the other hand, without the BRAC law, we wouldn't have ARL. I don't think either of the big buildings would have been built. Too many naysayers were coming along. By the time '93 rolled around, we were under a severe challenge, the DoD IG questioning the need. Fortunately, the BRAC legislation is so tight, so rigid, we went ahead and built this lab. The result is we have some very, very good facilities.

We lost a lot of people. We lost more than half the Fort Monmouth group. We managed to move more than half the Watertown group. We moved some folks from White Sands, and I think we lost over half of them. On the other hand, we moved people up from Fort Belvoir without losing many.

The second thing we did was to open the laboratory up through what we called an "open lab" concept, which was patterned somewhat after some things that Clare Thornton had done at Fort Monmouth. We created some rather formal relationships with the outside world in the area of battlefield digitization (so-called). These came to be known as the federated laboratories. There are three of them that are really major partnerships with the private sector, but with a base inside. One of the key concepts was that we should have 20 or so percent of our work matched up with a larger part of the world outside. We did that under cooperative agreements that allowed us to manage the outside work on a regular day-by-day basis rather than. . .

Moye: I've forgotten the chronology on that. Clare Thornton was doing some things. . .

Lyons: Clare had been doing them for years in LABCOM days or before. . .

Moye: But it was really you that got the concept of doing it for the. . .

Lyons: Those weren't partnerships. What Clare had done was open up his equipment, which was pretty good—excellent—to industry, to come and work with him and to use his equipment. That's the way I view

that. It was primarily that one-way street. They weren't tied down to any contracts. They were just guests to use his equipment. Treated as guest workers. There were a lot of them.

Moye: They weren't necessarily doing Army stuff. . .

Lyons: They weren't on projects, and they weren't necessarily doing Army work. In the fed lab, of course, we stated a set of technical barriers to the technology that General Sullivan wanted to use for the Army XXI, and really beyond Army XXI. Identified those barriers, put out a broad agency announcement, and rated the proposals as to the quality of their addressing these barriers.

So when we get all through, we have these partnerships working away at Army programs, just as though they were in our own labs. We control the planning under the provisions of the cooperative agreement, so if we don't like the plan of some component as part of the external workings, we just turn it off and rework it. Same as if it were inside. Can't do that with a contract, because that's fixed. Once you do a contract, it's fixed.

With a grant, we evaluate the capabilities, and I give you the money—the grant—and I don't do anything else until next year when I see how you did. In neither of those two instances can I adjust and control. With a cooperative agreement, I can.

So there are three of these with, I think, varying levels of success. But all are successful, according to the evaluation board, the Technology Assessment Board. From what I've seen, they like the sensors one the best and the display one probably the least of the three, but the words are all pretty positive about all three.

In addition to that, we set up some other key centers, or inherited them. There's one in microelectronics and one in materials that were set up by us to help with the moves.

Moye: Will they continue?

Lyons: I hope so. So far, they're still running. They were set up originally to be renewable for five years, at a level of about $3 million in each area per year. The budget people are cutting away at that, so there won't be $3 million on renewal. There was a threat to shut down the electronics one in this past budget cycle. We fought that, largely because we haven't finished moving the electronics people. Plus the fact that I kind of like these arrangements. They're academic. They help raise the intellectual standard. Johns Hopkins.

We have the electric gun program, which we inherited.

Moye: Down at Austin.

Lyons: Yes. . . very expensive. Probably $15 million or so a year. And it's very controversial.

Moye: It's been difficult to prove out a concept.

Lyons: Well, the physics is okay. The physics is reasonable. There is no reason why we can't do it, but it's limited by a lot of engineering problems, particularly materials problems. You spin a great big rotor at 20,000 rpm, and there's a lot of stress, because it is a big rotor. The linear, so-called "tip speed" is very high. Very few materials can stand that without coming apart. So we have that kind of problem. In a sense, that's a physical problem. But we do know of some materials that would be considered to be exotic, but they could take it. The problem is we can likely attain the necessary current that is what you need to fire an electric gun, but we can't do it in a package small enough and light enough to put on a land vehicle.

So now, what we're arguing is that the program probably should be changed around to focus maybe on big, heavy artillery or battleship applications or something else that can stand the size and develop it for that purpose, instead of trying to stuff it into a lightweight combat vehicle. Anyway, that's a big Center of Excellence that we inherited.

We inherited the Advanced High-Performance Computing Research Center at the University of Minnesota. We inherited the software engineering program at Clark Atlanta. So we have five or six centers, plus the fed labs. I told you a minute ago we'd like have three more fed labs.

I think that, ultimately, ARL is headed to something like 50 percent outside. That's a long way from where we started.

Moye: With the merging and transferring in of ARO to ARL. . . They had funded Centers of Excellence and MURI (Multidisciplinary University Research Initiative) for a number of years. The oversight and the management of all of these different kinds of agreements, is that going to be centralized?

Lyons: No. The question sort of runs the other way. I tell Dr. Chang that he is responsible for oversight of all 6.1. Remember, the three fed labs are 6.1, yet they're run out of the directorates. The question is, should he take over the management of the fed labs? The answer is no, because they are program-driven. They're very specifically aimed at objectives and are part and parcel of the directorates that they're in.

On the other hand, with ARO now an integral part of the team, it ought to be easier for us to form teams, at least with the university community, where ARO is mostly focused. There ought to be some give and take and back and forth about how to do these things better, given their experience with the URIs (university research initiatives) and the MURIs and all these other approaches. So I expect that we'll

be stronger. Remember that the fed lab was put together administratively by ARO in the first place. Jerry Iafrate and his people ran the procurement. Well, with a lot of our help.

Moye: They did a lot of evaluation.

Lyons: Yeah, the mechanics, because that's what they do all the time. So I think that will strengthen, but I don't think that we'll take the external work and put it under ARO or vice versa. At least not soon.

So anyway, partnering has become a very big part of our way of doing business. I said earlier I thought maybe we're heading toward as much as 50 percent outside. Originally, the idea was to be 100 percent mission funded. We never got that, never managed to get our heads above water with mission funding. So two things have happened: one is, we have taken a lot of sponsor money, soft money from PMs and RDECs. About a quarter of our operating budget each year comes from sponsors. Which is okay. I think that's fine. It gives you relevance. On the other hand, it tends to make for a focus on short time frames.

The other thing was, we were going to be an in-house lab. Well, we're not. We're about 40 percent outside, and we're heading toward 50. One of the reasons for the ARO merger was that senior Army leaders have been told for years that ARL was the inside gang and ARO was the outside gang. Then, all of a sudden, with all of these new partnerships and so forth, you couldn't say that. Furthermore, you couldn't say ARO is the 6.1 group, and ARL is the 6.2, because ARL actually had more 6.1 after the fed lab was put together than ARO did. So things got confused. Now, nobody worries about that.

Let me just finish up with ARO. We brought ARO in—and we may have said this before—under a memo of understanding that was supervised by General Benchoff, who was Deputy Commanding General at AMC. The basic terms of that agreement were that we would not alter the mode of operation at ARO. In other words, we wouldn't take all those grants and disperse them to our directorates. Neither would we take their money and give it to our people to be used to hire staff. We put a fire wall, in a sense, between ARL and ARO to protect ARO from any depredations from directorate executives at ARL.

We decided that the ARO director, as deputy director of ARL, will worry about all the 6.1 at ARL, including that which is in the directorates. So that's kind of touchy. He's going to look over the shoulder of an SES-level director and do something with his 6.1. Not clear what. Not clear that that isn't risky business, either. But the general idea is to look at it as a big picture, as you might if you were at a higher level, and see if we have gaps, for example, and look at the whole business. Have we got things pretty well covered? Is it uniformly covered? Is it underfunded here and perhaps overfunded there? Make recommen-

dations at budget time about possible changes and work through the TAB process and worry about the quality. We'll see how that works.

That's the starting point. I think the mode of operation of ARO within ARL can change over the years, assuming people are willing. The biggest burr, I think, was that the staff in North Carolina thought we were going to move them up here. They probably knew we were a little bit loose at this site.

Moye: When I was down there for the installation, that was expressed a couple of times. Especially when they know we've been looking for tenants for the building. They say, "Well, we're their solution." I think that's their concern or paranoia coming out.

Lyons: We told them that that was not our motivation. Furthermore, we don't have any money to do that. PCS (permanent change of station) for that many people would cost a lot. We don't have that kind of money. It is possible under a BRAC, because then you get money up front. ARO is in a leased building. So you could argue, why not put them here? But in the meantime, we won't see a BRAC for several years, and we need to get this place filled up with tenants now. ARO works pretty well where it is. I don't know why we would want to mess with it. I think the ARO staff have accepted the transfer. The fact that Jim Chang went down there and bought a house is very significant.

Okay, next thing we did was the Personnel Demo and the GPRA business. Ed Brown has done a nice job of writing some of that stuff up. The GPRA went along. We applied for that in the winter of '93/'94, and got accepted later on. We did that during the pilot phase, and that's now over. Got a lot of nice kudos for doing it. Ed Brown met a lot of interesting people. We went into that primarily because we wanted to do the Personnel Demo. Later, you remember, that was authorized separately. So we spent two or three years designing a Personnel Demo. It took much too long, but we started it last June.

We're now coming up on six months on it. We're still wrestling with issues of individual performance ratings. I think it's going to come out okay. We didn't get all the authorities we wanted. And we're frustrated we didn't get rid of things like high-grade ceilings and priority placement. I think we need to keep pushing and hope for success in the hammering. But it does give us more flexibility in hiring, more flexibility in pay. It allows us to do a better job in rewarding high performance and withholding awards for poor performance. Things like that. So we got that going. I think that's an accomplishment.

I developed a "campaign for the workplace environment" as a response to the Channel 7 expos. I've followed that up with Felipa Coleman in the EEO office ever since. I think she's done a lot of good things, and she's still doing good things, but we've got a way to go. She's got a contractor, and she's going to do another round of training. The figures suggest the environment is a lot better. We've still got

a lot of loose ends dangling, a lot of legal cases that haven't been resolved. But I don't believe, anymore, we have a difficult work climate other than the problems arising from downsizing.

We've perfected a construct for evaluating the laboratory. Some of the work on evaluation was done by Bruce Fonoroff and Pearl Gendason before I came. They've benchmarked places like NRL.

Moye: Customer satisfaction?

Lyons: Yeah. A whole host of things. Metrics. Customer satisfaction. Anyway, that has now turned into an institutionalized, formal process with four major components. There's a peer review for quality by the NRC body known as the TAB, the Technology Assessment Board. Most members of the TAB are members of the NAS (National Academy of Science) or NAE (National Academy of Engineering). Savvy people. And they, in turn, retain a set of panels that come in annually and review the ARL quality. They beat us up something terrible the first two years, criticizing what they called our "insularity." A holdover from the Cold War days. This year's report is going to be much more favorable. They have done what they set out to do, which is to stimulate a series of responses to improve the quality.

Moye: Hasn't there been a turnover recently and new membership in the TAB?

Lyons: We're going to have a new chairman next year. This is the end of the third year, and there's going to be a turnover now. Anyway, so the TAB is for quality, the peer review quality part of the evaluation.

The second part is the AMC Board of Directors, which is the tech directors from the RDECs, plus some others from similar positions. They come in once a year. That was part of the plan from the beginning. Half of our mission money is supposed to be subject to agreement with those folks. They don't pay. There we do a survey. We call those folks our customers. We survey them, and we get graded on our work in terms of timeliness, responsiveness, relevancy. There's a whole process that takes about four months of the year to develop mini-contracts with our customers. What is produced is a very much improved and strengthened bond between us. That process requires that we talk a lot to our customers, and that's terrific. The result this year, after five years of doing this, is that the tech directors, to a person, said that they are very happy with ARL.

Moye: That *is* a change. There used to be some animosity.

Lyons: I think we talked about this the last time, because I had that report. Anyway, that process has gone from a place where they said, "ARL, you're grazing in my pasture, or you're driving in my lane." Whatever you want to say. Now they're saying, "You're terrific." That's quite an achievement. I think that's a tribute to the process as much as

anything. So much good communication has come out of it. Even where we didn't have very good communications. For example, we didn't do too well with MICOM (U.S. Army Missile Command). Now MICOM has decided they want to get in on some of the free R&D, so that's an improvement.

Then a third part of it is metrics, which are "parametrics," really. They take the place of your being able to look at the lab and see the end result. You might have to wait 20 years for the end result, so you have to have some kind of indirect standard, or parameter. Pearl and company cooked up 50 or so metrics. I picked out of that a long list of about 14 or so that I follow. They have to report on their metrics to me every year at the first quarterly meeting, plus in their individual TAPES (performance ratings). We can now go back and look at the metrics numbers and such things as numbers of papers and judge performance over the five years. We're going to come to that in a minute, and I have good news for you.

Finally, we set up a "stakeholders board"—three-star-level folks—frankly, as a marketing tool. We thought that, if we could get people like that to listen to us for a day, they might become somewhat more supportive of the budget. They've met now three times, and we've talked variously about long-term and short-term balance in the lab. We talked about the Quadrennial Defense Review two years ago, and this past year, we talked about outsourcing. There again, we got much better marks as we moved through. The third year, we got very positive reaction from the stakeholders. I hope that will continue. I hope that device will outlast me and General Wilson.

So that's really quite a story, the self-evaluation. I think we do that better than anybody else in DoD. It works.

Let's go to the bad news. Downsizing, of course, is the really bad news. The resource hemorrhage continues in both dollars and spaces. I guess if I have any regrets, it's that I couldn't stabilize that, despite pleading with DA that you can't run a laboratory in such an environment. We've run it this way for nine years, since '89, I guess. ARL started, as you know, around 4,500 people, and we're sitting at 2,150 now. We started with $800 million, and now we're sitting at $350 million. Terrible, devastating losses. I tell the story to people, and they just shake their heads. So it's a bad story, and it leads to all kinds of problems—primarily, I suppose, the staff thinks, "If you can't see the end of this, maybe there's no future."

On top of that, comes this outsourcing business. By the way, if you think about outsourcing, Bill, the worst thing that's happened to us—and we don't talk about it much—is that, first, we lost control of our finances to DFAS; then, we lost control of people to the regional CPOC; and now we're losing procurement to the AMC Procurement Center. If you go back and look at the studies about what ought to be done for the defense labs, the first thing they say is to empower the

directors in those areas, those three areas. We lost them all. So that's the beginning. They were outsourced to someplace else in DoD. They didn't go outside. They just went to somebody else. Maybe someday they'll go outside. Now we're talking about outsourcing the rest of it.

That's why the ESOP looks good to us, because we think that could lead, not to a loss in service, but maybe even a gain in service support. This whole business of taking away from management's ability to handle things doesn't make any sense. No sense.

On top of that, I came here to change the culture, and I was supposed to make a tech-base lab out of a set of disparate, loosely affiliated, broad-spectrum labs. Here at Harry Diamond, they did fuze production. Up at BRL, they had full service in their departments, support and all. Push all of that together and say, "Okay, guys. We're not doing 6.3 anymore. We're doing 6.1 and 6.2, and it's a research lab. Here's how we're going to have to evaluate it." So I started talking about archival publications and raising the number of Ph.D.s. A lot of folks who don't fit that mold were made very uncomfortable, and we tried to reach out to them. The fact is, that's what happened. We lost 6.3. The culture change is not complete yet, and probably won't be for another five years. Eventually. It's a slow process.

What I find astonishing in all of this, if you look at the metrics for the last five years—from '93 to '97, and pretty soon we'll have '98—remember, the number of staff has gone from 4,500 to 2,100. The numbers for publications, patents, and internal reports have skyrocketed. Three times the number of publications. The number of post docs doubled. Percentage of Ph.D.s. has gone up five percentage points. Number of guest workers has gone up. That's from a small base, so it's not a real big number. The number coming in has doubled. That's partly fed lab. So we're much more productive, while we're much smaller.

That was a surprise. The metrics people just brought that to me. I said, "Okay, we did something right." We, everyone, the staff as a whole, was doing something right, and you say to yourself, "Why, in the face of all this negativism?" I think it's the nature of the work, to support the soldier. It's a very inspiring sort of mission,to protect the soldier.

Moye: So we're more efficient. Do you also think we're more unified? Do you think there's more of a sense of ARL, and less of Harry Diamond or BRL?

Lyons: I think we're more efficient, certainly. I think that some of the downsizing was just eliminating unnecessary duplication. We know we were fat. We had seven major components, each of whom had their own full services, and that was kind of silly. Pulling that together certainly helped efficiency. We reduced somewhat more in the support area than we did in the science and engineering. It's not quite as heavy a hit on the technical side.

We moved the materials people out of Watertown, and they didn't miss a beat in publishing. Maybe it's because they were not able to do lab work, so they wrote a lot of papers. Whatever it was, the publication rate for that group held steady.

But I do think that people stay with us despite the resource problem because it's a good place to work and because it's an exciting, challenging, and worthwhile mission. A lot of missions in industry aren't. It's just to make money. Here we have the "higher good" to work for. The ability to publish has improved since we don't have so much restriction. I don't know whether we have less classified work now than we used to or not, but we're certainly encouraging S&Es to publish their work and build their own personal reputations. And we bought a lot of new equipment under the BRAC, so the equipment is good, and the buildings are good. Whatever, it's working.

Let me just take a minute here to look forward. This won't take too long. I sat down to think about what I should put on a chart, and I just started writing stuff with no particular bias. I didn't think of the answer first, which is usually the way I go. I started off by saying I think the resource problem will continue. I think the pressure to outsource will continue. I think we may get some support for one or two of these program additions because of the way we selected them and their importance to the soldier. Fuel efficiency is very important. We're talking about a revolution in military logistics. Information assurance and network security is getting to be a real challenge, not just on the battlefield, but in all our facilities.

Moye: There was an interesting, kind of off-the-wall little piece in the *Washington Post Magazine* yesterday. They frequently do a little something on "bureaucratese." They showed the photocopy of this NSA document that had black marks through some of it, saying they are permitting people to discuss the term "ZARF." You can't define what it means, but it's now okay to use the term "project ZARF." You just can't define the details of the thing. So the guy went on the internet and put in "ZARF" to see what it is. And he came up with some hits out of the Air Force about something to do with computer security. So his assumption is, just on the basis of that, that maybe the Air Force has some contracts out there working on computer security. Kind of an interesting interplay.

Lyons: There was an exercise at the DoD level this past year as to how much information you learn just by cruising around public information. It turns out that the web pages, the web sites, are full of information which, when pieced together by a clever analyst, which is what intel does—pretty soon you learn some pretty deep secrets. *If* people are not watching what goes on the web site. That's why the deputy secretary last month, I think it was, shut down all the web sites and asked people to review very carefully what information they are releasing. A lot of it comes out of procurement. Somebody wants to

build a top-secret facility to do something super, super, super, super secret, and then they put out these RFPs, that are full of dope that you could procure things for.

Anyway, I think we'll get support for one or more initiatives, and that will have the stabilizing effect that we need, I hope. I believe ARO will be a source of real strength as things work their way together and that each side will reinforce the other. We now have the facilities and equipment. It's a nice place to live. I think we will hold our top people. I think the lab will get stronger, and I believe that we will keep working on the Army After Next. So I really feel pretty good about it, with respect to the budget.

Moye: You've been working the AAN part of it pretty hard.

Lyons: We're still working on it hard, and Joe Rocchio continues to lead that, even as he serves as deputy. He's now got a couple of people working with him regularly here. We've developed an awful lot more contacts with TRADOC, and we have shaped our program to respond to AAN. I know we've talked in the past about the grand challenges, and they are part of this focus on AAN. So I leave with a sense of satisfaction, but I'm disappointed we didn't get some things done.

Moye: We'll have to be sure to put your name on the invitation list for the ceremony for the building next door. I know it was something of a disappointment that it kept sliding.

Lyons: It slid so far, there was no way to hold it. At one point, we thought we were going to occupy it in the fall and we could do a fast-track dedication while I'm still here. That's so far out of whack now. . . I'll come back for that, I hope.

Moye: Is the NSA, the tenant thing, is that coming along?

Lyons: NSA is in Building 601. They've done the reconstruction down there, and I went down and looked at it. They may eventually end up with more of our space. Here in the 200 area, the situation with NSA is still fuzzy. We have set aside a block of space for them. We were under the impression they have money to go ahead and start building the clean room space, but it seems to be on hold.

Moye: I hope that's not project ZARF.

Lyons: I think the other one may be. Down in 601. That's what they're doing. Network security. Some of it's hush-hush.

Okay?

Moye: Thank you very much.

Glossary

AAN	Army After Next
ACAP	Advanced Concepts and Plans Office
ACIS	Advanced Computational and Information Sciences
ACM	Association for Computing Machinery
ACTII	Advanced Concepts and Technology
AHPCRC	Army High Performance Computing Research Center
ALC	Adelphi Laboratory Center
AMC	U.S. Army Materiel Command
AMSAA	Army Materiel Systems Analysis Activity
APG	Aberdeen Proving Ground
ARL	U.S. Army Research Laboratory
ARO	U.S. Army Research Office
ARPA	Advanced Research Projects Agency
ASHPC	Advanced Simulation and High-Performance Computing
ASL	Atmospheric Sciences Laboratory
ATR	automatic target recognition
AUSA	Association of the United States Army
BAA	broad agency announcement
BASEOPS	base operations
BAST	Board on Army Science and Technology
BE	Battlefield Environment
BOD	board of directors
BRAC	Base Realignment and Closure Commission
CECOM	Communications and Electronics Command
CG	Commanding General
CMRL	Combat Materiel Research Laboratory
CPOC	Civilian Personnel Operations Center
DARPA	Defense Advanced Research Projects Agency
DCSINT	Deputy Chief of Staff for Intelligence
DCSLOG	Deputy Chief of Staff for Logistics
DCSOPS	Deputy Chief of Staff for Operations
DCSPER	Deputy Chief of Staff for Personnel
DDR&E	Director of Defense Research and Engineering
DE	directorate executive
DERA	Defence Evaluation and Research Agency (UK)
DEFAS	Defense Finance and Accounting Service
DISC4	Director of Information Systems for Command, Control, Communications, and Computers
DISUM	Daily Information Summary
DoD	Department of Defense
DSB	Defense Science Board
EE	electronics/electrical engineering
ESC	Executive Steering Committee
EPS	Electronics and Power Sources
ESOP	employee stock option plan
ETDL	Electronics Technology and Devices Laboratory

FAA	functional area analysis
FAST	Field Assistance in Science and Technology
FFRDC	federally funded research and development center
G&A	general and administrative
GOCO	government-owned, contractor-operated
GPRA	Government Performance and Results Act
GPS	Global Positioning System
HBCU	Historically Black Colleges and Universities
HMMWV	high-mobility multi-wheeled vehicle
IG	inspector general
ILIR	in-house laboratory independent research
IMETS	Integrated Meteorological System
IPA	Intergovernmental Personnel Exchange Act
IPR	in-process review
IRAC	Internal Review and Audit Compliance
IS&T	Information Science and Technology
JWIDS	Joint Warfighters Interoperability Demonstration Program
KBLPS	Knowledge-Based Logistics Planning Shell
LABCOM	U.S. Army Laboratory Command
LAD	Log Anchor Desk
M&RA	Manpower and Reserve Affairs
MEA	Management Engineering Activity
MER	Management/Employee Relations
MICOM	U.S. Army Missile Command
MOD	Ministry of Defence (UK)
MSC	major subordinate command
MURI	Multidisciplinary University Research Initiative
NAE	National Academy of Engineering
NAFIC	Nonappropriated Funds Instrumentality Council
NAS	National Academy of Science
NASA	National Aeronautics and Space Administration
NBS	National Bureau of Standards
NCAR	National Conference for the Advancement of Research
NIST	National Institute of Standards and Technology
NRC	National Research Council
NRL	Naval Research Laboratory
NSF	National Science Foundation
NTC	National Training Center
OBM	Office of Management and Budget
ONR	Office of Naval Research
Ops	Operations Directorate
OPTEC	Operations Test and Evaluation Command
PAO	Public Affairs Officer
PM	program manager
PEO	program executive officer
POM	program objective memorandum
PPP	Priority Placement Program
QDR	Quadrennial Defense Review
RDA	research, development, and acquisition

RDTE	research, development, test, and evaluation
RIF	reduction in force
RM	resource management
SAIC	Science Applications International Corporation
SAR	synthetic aperture radar
SARD	Assistant Secretary of the Army for Research, Development, and Acquisition
SBIR	Small Business Innovation Research
S^3I	Sensors, Signatures, Signal and Information Processing
SLAD	Survivability/Lethality Analysis Directorate
SMC	Staff Members Committee
SO	Special Operations
SSAC	Source Selection Advisory Committee
ST	scientific and technical
STOW-E	Synthetic Theater of War—Europe
TAB	Technology Advisory Board
TARDEC	Tank-Automotive Research, Development, and Engineering Center
TDA	table of distribution and allowances
TECOM	Test and Evaluation Command
TOC	tactical operations center
TRADOC	U.S. Army Training and Doctrine Command
UAV	unmanned aerial vehicle
URI	university research initiative
USAMARDA	U.S. Army Manpower Requirements and Documentation Agency
USIS	U.S. Investigative Service
VERA/VSIP	Voluntary Early Retirement Authority/Voluntary Separation Incentive Payment
WSMR	White Sands Missile Range

Key Personnel

Benchoff, LTG Dennis L., U.S. Army Materiel Command (AMC) Deputy Commanding General

Bill, Dr. Robert C., Director, Vehicle Propulsion Directorate

Brown, Dr. Edward A., Special Projects Office

Chait, Dr. Richard, AMC Chief Scientist, then AMC Principal Deputy for Technology, later Director for Research and Laboratory Management (SARD)

Chang, Dr. Jim C. I., Director, Army Research Office

Decker, Gilbert F., Assistant Secretary of the Army, Research, Development, and Acquisition

DeMonte, Vito J., Director, Sensors, Signatures, Signal and Information Processing Directorate, later ARL Deputy Director (September 1996–June 1997)

Denney, Charles V. III, Director, Operations Directorate

Dunn, COL Thomas A., Deputy Director/Commander (August 1994–June 1996)

Elber, Dr. Wolf, Director, Vehicle Structures Directorate, later Vehicle Technology Center

Fisette, Michael F., AMC Principal Deputy for Technology

Fonoroff, Bruce M., Director, Advanced Concepts and Plans Directorate, later ARL Associate Director for Plans, Programs, and Budget

France, CSM Larry D., Command Sergeant Major, until June 1995

Frasier, Dr. John T., Director, Weapons Technology Directorate (until March 1994), then Associate Director for Science and Technology (until September 1996)

Gantt, Dr. James D., Director, Information Science and Technology Directorate

Gelnovatch, Vladimir, Director, Physical Sciences Directorate

Griffin, Glenda, Intelligence and Security Office (until September 1997)

Holmes, John E., Director's Initiatives Group, later Strategic Planning Office

Hollis, Walter W., Deputy Under Secretary of the Army for Operations Research

Iafrate, Dr. Gerald J., Director, Army Research Office

Johnson, Lawrence D., Director, Materials Directorate

Jones, Dr. Anita, Director of Research and Engineering (DoD)

Keesee, Dr. Robin L., Director, Human Research and Engineering Directorate

Kelly, MG Patrick J., Commander, U.S. Army Laboratory Command/ Army Research Laboratory (1992)

Kirby, Kevin E., Director's Initiatives Group, later Deputy Director, Operations, later Site Director for Adelphi Laboratory Center

May, Dr. Ingo W., Director, Weapons Technology Directorate (now Weapons and Materials Research Directorate)

Mermagen, William H. Sr., Advanced Computational and Information Sciences, later the Corporate Information and Computing Center

Miller, John M., Director, Sensors Directorate

Miller, COL William J., ARL Deputy Director/Commander (until July 1994)

Pellegrino, Dr. John, Director, Sensors and Electron Devices Directorate (September 1996)

Pigaty, LTG Leo J., AMC Deputy Commanding General (1992–1994)

Reed, Jerry L., Director, Operations Directorate (through December 1993)

Reimer, GEN Dennis J., Chief of Staff, Army

Rocchio, Dr. Joseph, Associate for Science and Technology, later ARL Deputy Director

Ross, GEN Jimmy D., AMC Commanding General

Salomon, GEN Leon E., AMC Commanding General

Singley, George T. III, Deputy Assistant Secretary of the Army for Research and Technology, later Deputy Director of Research and Engineering (DoD)

Sullivan, GEN Gordon R., Chief of Staff, Army

Thomas, Sergeant Major Charles L. (August 1995–April 1997)

Thornton, Dr. Clarence G., Director, Electronics and Power Sources Directorate (until February 1995)

Veazey, Don R., Director, Battlefield Environment Directorate

Vitali, Richard, ARL Acting Director (September 1992–September 1993)

Wade, Dr. James J., Director, Survivability/Lethality Analysis Directorate

Whalin, Dr. Robert W., ARL Director (as of December 1998)

Williams, COL O. J., Chief of Staff (August 1996–June 1998)

Wilson, GEN Johnnie E., AMC Commanding General

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Dr. John W. Lyons served an exciting and tumultuous five years (1993–1998) as Director of the U.S. Army Research Laboratory (ARL). Dr. Lyons and ARL count a number of significant achievements, despite operating in an environment of government shutdown, uncertain funding, declining personnel resources, and shifting defense priorities.

The consolidations of personnel and functions and the major construction projects arising from Base Realignment and Closure Commission (BRAC) decisions are almost complete. ARL launched its federated laboratory initiative, entering into cooperative agreements with three industry/university consortia. The U.S. Army Research Office (ARO) transferred into ARL to strengthen and centralize coordination of the Army Materiel Command (AMC) basic research program. The laboratory implemented its new personnel system as a "demonstration project." On the technical side, the laboratory focused considerable energies on technologies and systems to "digitize the battlefield." ARL demonstrated the GPS registration fuze, and it maintains state-of-the-art supercomputing capabilities at the Major Shared Resource Center. Meanwhile, ARL supported U.S. soldiers deployed to Somalia, Haiti, and Bosnia, and ARL is working with the Training and Doctrine Command (TRADOC) in the Army After Next (AAN) process.

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