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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 2000

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

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SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

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James D. Ogsbury, Jeanne L. Wilson, and Donald M. McKinnon,

Staff Assistants

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PART 5

	Page
Secretary of Energy.....	1
Departmental Administration.....	244
Energy Research, Renewable Energy, and Nuclear Energy.....	355
Federal Energy Regulatory Commission.....	928
Nuclear Regulatory Commission.....	1081

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(ii)

Thursday, March 4, 1999.

DEPARTMENT OF ENERGY

WITNESS

HON. BILL RICHARDSON, SECRETARY OF ENERGY

Opening Statement

Mr. Packard [presiding]. Ladies and gentlemen, I would like to begin on time. We do appreciate you all being here, and appreciate the members being here on time. I just have a habit of starting on time. I get a little upset sometimes sitting and waiting for my hearings to start.

So, maybe a little housekeeping as to how we will operate on this subcommittee. Inasmuch as this is the first hearing, it might be good to indicate how we plan to operate.

We will probably observe the 5-minute rule starting with Mr. Visclosky, and then go over as many cycles as necessary during the question period, so that all will be able to ask whatever they wish.

Opening statements. Unless members insist on an opening statement, I think that just maybe the chairman and ranking member will have short opening statements.

I do not wish for the hearings to be long and drawn out. We may not ask all the questions, either in this hearing or in future hearings. We may ask the witnesses and their staff to respond by submitting answers for the record, and we will get some of that today. We do intend to start our hearings on time, and hopefully not have them long and drawn out.

The next hearing, for the information of the members, will be next Tuesday. We are not exactly sure of the time because we may have some changes in the Full Committee markup on the supplemental that may interfere with our scheduled time, but right now it is scheduled for next Tuesday--next Thursday, not Tuesday, my apologies. Next Thursday. And you will have that if you have not already received it.

Now we are very, very pleased to welcome each of you here, and certainly the members of the subcommittee. I am very pleased to be able to serve with you on this subcommittee. This is my first term as chairman, and perhaps we might introduce some of those that are new on the subcommittee.

We have Bill Young who is now full committee chairman that will be serving as a member of the subcommittee, as he is on all subcommittees. Mike Forbes from New York. We are glad to have Mike Forbes join us on the subcommittee. Mr. Clyburn is not here, but also a new member of the subcommittee, along with Tom Latham, who is here. Tom, we are delighted to have you with us. And I am delighted to join with some of you old veterans of the subcommittee.

I am particularly pleased to have as our first witness--and we won't introduce him quite yet--the Secretary of Energy, Mr. Richardson, who is one of our former colleagues and a friend of all of us, I believe.

We are pleased to have the opportunity to begin these

hearings. We intend for this subcommittee to be one of the early bills out of the chute as far as the appropriations bills. We will complete our hearings during the month of March, and it is important that we have--in fact, we will conclude on March 25.

We will like to have all of the outside witnesses' testimony submitted to the committee by the 26th of March if we can. It would allow us then to proceed with the writing of the bill.

Again, Mr. Knollenberg, we are pleased to have you, and I am pleased to join with you on this subcommittee.

With that, I am going to ask if Mr. Visclosky would like to say a few words, and then we will proceed.

Mr. Visclosky's Opening Remarks

Mr. Visclosky. Mr. Chairman, I appreciate that very much. I welcome you to the subcommittee, and congratulate you on your chairmanship. And I also join in welcoming Mr. Forbes who has served with us on Treasury-Postal; and Mr. Latham, as well as Mr. Clyburn from South Carolina. I think all three gentlemen, as well as yourself, are a welcomed addition to this subcommittee.

I would also point out that the subcommittee has had a long tradition of bipartisan cooperation, members getting along with each other. That has certainly always been my experience. It was my experience with you when we served together on military construction; and through four different chairs and the last four Congresses that tradition has been maintained. I certainly look forward to working with you and members on both sides of the aisle here to make sure that we are as productive and responsible as possible as far as our responsibilities. I would simply also conclude by adding my welcome to Secretary Richardson. Happy for his success, and look forward to working with you, Mr. Secretary.

Thank you, Mr. Chairman.

Mr. Packard. Thank you very, very much. And we are very pleased to have the Secretary with us as our first witness in our hearing process. Like I mentioned, he served in the House for some years. Most of us have had very pleasant experiences working with you in the House.

I want to congratulate you on your new assignment, even though it is 6 months old now, as Secretary of Energy. We appreciate the work you are doing; looking forward to your testimony this morning.

I might mention that I presume members of the subcommittee have read your testimony. It is very thorough and very complete, and frankly very technical. You handled the issues very well. I have read it all, and I am sure they have.

I would not like to sit here for 2 hours and listen to it all again--[Laughter.]

But you may do as you wish, Mr. Secretary. But I would appreciate it if you would maybe summarize, but, again, it is up to you. We are delighted to have you with us though, and congratulations on the work you are doing at the agency.

Secretary Richardson. Mr. Chairman, I want to get off to a good start with the subcommittee, so I will take the hint, and not only summarize, but summarize extremely briefly, because I know that this subcommittee has a lot of work to do. I also want to note that you, Mr. Visclosky, and myself are all new in our jobs, so I hope to have a very good working relationship with you and many members of the subcommittee who I have known over the years. And when I was at the United Nations I sort of felt I was Congressman Forbes' constituent. I don't know if he felt the same way, but he was my Congressman, and my friend for many years.

Mr. Chairman, we are proposing to this subcommittee \$17.1 billion in your jurisdiction to strengthen our country. We have a number of missions: developing breakthroughs in science and technology; maintaining the safety and reliability of our nuclear weapon stockpile; ensuring energy security; and cleaning up the environment from the legacy of the Cold War.

I would also like to mention, Mr. Chairman, that I have here most of the assistant secretaries, for the relevant areas of the budget. So any questions that get very, very technical, I may be deferring to them.

Let me say also, Mr. Chairman, that I look forward to working with you on a number of issues. I know that Mr. Frelinghuysen--as a member of this subcommittee--and I had a chance to visit his facility, the Princeton Plasma Physics Lab just last week, and I was very impressed with the fusion work that they are doing there.

national security

Mr. Chairman, in the interest of moving rapidly let me talk about national security which is one of our primary missions.

We maintain a safe and reliable nuclear weapon stockpile that does not require nuclear testing, and to do so requires that we ensure an adequate supply of tritium. This is a program that Dr. Vic Reis, who is on my right, runs here for our Department. It is very important, the stockpile stewardship program.

We also deal, Mr. Chairman, with the global nuclear peril through our nuclear non-proliferation programs, eliminating excess weapons grade materials, and adhering to international arms control treaties.

We have joined with Russia and a number of programs that are under the jurisdiction of this committee that are very important; nuclear cities, programs where we try to keep Russia and nuclear scientists from defecting and working with us rather than for the Iranians, Iraq's, and North Koreanans. These are some very important programs that we consider are key to our national security.

We also believe, Mr. Chairman, that these are programs that are being run well, and we look forward to working with you to make them run even better.

stockpile stewardship

As I mentioned, on stockpile stewardship the Secretary of Defense and I certified to the President for the third consecutive year that there was no need to conduct an underground nuclear test at this time. We think this program is working well.

Eleven thousand nuclear weapons have been safely dismantled since 1991. We have supercomputers that will reach 100 trillion operations per second by the Year 2004. These are advanced supercomputers that we use in the stockpile stewardship program to complete the shift from nuclear test-based methods to science-based methods to certify the safety and security of the stockpile.

Mr. Chairman, I think I have made a good decision for the taxpayer on tritium. I believe that we are ready to announce the figures of our negotiations with the Tennessee Valley Authority (TVA) to substantially save the taxpayer money; provide for our strategic stockpile, our tritium supply a flexibility for arms control negotiation.

But most importantly, I think I know, in a committee that wants us to reduce funding, we have done extremely well in protecting the taxpayer; and we have just concluded, as I said, our negotiations with TVA on the cost.

solar and renewables funding

Mr. Chairman, moving on to other issues that do not relate to our nuclear weapons. Mr. Chairman, in the energy resources budget we are requesting \$2.1 billion. Within the jurisdiction of the subcommittee, our request is \$867 million.

We have a request of \$399 million for solar and renewable programs, an increase of nearly 19 percent over Fiscal Year 1999. And we are doing some very important work in photovoltaics, solar, thermal, biomass, and alternative transportation fuels.

I am proud to say that the management process in the Office of Energy Efficiency and Renewable Energy has been tightened up. Dan Reicher, our very able Assistant Secretary, I know has been meeting with your staff, and we are continuing our efforts to deal with more competitive bidding and more solicitations. We have received more than 400 applications from a broad range of applicants.

This is one of our best programs, the renewables program, Mr. Chairman. We are doing a lot to have energy efficiency in federal buildings, a lot of very important research that takes place.

Today I am announcing that we are awarding the first two grants under the solicitation to Columbia University and the American Wind Energy Association. Both of these entities are shouldering at least 75 percent of the cost.

We are increasing our request for nuclear energy R&D by \$13.5 million to \$87.3 million.

nuclear waste clean up

We also, Mr. Chairman, want to work with this subcommittee to develop a national plan to integrate our nuclear waste policy. We have a Rocky Flats policy, a Brookhaven, a New Mexico, and Oak Ridge policies.

We need a national policy. I have just met with the governors at the National Governors Association to try to develop a multi-year plan with funding and standards that once and for all recognizes that we have to dispose of this waste, and that it is in our interest to have an integrated plan rather than spotty, ad hoc initiatives that over the years have not worked.

waste management program

We, except for remaining ground water contamination, have completed clean-up of 22 large uranium mill tailing sites, as well as a number of other vicinity properties. We are also making progress at other sites, at Hanford.

I am very pleased that we reached an agreement with the governor and the attorney general on tanks. We have a reprogramming before the committee which we think is important on the Hanford Tanks issue.

We also are moving ahead on improving the management of our waste program. I have an Assistant Secretary that I have selected. If the other body ever confirms my nominee we will have made a lot of progress and moved towards more efficient management of this division, which does need better management.

On the low level, transuranic waste, we are having some problems regrettably with my State of New Mexico to open the facility known as the Waste Isolation Pilot Plant. Hopefully in the days ahead we will make progress because the State of Idaho and the Department of Energy have an agreement to have the waste come in by the end of April. This is tight. The Rocky Flats in Colorado--we have to make more progress there.

environment, health and safety

Mr. Chairman, safety is a big issue for me. I issued a directive on safety today, which will be one of the most comprehensive in the history of the Department, if not 'the' most comprehensive.

I want to hold contractors accountable for safety throughout our contracts. We will insist that the integrated safety management be put in place at each of our sites by September of 2000.

We have also taken many measures to conform with your subcommittee's project management initiatives. I know this is a management issue, and it is one that we take very, very seriously. I will establish a secretarial safety council to

enforce these safety targets.

managing our workforce

You will also be pleased to know that the Department is functioning leaner and smarter. We have reduced by 25 percent our workforce since 1995--25 percent--surpassing our goal by almost 2 years.

We have also reduced our contractor employment by 29 percent since its peak in 1992. I have an initiative called Workforce 21 to address some of the certain skill shortfalls that we have.

I am particularly concerned, Mr. Chairman, about losing employees at many of my colleague's sites, replacing that workforce with a technical workforce that can be drawn in and brought in. We are losing a lot of skilled engineers to the private sector, and we have to look at our replacement workforce, especially in the nuclear weapons complex, but it affects all the lab employees, certainly at Brookhaven, and certainly at Princeton also, which I visited last week.

Mr. Chairman, I think every Secretary of Energy says that they want to manage the Department better. The Department needs to be managed better; there is no question about it. We need to have clear lines of responsibility. We need to have more efficient reporting requirements. We need to make sure the labs and the headquarters communicate effectively. We have to be able to find ways to manage our waste and our clean-up better.

We need to make sure that we have a diverse workforce; that we need to have more women in science and engineering at our Department. We need to do many, I think, very important initiatives that deal with a top to bottom management review.

And I am doing that. And I would ask this subcommittee to give me the flexibility to do that. It is going to take a little time, but we have already made a lot of progress. I want to also look at the possibility by the end of the year, Mr. Chairman, of having a mega-contract for all our defense facilities; one contract that deals with all of our weapons labs.

Vic Reis is here. What we want to do is consolidate, save money for the taxpayer. We have a plethora of contractors, and we are looking at ways so that perhaps in a year, we can come back to this committee and deal with more efficient ways to manage our weapons complex, and that would be with one contractor.

Finally, Mr. Chairman, I think this committee has given us very good advice on many other management initiatives which we are adopting, which we want to work with you to do. Perhaps the most important one is to find ways that our Department is more accountable to the Congress.

Mr. Chairman, I have done this in 8 minutes, and you are right, it would have taken me 45.

[The prepared statement of Secretary Richardson follows:]

[GRAPHIC(S) NOT AVAILABLE IN TIFF FORMAT]

questions

Mr. Packard. But you were thorough on it. And again, thank you very much.

On questions we will take the members as they have arrived, in the order that they have arrived out of fairness. And Mr. Visclosky's made a suggestion which I think is a good one. And that is, if there are members that have other appointments or other hearings that they cannot remain, we still want to hear your questions.

And so, if you will just contact either Mr. Visclosky or myself, we would be more than pleased to move you up in the order, if it were possible, to allow you to ask your questions before you have to leave.

Again, I want to welcome Mr. Clyburn who has arrived now, and thank him for being here as a new member of this subcommittee.

roll call vote

Thank you very much. My staff reminds us that we need to have a roll call vote to close the March 18th hearing which is dealing with the atomic energy defense activities.

Mr. Visclosky, would you like to make a motion to that effect?

Mr. Visclosky. Mr. Chairman, because the Subcommittee on Energy and Water Development will be dealing with national security and other sensitive matters at its hearing on atomic energy defense activities, I move that the hearing on March 18, 1999 be held in executive session.

Mr. Packard. Thank you. Any discussion on the motion? It requires a roll call. The Clerk will call the roll.

The Clerk. Mr. Packard?

Mr. Packard. Yes.

The Clerk. Mr. Rogers? [No response.]

The Clerk. Mr. Knollenberg? [No response.]

The Clerk. Mr. Forbes.

Mr. Forbes. Yes.

The Clerk. Mr. Frelinghuysen?

Mr. Frelinghuysen. Aye.

The Clerk. Mr. Callahan? [No response.]

The Clerk. Mr. Latham?

Mr. Latham. Aye.

The Clerk. Mr. Young? [No response.]

The Clerk. Mr. Visclosky?

Mr. Visclosky. Aye.

The Clerk. Mr. Edwards? [No response.]

The Clerk. Mr. Pastor?

Mr. Pastor. Aye.

The Clerk. Mr. Clyburn?

Mr. Clyburn. Aye.

The Clerk. Mr. Obey? [No response.]

Mr. Packard. Thank you, 8 ayes. So it passes, and we appreciate that technical effort.

Now we would proceed to the questions. Again, we appreciate the testimony of the Secretary.

And I am going to open the questioning with a couple of

general questions, and then we will proceed with Mr. Visclosky.

fy 2000 funding priorities

You have been on the job, as we mentioned earlier, for 6 months, and you have certainly gotten your hands on the job. What do you see now after that period of time as your highest priority?

Secretary Richardson. Mr. Chairman, right now what I see is the management issue. I can tell you right now that nuclear waste is an extremely high priority. Stockpile stewardship, national security is critical. The waste issues, how do we deal with clean up; those are immensely important. Science and technology.

But I think it all boils down to managing this Department better. This is a Department of \$18 billion, if you add the Interior side to your jurisdiction. It is a Department of 100,000 people with labs and project offices every where.

What we want to do, Mr. Chairman, is continue what this committee suggested we do, and that is make our initiatives and our programs more effective and efficient. We have proceeded with the project management reviews that you asked us to do. I am expanding that to defense programs and environmental management programs similar to our review teams in the science area.

We are moving forth on ways to ensure that R&D is more effective and efficient, and we have set up a team to deal with that issue.

I mentioned earlier our labs; how can we have our labs not be duplicative? They are crown jewels and they are doing excellent work, but maybe there are ways that we can manage them better.

Workforce 21. As I mentioned, Mr. Chairman, we have technical work and some very important priorities to ensure that we have a future workforce in these very technical, scientific national security areas that can replace the very good existing workforce.

Contract reform. We have followed generally the Committee's view that we should re-compete as much as we can, and we are going to continue doing that. We think that this is a way that we can be more efficient and find ways to save money for the taxpayer.

But Mr. Chairman, the management review that I have instituted at the Department is comprehensive. And when I testify again you will see that this is not a paper review; this is going to propose some broad changes in the way we manage our department.

We have not been as good as we should be in the safety area, in the clean-up area. We have not been as good as we should in complying with States and the Congress on a lot of clean-up and other schedules.

We are a very important and good department with a lot of good people, but I think the key and most important priority is to have this department managed better. We have reduced, Mr. Chairman, 25 percent over 4 years. That does not mean we are going to continue doing that and be efficient.

I think we have reached a point where we now have to look

at critical skills, and recognize that if we are going to fulfill the objectives of taking care of our nuclear weapons; of ensuring that Russia and their nuclear weapons and scientists do not go askew; that we keep the stockpile stewardship program effective and efficient; the science and technology programs that we have.

We are making a major announcement today--work performed at the Advanced Photon Source at Argonne National Laboratory has confirmed that x-ray diffraction studies of hair from breast-cancer patients shows a markedly different pattern than hair from healthy subjects. Brookhaven, just in the last 6 months, has made great advances in the areas of narcotics detection.

Mr. Chairman, in the renewables area we are doing very important work. Not related to climate change, which is important, but the energy security, Mr. Reicher's program, is making the government more efficient, the energy efficiencies and the ways we use the taxpayer dollar.

My whole point is that managing the Department better will enable us to manage the direction that this committee has given us more effectively and efficiently.

fy 2000 funding levels

Mr. Packard. We will follow your management changes closely, I think, in the future, and we are looking forward to seeing those changes.

You have called for an increase, a modest increase--well, it may be considered a modest increase, \$600 million increase over last year's budget or appropriated levels. And you are fully aware that the budget caps are being discussed here on the Hill. And if we have to take cuts because of living under the caps, or if we cannot come up with the monies that would be able to grant you the increases that you have asked for, what areas would you still wish to increase in terms of budgeting levels, and what areas would you be able or willing to cut?

Secretary Richardson. Well, Mr. Chairman, I support all our funding. But let me just say, if you look at our budgeting--and Mr. Telson can explain it better--our budget is a 4.1 percent increase if you take into account some of the Russia programs that we got at the end of the year in the emergency appropriation.

So some have said--and Mike Telson, my budget man--where all he does is work on numbers--has said to me that our budget in essence is flat. And so I am not exactly asking for dramatic increases.

I think our budget is spaced out in a way that on stockpile stewardship we feel very fortunate that the \$4.5 billion that we got will do the job to protect our weapons, and be able to come to you, as Secretary Cohen and I do every year, and say that we have met our national security goal of having these weapons without testing.

In the area of clean-up we got \$5.7 billion, which is \$100 million more than last year, which will enable us to meet the clean-up schedules at many of our sites.

In the science area we consider it a good budget, a slight increase.

Across the board, Mr. Chairman, I think our budget is fair.

We are not a high growth department. We have reduced our work force. But I think if we are going to complete our mission I want to be able to come back to you in 6 months and answer your question, and say this is where we can reduce by improving our management.

Mr. Packard. I expected that answer; that you are not willing to cut anywhere, of course. And you are to be commended.

Mr. Visclosky, let's go to you.

Mr. Visclosky. Mr. Chairman, thank you very much.

Mr. Secretary, again, wish you well in your endeavor, and realize you have already been called upon to make a number of hard decisions.

aging workforce and infrastructure at production plants

In your opening remarks you alluded to stockpile stewardship and you also mentioned stockpile management, and talked about some of the difficulties and problems we face as far as the workforce and facilities.

I do have a concern--and I guess I would be remiss in not mentioning them at the hearing, and I know you share my concern. But we have the four facilities, and my understanding is that the average length of service at the Kansas City plant, for example, is about 28.2 years, and that 25 percent of the staff could retire right now. I think that pretty well plays out at the other facilities, as well as problems with collapsing ceilings, puddles near electrical equipment, and what have you.

The administration generically has obviously set aside additional monies for defense functions. My concern is how are we collectively going to deal with what I think is a very serious problem in making sure that, one, the people problem prospectively, as far as the unique talents that your people possess are going to be secured in the longer term; and also, how are we going to address the real property maintenance issue?

Secretary Richardson. Well, I think, Mr. Visclosky, I will answer your question, and then time permitting, Dr. Reis is also here, who is distinguished and has a long record in these issues.

We have to keep a balance between our stockpile management program and our stockpile stewardship program. You have pointed to a very critical problem, and that is people. And we are worried that the ever-increasing age of the workforce is a complex wide problem, especially in these defense plants, and we have to do something about it.

The reason this has happened is because of the downsizing of our workforce. If you all recall, 5 years ago we all considered legislation to abolish the Department. And we were conscious of that, and we reduced. But I think it has reached the point that a lot of these younger employees don't have seniority anymore.

We need to look at incentives, retirement bonuses. We need to recruit better. We need to get more minorities and women. We need to be more competitive with the workforce.

chiles commission report

A very distinguished admiral by the name of Admiral Chiles, has just completed a report on the workforce. He just finished briefing, I think, your staff. And I would urge you, if you get a chance, to read it because it deals with ensuring ways that-- we find those that are nearing retirement with critical skills and give them retention bonuses; that we retain the services of retirees with certain skills as part-time workers or advisors. Dr. Reis and I had heard a briefing on this yesterday.

We need to look at compensation packages, quite frankly, that also deal with ways to make employment in our labs, in our facilities, more attractive than the private sector. And I have to tell you, that is tough. But we have to have a way to ensure that there is a balance between stockpile management and stockpile stewardship. In other words, we have to have the people to do this job; we cannot just let people go and bring computers in. There has to be a balance, and I think that Dr. Reis has achieved that.

Could I ask Dr. Reis briefly to----

Mr. Visclosky. Sure.

Secretary Richardson. Vic.

Mr. Reis. I would elaborate just a bit on what the Secretary said. The Congress asked the Chiles Commission specifically to look at the personnel problem several years ago because that is the long-term--that is over time, as you project out in time, I think that is the most difficult part of the whole stockpile stewardship.

We are asked not to maintain the stockpile just this year, but we are asked to maintain it indefinitely in a safe and reliable case, and do that without testing. And that ultimately comes down to a judgment call of the people in the laboratories, and it comes down to the ability to maintain the critical skills in the plants as well.

So that is--you asked me what the number one problem is over time. At this stage of the game it is the personnel--it is the personnel level.

I think many of the suggestions of the Chiles Commission-- we are in the process of implementing, and will be implementing more. In doing that, we have to train those people. We have to shift the skills of the people who are retiring to the new people coming on board.

And I think the key finding, if you will, of the Chiles Commission--in fact, their number one finding related to the long-term stability of the program. People don't want to come in if they don't think the program is going to last for that much longer. With the end of the Cold War people were very concerned with what was happening, so many of the younger people left at the same time we were doing the downsizing.

So the key item across the board is maintaining the stability of the program, because nobody is going to join if they don't think they are going to have a job 3, 4, 5 years down the road.

That was basically the number one concern. And as we have talked about this before in the past, the administration is now projecting a stable \$4.5 billion budget for stockpile stewardship over the years. That was their number one concern

about how to do that.

The details are very important as well; to initiate the training; to have the mentoring programs, and we are in the process of doing that. And maybe when we get together on the 18th we can go into that in more detail.

Mr. Visclosky. Thank you, Mr. Chairman.

Mr. Packard. Thank you very much. Mr. Forbes from New York.

High Flux Beam Reactor at Brookhaven National Laboratory

Mr. Forbes. Thank you, Mr. Chairman.

Mr. Secretary, it is indeed a pleasure to see you again, and thank you so much for what I can only best describe as being a champion of Brookhaven National Laboratory.

As you know, it is a facility that is near and dear to my heart. I appreciate that the Secretary recognizes the really groundbreaking research that is going on there, and the fact that Brookhaven National Lab is really a major partner in making sure that America keeps its competitive edge.

You also know that I have been extremely critical of some of the past environmental practices, and I know you are no stranger to that. You come to this job with an excellent record in the House of being able to balance both environmental considerations against the need for America to make strong investments in its research and in its laboratories. So I am really pleased that you are at the helm of the Energy Department.

We have discussed a number of times, as you know, the High Flux Beam Reactor, and if you will indulge me, Mr. Secretary, clearly an issue of great importance to the people in the 1st District of New York, I am concerned obviously that this High Flux Beam Reactor would be approved for re-start. And I know that you are in the process now of contemplating, based on the various information that is being gathered. There is a comment period, which I thank you for extending the timeframe in which people could make comments to the Department of Energy on the environmental impact statement. I thank you for that indulgence.

And let me thank you too for postponing your decision twice, from my very--in this case--partisan view of keeping the reactor closed, I do appreciate the delay, and I am hopeful in the end that your decision will be one that perhaps falls in line with what some of us in the 1st District believe should be the case.

Have you a set timeframe at this point for when you will make a final decision on the re-start of the High Flux Beam Reactor?

Secretary Richardson. Congressman Forbes, yes. I am going to make the decision in April, and my very able Director for Science, Martha Krebs, is in the process of preparing that recommendation now. And as you know, we extended the comment period at your request, and I did agree with you that more comment from your citizens and constituents was needed.

I want to make this decision based on science, based on the interest of the people in your community. I have some science people that think that this research is important. On the other hand, we have to look at the cost of this reactor; how much it

would cost to restart it versus decommissioning.

There are a lot of factors, but I am not going to delay again. I think you would agree with me that the time has come to make the decision.

I am informed here the record of decision is a little later than April, but my recommendation from my staff will be given to me this spring. So we have a little bit of time.

Mr. Forbes. That is great. I appreciate that.

Secretary Richardson. You know, Mr. Forbes, one of the things I found when I got in the job is a lot of decisions were postponed, and I came in September and had about five huge decisions involving a lot of States to do. I would prefer to make the decision sooner than later.

But here, I would hope that we could work together on it. This is a very important decision. And as somebody who also, as you know, spent time in your district, in New York, I sort of feel a kinship for that area too.

Relativistic Heavy Ion Collider (RHIC)

Mr. Forbes. I know you do, and I appreciate that.

And let me thank you for your request, particularly in nuclear physics, to increase that budget by almost \$5 million. I think that is particularly noteworthy when you take into consideration that we have that exciting new project that is to go on line very soon toward the end of this fiscal year, the Relativistic Heavy Ion Collider, which has been the pride of Long Island. And frankly, this member of Congress would love to take great credit for it, but I think it goes back three members of Congress that this project has been under construction, and frankly, a major priority, both with former Congressman Hockbruckner and former Congressman Carney.

This has been a project that has bipartisan support, and I am very, very appreciative that the Department did make the request for an increase, and that \$118.5 million I would hope based on that request be dedicated to the RHIC project when it goes on line.

Having said that, I would also emphasize that I think the RHIC project really is--and not to detract from all the good research and all the other ability to do research at Brookhaven, but the RHIC is going to be clearly our centerpiece, and I think that its operation will continue to make sure that Brookhaven National Laboratory is in the forefront of research and development in this country. So I do thank you for that commitment.

Do you see any delay in the start-up of the RHIC project?

Secretary Richardson. The answer is no. Let me just deal with the first part of your statement.

We did put in the \$5.7 million in the clean-up funding. I think you are being very generous in sharing the credit with everybody. You had a lot to do with this; I think you put it in the bill. And we have honored that.

Mr. Forbes. Mr. Secretary, I also appreciate the fact that the administration, with your direction, asked for an increase in the environmental clean-up fund. It is almost \$30 million, so I thank you for that.

Secretary Richardson. Right. And we will be moving that--or

the money is already moving.

In terms of the RHIC money, we will complete on time the RHIC funding in the fourth quarter--this is Fiscal Year 1999--and begin operating it. We are also providing an additional \$17.9 million to Brookhaven to support research using this very unique facility.

So for the total of the Fiscal Year 2000 budget it is \$106.1 million to fund these operations.

Mr. Forbes. Okay, I appreciate it. If I could just ask one final question. I know that the additional \$5.7 million still hasn't been expended yet. Will that be forthcoming to Brookhaven?

Mr. Richardson. I think--I have got my budget man here--\$2.1 million has already been made available, and \$3.6 million will be transferred in the next monthly financial plan.

Mr. Forbes. Thank you very much. Thank you, Mr. Chairman.

Mr. Packard. Thank you. The gentleman from Arizona, Mr. Pastor.

Science Education Funding

Mr. Pastor. Thank you, Mr. Chairman. First of all, welcome to the subcommittee. I look forward to working with you under your leadership, and, Mr. Secretary, welcome to your position, and I also look forward to working with you.

I have two questions, Mr. Chairman. Mr. Secretary, I understand you are proposing a new science education budget of \$10 million. I know it is very important, but other Secretaries were not as successful in getting this money, so, hopefully, you can persuade us that the request is important, and you can also inform us of how that money will be used.

Mr. Richardson. Well, Congressman, I am delighted that you are on this subcommittee, and I am delighted that you are pressing for this initiative, because I think this is very important. We have proposed over the years--I think it was \$15 million last year--for this program that basically is in line with what we talked about of replacing the work force that we have at the Department of Energy. This is a problem we have had with our Appropriations Committees. We hope this subcommittee gives us a chance to show that this is a good program.

What we have is a program that blends the assets of our National Laboratories with the National Science Foundation Education Programs. It is K through 12; it involves pre-college math and science teachers providing research opportunities at Department of Energy laboratories. They learn about science; they learn about the classroom science environment at the labs. It allows university faculty and student teams at the end of graduate level to participate in long-term research programs.

We are investing in science, and I hope, Congressman, that we will work together with every member of the subcommittee to make sure that this program is well managed, I can assure you of that. But give us a chance to show you that this is a good program. We have not had luck--but, I am going to work very closely with the Chairman and the ranking member and members of the subcommittee to persuade you that this is a good investment and a good program.

Education Support for New Mexico

Mr. Pastor. I can't help noticing that the New Mexico schools are doing well in Los Alamos, and I know that the factor is that they are in the State, but I would encourage you as I have former Secretaries that there are States adjoining many of the labs that could benefit, and I would encourage you that at least at Los Alamos you might look at adjacent States that could participate in this, and it would be beneficial to its students, and so I--

Mr. Richardson. You mean like Arizona?

Mr. Pastor. I mean like Arizona. [Laughter.]

Mr. Packard. I am surprised that Mr. Pastor noticed that in testimony that all the education money goes to New Mexico; that is unique, isn't it?

solar roofs program

Mr. Pastor. Well, I know that this Secretary is very sensitive to other States, and I know he will do his best to make sure that the adjoining States will participate.

I noticed in your budget, you are continuing to support solar and renewable resources. I think it is very important. I think it is important that we have a balance, and I congratulate you and thank you for supporting this effort. I have to tell you that I also want to commend your department, working with them. Most recently, I think, a couple days ago, they announced that they are trying or will try to get proposals from various Native American reservations in which we can use the photovoltaic cells--shingles in their communities. And you well know how isolated the Indian nations are and how widespread they are, and it is very commendable that you have this initiative. I will try to encourage as many Native American nations to participate, because it will help them; it is a win-win situation. It will help them in terms of generating power from solar energy, and I think will continue your effort to make sure that photovoltaic shingles are available, and you may want to comment on it.

Mr. Richardson. Well, I thank you, because we have a very good program in solar energy. We have the Million Solar Roofs Program. We are doing a lot of innovative photovoltaic work, in fact, in the southwest, at our solar energy renewable lab, NREL in Colorado, in Golden, Colorado. In this connection, Mr. Pastor, I was discussing with other Cabinet members just yesterday ways that in the electricity restructuring bill we can bring some type of solar or power plant investment into Indian reservations.

But the point I would like to make to this subcommittee is that these renewable monies that we have in there are good for our energy security. They reduce our emissions; they address the problems of climate change. I think as you mentioned, the management of these programs is a lot better. It is being run very effectively and efficiently, and I would hope that this subcommittee also sees these as encouraging new technologies that will be export-intensive; that will bring us jobs, and, if I could, Mr. Pastor, Mr. Reicher who runs this program--do you want to add anything, Dan?

Mr. Reicher. Mr. Pastor, Mr. Chairman, we are very excited about the work with the tribes on renewables. These are often areas of the country without electricity or easy access to electricity. More generally, we are making real progress with renewables across the country, major new wind installations in Minnesota and Iowa, big new biomass facilities in Louisiana, California, work in Indiana, Illinois, Vermont. We have major commitments to solar energy, literally, from Maine to Illinois to New Mexico, Arizona, California, and Hawaii. Superconductivity, which this subcommittee supports investments in has had some big breakthroughs in the Midwest. So, there is a great deal going on, and we think that the work is very important, and we appreciate the support.

power marketing administration

Mr. Pastor. Mr. Chairman--or Mr. Secretary, my last question deals with the Power Marketing Administration, and I read on page 15, that beginning in Fiscal Year 2000, the administration's proposed policy is that PMAs will no longer seek appropriations for power purchases used to firm the variable hydroelectric power or for wheeling Federal power across other utilities' transmission lines.

As you know, in the West, the PMAs have brought electricity to the most remote, isolated areas. This was a commitment that the Federal Government made to ensure that the rural areas would have power at a reasonable cost, and this policy which I think is rough, may cause problems to the customers that rely on the power--like WAPA in the West. As you know, WAPA has an extensive infrastructure in the West, and I would only hope that as you develop this policy that you take under consideration that there may be a need for a transition rather than just this rough change in policy, and I would like for you to share your thoughts on this change in policy.

Mr. Richardson. Well, we will--we know that this so-called power wheeling has caused a little bit of concern, especially with some of the northwest members. We will work to address some of these concerns. We have to explain our proposal better, and my Chief Financial Officer, I would like him to visit with you and your staff. I think we can address some of the Members' and Senators' concerns, but, Mr. Pastor, we want electricity restructuring. We want everybody to be competitive, and some of the PMAs, they are part of the Department of Energy--I shouldn't say whine--they whine a little bit sometimes, and they whine to you. We are trying to make them a little more competitive, but maybe in this particular case, we haven't explained what we want to do well enough. We want them to be a little more competitive. We want them to run a little better. They are doing a good job, but before you address this legislatively, let us explain it in a more effective way.

Mr. Pastor. Well, I appreciate the invitation to continue the dialogue because as much as they whine and as much as they are concerned, the reality is, I think that they also have to consider their ultimate customer. In many cases, the customer is a rural area, isolated, and may be concerned that a change in policy is going to cost them in terms of higher prices and the intent for developing this infrastructure was that we would

get power to the most isolated areas. It was a Federal investment, and the customer, our constituents, would get power that they could afford, and so I think that is the concern. As you well know, coming from the West, the power marketing administrations play a very important role.

Mr. Richardson. I understand, and let me assure you, you didn't see in our proposal any effort to privatize them or sell them off as in other years; we are not doing that. That doesn't mean that they and others shouldn't run, like all of us, a little more efficiently. But I understand your point, and we are not trying to burden them; we will explain it better, but let us have this dialogue.

Mr. Pastor. Thank you, Mr. Secretary. Thank you, Mr. Chairman.

Mr. Packard. Thank you, Mr. Pastor. The gentleman from Iowa, Mr. Latham.

Mr. Latham. Thank you very much, Mr. Chairman, and first of all, I would like to thank you for the opportunity to be on this committee; I am really looking forward to it, to work with you and all the members on the committee, and if you think you are new, Mr. Secretary, I am really new on this committee.

First of all, I guess I would just like to associate myself with the concerns that Mr. Pastor just talked about. I have a lot of communities, rural electricities, that derive power from the PMAs, and, obviously, it is a major cost issue in my part of the country, too. So if you are going to have a briefing or a conversation, we would sure like to be a part of that also.

Mr. Richardson. Of course, okay.

wind energy tax credit

Mr. Latham. Thank you.

One thing, and it was alluded to earlier, is that there is a huge amount of wind generation activity going on in my part of the country and my district. I think one of the largest, if not the largest, wind generation farm in the country is going to be right in the center of my district, and I was just curious, is the Administration going to be supporting and pushing the extension of the wind energy tax credit and actively a part of that?

Mr. Richardson. Well, let me say that we have a new commitment in Dan Reicher's office towards wind and I am very eager to see some of your facilities. This is very important to us. What is important about wind is it is meeting its technology goals. This is a renewable that is working. To give one example, electric power from wind turbines in 1988 cost between 30 cents and 40 cents per kilowatt hour, and through aggressive research and cooperation with industry in R&D, we have been able to reduce costs since then to between 4 cents and 6 cents per kilowatt hour, a reduction in costs of more than 80 percent. We have some research on the next generation turbines to reduce the cost even further to 2.5 cents per kilowatt hour by 2002. We think this is very important.

Dan, do you have any more that the Congressman would be interested in?

Mr. Latham. Yes, as far as the extension of the tax credit.

Mr. Richardson. Yes, we support that; it is excellent.

biorenewables research consortium

Mr. Latham. You will be pushing it. Okay, good.

As you are probably aware, Iowa State University is home of the Department's Ames Laboratory, and there is a memorandum of understanding with DOE and the USDA as far as the biorenewables resource consortium. I would just ask you, I guess, to comment about what you think, and not everyone, obviously, supports biomass for this kind of research, but what do you think? Is it promising? What kind of future do we have?

Mr. Richardson. I think it is promising, and, you are right, at Ames, which is one of the few labs I have not been to--I have been to 28----

Mr. Latham. You can come out; we will go to Ames, and we will go up with wind generators and have a great trip.

Mr. Richardson. Sounds great, okay. I am serious, I would like to do that.

This is promising, the whole area of biofuels, the whole area of biomass power, the collaborative work we are doing with the Agriculture Department, the Forest Products Division of the Agriculture Department, because what we are able to do is produce different combinations of fuels, of different powers of chemicals from the different feedstocks. We think this is very promising, and this is going to be, I think, another way that we demonstrate that biomass is going to be an effective competitor to the imported fossil fuels. So, we are going to continue this program and we think it is promising.

biodiesel rulemaking

Mr. Latham. Great, I appreciate that. I know the chairman's interest in brevity, and I have another hearing too, but last year in the omnibus appropriations bill, we had biodiesel provisions in there, and it said the Secretary shall before January 1st of 1999, issue a rule establishing procedures for implementation. Has that rule been issued, and, if not----

Mr. Richardson. In other words, no. [Laughter.]

Mr. Latham. So, we obviously have missed our January 1st, 1999 rulemaking.

Mr. Richardson. On the diesel, it is being developed. [Laughter.]

Let us do better there.

Mr. Latham. Okay. Thank you very much, Mr. Secretary. Thank you, Mr. Chairman.

Mr. Packard. Thank you, Mr. Latham. We are delighted to welcome a new member, Mr. Clyburn from South Carolina, and the time is yours.

Mr. Clyburn. Thank you very much, Mr. Chairman. Mr. Chairman, I want to express my appreciation to Secretary Richardson for his testimony here today and pledge to you, Mr. Chairman, and to the Secretary, my cooperation as we are trying to develop an appropriations bill that will meet the needs of the various programs we discussed here today while ensuring that taxpayers receive a good return on their dollars.

First of all, let me add my association with the concerns expressed by Mr. Pastor and Mr. Latham as it relates to the

PMAs. As you know, in rural South Carolina, I have those concerns as well. Mr. Secretary, as you well know, the Department of Energy has a significant presence in South Carolina. I took note of the fact that you spent your very first day on the job down at the Savannah River site, and I hope we can count on your interest not waning in that. But I wanted to express my strong support for SRS' high level waste Alternate Source Processing Program. I know the Department has budgetary constraints and must balance competing interests, and it may be useful for you and I to meet privately to discuss this, but I want you to be aware of my interest in this program.

yucca mountain nuclear waste repository

I think I only have one real question outside of my interest in the PMAs, and that is the characterization of the Yucca Mountain program, as you know. In my opinion, the Federal Government has not met its responsibilities, and the result is that South Carolina electricity customers are paying a disproportionate share of the Federal debt. I think that is a bit unfair, and I would like for you to give me briefly your vision of what is going to happen with that program.

Mr. Richardson. Thank you, Congressman. First, on Savannah River, it is one of our strongest facilities, and I appreciated the way that you spoke up for it when we decided on the pit disassembly. I know your views; I think we responded to them. Savannah River has three key facilities for the Department of Energy. It is a community that is supportive of our Department, and we are supportive of the relationship. It is going to continue; it is going to flourish.

On your question, Congressman, and I know Savannah River has done its share for the country in foreign fuel and domestic fuel and waste, I appreciate what you said. I have put forth before the Congress--I have floated a proposal for consideration on nuclear waste that basically says that the Department of Energy would take title to the waste at the 72 different sites on an interim basis until we have made a definitive decision on Yucca Mountain as the permanent repository. Now, that decision is to be made in the year 2001.

I don't want to get into a legislative train wreck with the Congress, which in the past has voted very overwhelmingly to say that there should be interim storage at Yucca Mountain. We think the science and transportation factors dictate that we be very careful that we find ways to work together. This proposal that I have made, we are not necessarily endorsing it or putting it in legislative language; it is a way to start a dialogue with the Congress so that States like yours and delegations in the Congress can be assured that we have a policy.

Now, under my plan that I floated, the utilities would have to drop all their lawsuits to the Department of Energy to the Federal Government. We are liable now because we have not met these deadlines. And from the utility fund, we would want--it is about \$7 billion to construct this permanent repository--it would pay for us taking title. Now, this doesn't mean that you are dramatically changing what exists today. It basically means

that we would contract out to make sure that this waste is properly stored and maintained as it is now.

I don't know what kind of response we are going to get. I am testifying before the Energy and Commerce Committee on this. Some utilities like it, Wisconsin likes it; others don't. This is a new proposal on the table. What I want to avoid with this Congress and this committee is a showdown on this issue. I think we can work together to try to address this very serious concern.

Mr. Clyburn. Well, thank you, Mr. Secretary, and thank you, Mr. Chairman.

Mr. Packard. Thank you, Mr. Clyburn. Mr. Knollenberg from Michigan.

Mr. Knollenberg. Mr. Chairman, thank you very much, and, incidentally, let me congratulate you, which I haven't had the opportunity to do; this is our first meeting. I want to also congratulate Mr. Visclosky as ranking member. We do look forward to working with both sides of the aisle, and we do a pretty good job I think, as you said.

Mr. Secretary, I want to congratulate you on your position; it has been a while since you have held it, but it is the first time that we have had a chance to really talk, and I appreciate your coming forward today.

closure fund

I wanted to talk about the Closure Fund. I know you expressed your optimism, at least your support of that. This Closure Fund, as you know, does something about closing down some of those sites, Rocky Flats being one, that brings us, hopefully, some successes; something I think we dearly need. I remember back in 1995, when I first became a member of this subcommittee, they were projecting that the date that they might reach closure would be somewhere around 2065. We found that totally unacceptable, absolutely unacceptable, and so we engineered some ideas about bringing about something that would put many of these sites online for closure sooner. And, so we adopted sites, such as Rocky Flats, Fernald, Mound, and others to close them down. The idea being that by closing them down, by bringing about a success, we will have more money for the Savannah Rivers of the world, the Hanfords and the others, because they have problems too. We don't mean to look away from them, but I do think that we need a victory.

One of the things I have noticed is the budget does not allow for the monies that are needed to bring closure about by 2006. Instead, it is 2010, and I guess my first question to you is what is the amount of money that would be needed to bring it to closure by 2006, and why haven't you asked for more money to bring that about?

Mr. Richardson. Well, first, Congressman, we appreciate the work that you have done on this. I know this is a big interest of yours. I am here to tell you that I am committed to closing Rocky Flats by the year 2006.

Mr. Knollenberg. I am glad you said that.

Mr. Richardson. And the amount that we have requested, we believe, can do that. Now, the contractors are running around saying they need more money, and I hope you don't listen to

them, because with the budget we have, I believe we can make that target.

Closure of Rocky Flats, Congressman, is also contingent on solving other problems I have with the opening of the facility in New Mexico, and waste coming from Idaho. So, I would hope that you will help. You have taken a big interest in this program, not just the funding, but also with the targets, that when we look at this prospective meeting and summit of governors and of other elected officials to set up targets for all the other facilities just the way you did for us on Rocky, that we do it for the Mounds and Fernald which I will be visiting soon and do it in a systematic way. But I can assure you the amount we are asking for Rocky Flats this year--we are requesting \$100 million more in our cleanup funds than we did last year. It is enough, so----

Mr. Knollenberg. It is enough?

Mr. Richardson. It is enough, so these tales that they need more money because that way they can complete the cleanup or proceed with a contract, don't listen to them. We can do the job, and I can assure you we will.

Management Concerns

Mr. Knollenberg. Well, I appreciate your going on the record making that statement. We will have the continuation, I am sure, of this debate.

Let me go to another question that I think has to do with--and some of this is not on your watch, not on your time, but it is a concern that many of us have--it has to do with management. You spoke of the need for better management, and I don't disagree with that. I think the DOE, very honestly, can be assessed as being in some difficulty when it comes to having people in positions at the top. If you look at--let me just ask you, how many positions in DOE require Senate confirmation?

Mr. Richardson. Too many, but--[Laughter.]

My point in answering that--you know I am having difficulty getting my nominees confirmed.

Mr. Knollenberg. Let me just say this, I understand that you are. I can probably answer that question for you. I believe there are five. You can disagree out there, and if you think so----

Mr. Richardson. No, you are right, there are five, and there may be a sixth.

Mr. Knollenberg. And there may be a sixth when you consider the position of the Assistant Secretary of EM. I don't disagree with you that you are having some difficulty, and some of this is not on your shoulders or shouldn't be if it is not on your watch. But there has been a little bit of a revolving door at the top, and the problem is there appears to be no revolving door at all at some of those other positions, because what we have are acting individuals, and, frankly, acting people I don't think get you there.

You spoke of this need for better management, and I quite agree with you, but you also, I think, need managers. You need some people in position to actually manage, and I don't see that with acting managers. My concern is that there must be--and you may have some thoughts about this--there must be some

very difficult thinking going on about finding a qualified person for this office. I would just like to ask you why or why is it so difficult? If it is so difficult to find that one person, then, perhaps, we need to--and I am just asking--break it up in some fashion. But there appears to be a deficiency of leaders in positions where there should be strength.

Mr. Richardson. Well, you have pointed to a very important problem, and I will say, Congressman, we have for the job that you care about--I know about the Assistant Secretary for Environmental Management--we have somebody up before the Senate; her nomination has been up there for a while; a woman who has run NASA, the Space Center in Houston. She is good; hopefully, she will be confirmed soon. But we have had her up here.

This right here, Rose Gottemoeller who runs all my Russia programs, has been up for about three months now, and I know that the Senate was preoccupied with other problems, but this affects me when my nominees--and they are very capable--aren't confirmed. The Deputy Secretary who comes from the Office of Management and Budget who is like the Department's manager is still pending. I think these are going to be resolved soon, but I can't stress to you the importance that we have and we attach to attracting good managers.

This woman, Carolyn Huntoon, her main strength is management. She manages well; she managed the space operation, and we think that those skills are paramount in this job of environmental management which I know that you have paid a lot of attention to.

Mr. Knollenberg. At the Office of EM, for example, we have had an acting secretary since, I say, October of 1997. I admit that Mr. Alm didn't leave until January 1, but the announcement was made in October, and we still don't have anybody with their hands on the wheel who has the capacity to lead as something other than acting. I am reminding you, I know of what you know, but I want it on the record that we have some concern about that.

Mr. Richardson. Yes.

Mr. Knollenberg. We truly do, so I--I have consumed, I think, more than my share of time here--but I did want to get those things out, and I will wait for the next round for a couple of other questions. Thank you, Mr. Secretary.

Mr. Packard. Thank you, Mr. Knollenberg. Mr. Edwards, from Texas.

Mr. Edwards. Thank you, Mr. Chairman. Let me first say that having worked with you on the Military Construction Subcommittee where you served as chairman, I look forward to working with you here. Your leadership there was strong, decisive, bipartisan, and fair, and I know those same skills will come to this subcommittee and make a great contribution to important issues under your jurisdiction here. I look forward to working with you.

Mr. Secretary, sorry I missed your opening statements, I was----

Mr. Richardson. You didn't miss much. [Laughter.]

Mr. Edwards. I was at a Thursday morning meeting in which you and I used to sit together. But I am thrilled about your appointment as Secretary and look forward to working with you

as well. If what I touch on in my one or two questions has been addressed, please let me know, and I will refer back to the record.

I think about what we do in this Congress--most of what we do a year or two or three after we are gone will be quickly forgotten. But if I look at one legacy I hope would come out of this committee and all our work together, it would be that somehow and somehow we had made life safer for our children and grandchildren vis a vis potential threats from nuclear, chemical, and biological attacks against the 50 States of the United States.

Control of Soviet Nuclear Materials and Chemical and Biological Weapons

I would like to ask two questions, basically: one, what is your overall summary of how we are doing in the former Soviet states in helping them get control of their nuclear materials, and, secondly, what do you think the role is of the Department of Energy in relation to the Department of Defense in chemical and biological weapons? Is there some expertise DOE can bring to the table? If I were playing devil's advocate, and I said why not just put all of the efforts to deal with chemical and biological weapons and threats against the United States under the auspices of a much larger Department of Defense, what would be your response to that?

Mr. Richardson. Well, Congressman, what we bring at the Department of Energy is technology from our National Laboratories. For instance, the construction of and the research and development of hand-held detectors, ways that border guards can detect a nuclear accident or a nuclear spill; little portable machines that we are developing at our National Laboratories, specifically, Lawrence Livermore, Sandia, and Los Alamos.

When the President, a month ago, had his chem-bio initiative, it was the National Laboratories of the DOE that did the most sophisticated technology that is being used by our local cops and firemen, the first responders, that are not used by some sophisticated scientists but that can be used against the potential of chem-bio attack in this country.

We work very closely with the Department of Defense. They have the main funding for responding to an attack. Our funding is relatively modest. I think in fiscal year 1999 it is \$19 million, and we are asking for \$32 million based on the renewed threat.

But in terms of our programs with Russia, we think that they are being managed well. A recent GAO report, while citing some management concerns, came out and said that our program to manage with the Russians the safety of their nuclear weapons, their materials, the potential theft of weapons, the security of sites, nuclear cities initiative, keeping Russian scientists from selling out to other countries was working well, and, Rose Gottemoeller, who is here, runs our program. We are right now working at 40 sites in Russia, Russian sites, and we have contained approximately 650 metric tons of plutonium or highly enriched uranium. We have security systems right now at 25 out of the existing 53 sites, and we are upgrading 100 buildings at the remaining 28 sites.

One of the problems--since you know this issue and you know Russia--is Russian guards have no blankets, because they are not getting paid. There are no locks on the gates, so you are also doing very elemental things. The guards don't have shoes because of the economic conditions; and they are not getting paid. So, we have to have a program, and we need the support of the Congress to make this program work.

Mr. Edwards. Well, I appreciate the work the Department's already done, and sometimes you get less credit for preventing a disaster than responding to it or less credit for preventing a war than winning a war, but, clearly, prevention is better than reaction later.

I will follow up with some of your leadership on the question of \$32 million, I think, was that the request for chem-bio research?

Mr. Richardson. Yes.

Mr. Edwards. Because maybe there are other areas of the Government that are getting large amounts of research, but if one begins with the presumption that our first responsibility in this Congress is to defend, literally, the lives of our American citizens, the fact that we would be putting out a \$1.5 trillion budget with \$32 million into research to defend over 200 million citizens from the reality of a chemical or biological attack seems amazingly small. And I would like to get a better sense of maybe where all the different research is going on.

Mr. Richardson. We will provide that for you.

[The information follows:]

Federal Research and Development to Address the Threat of Chemical and Biological Weapons

The Department of Energy Chemical and Biological Nonproliferation program is one of several complementary Federal research programs focused on the chemical and biological threat. The Department of Defense R&D programs (including the Chemical and Biological Defense Program and several DARPA programs) are primarily aimed at military, as opposed to civilian applications, although some areas of research certainly have dual use. The Department of Health and Human Services is developing new vaccines and medical therapeutics. The interagency Technical Support Working Group supports a broad range of near-term counter-terrorism technology development efforts, some of which specifically deal with the chemical and biological threat. Research is also supported by the Department of Justice through National Institute of Justice and FBI programs.

In addition to these research programs, other important programs underway at several agencies emphasize operational, training and acquisition dimensions of preparing for chemical and biological attacks. However, the threat of domestic use of chemical and biological weapons, whether by terrorists or national states, must be viewed as a long-term problem. We must bolster our preparation and response systems to ensure our citizens are not vulnerable. Research investments today and in the coming years will be required in order to develop, demonstrate and deploy technologies and systems that can offer

increased civilian protection and effective response capabilities. The Department of Energy is committed to developing such technologies and systems, and to working with other federal, State and local planners and responders that ultimately must use them.

chemical and biological weapons

Mr. Edwards. And if we had additional money, what would we do? I think we need to redefine the whole concept of national security. If I were a terrorist--I am for a limited Missile Defense System--but if I were a terrorist, I am not going to send an ICBM into the United States knowing your Nation can then wipe me off the face of the Earth, because you will know exactly from which place that missile was launched. I am going to get a cup of anthrax and put it in the water supply of a small town in Texas or a mid-size city in Iowa and terrify every family in America. We need not just small incremental changes in this area, we need to be sure we are putting the resources there that we need to. So, I look forward to following up with your people in trying to determine what the proper role is. I don't want to duplicate what DOD is doing or somebody else, but if you have expertise that others can't duplicate, we ought to take advantage of that and, I believe, as just one voice. We ought to make that a real priority within our Federal Government. Thank you, Mr. Chairman.

Mr. Packard. Thank you, Mr. Edwards. Mr. Frelinghuysen, from New Jersey.

fusion energy funding

Mr. Frelinghuysen. Thank you, Mr. Chairman. It is a pleasure to work with you. Mr. Secretary, thanks very much for coming up to New Jersey last Friday and for invoking the fact that you visited the Princeton Plasma Physics Lab. It was good to have your irrepressible self up there on behalf of the Department. That lab, as you are aware, you saw first-hand, is doing some remarkable research, and this leads to my first question about fusion research.

The Fusion Energy Sciences Program, as you are aware, Mr. Secretary, did suffer severe budget cuts over the last few years back, going from \$300 million to approximately \$230 million today. For the last few years, the budget has leveled out. Do you anticipate requesting increases for this program in coming years, and what would be your general funding projections?

Mr. Richardson. Well, as I told the Princeton people in your presence, I think that fusion research is critically important. I had gotten little doses of the good work when I represented Los Alamos in the Congress, and I think the work at Princeton is outstanding. These fusion reductions, as I mentioned to you, weren't on my watch. Martha Krebs, my Science Director, is here. We want to secure proper funding this year. Quite frankly, because of the importance of fusion, I would like to see us do more in the outyears and the years ahead, and I want to work with you to do that.

I also want to say to you that I appreciate your role in

recognizing this great lab. I know it is not right in your district, but you have become sort of the patriarch to make sure that lab is properly funded, along with Congressman Holt, and we appreciate that.

tokamak decommissioning

Mr. Frelinghuysen. I am not sure I want to be classified as a patriarch, but I am a strong supporter. In the overall scheme of things, what disturbs me, if you look at the overall budget, nuclear energy for our country represents just under 20 percent of the Nation's electricity, yet we are investing far more in terms of issues like solar and renewable, and sometimes this appears to be skewed. I think fusion does represent, I think, a viable part of our future, and I am not alone in advocating for it.

As you know, Mr. Secretary, this budget contains funding for the start of the decommissioning of the Tokamak machine at Princeton, some \$10 million. I was surprised to see this funding contained in the program account for this task, and I am wondering why it is in there? Normally, when you have a decommissioning of machines and devices, it is in the EM account. Could you provide me with some sort of rationale as to why it is in the program account? Some might argue--and I would since I am interested in fusion--that other elements of the Fusion Program would have to be reduced to make room for the decommissioning activity.

Mr. Richardson. Congressman, first of all, we put money in the budget for the decommissioning, and we thank you for your leadership on that. I had a chance to see this Tokamak facility, and it is operating--the decommissioning is going to operate effectively and efficiently. It has been a general practice of the Department that when a program reuses--plans to reuse a facility that what generally happens is that the program is responsible for decommissioning that facility, and--

Mr. Frelinghuysen. Actually, it was my understanding to the contrary, that normally decommissioning of machines and devices are carried out in the EM account, but what does history show?

Mr. Richardson. History shows that we have some examples that support what I just mentioned: the National Spherical Torus Experiment at one of our labs; the main injector at Fermi National Accelerator; the B-factory at Stanford Linear Accelerator. Basically, we have established facilities. What we do is we refurbish or recycle many of our established assets for use in these new projects. In other words, we try to get the most out of the existing deployments.

I would like to provide additional information for the record.

[The information follows:]

Facility Decommissioning

History shows that programs, other than EM, have refurbished and recycled many of their established facilities or assets for use in new projects. Recent examples include the Fermilab Main Injector and the B-Factory at SLAC which made use

of existing site credits and, of course, the National Spherical Torus Experiment which is using part of the TFTR building and support systems. Basically this is done, by the programs, to maximize use of existing resources and infrastructure and minimize costs of new projects. For the fusion program, the TFTR building and support systems are a valuable resource which could be used for a future fusion device if the TFTR vacuum vessel and other contaminated systems could be removed.

gao report on employment for russian scientists

Mr. Frelinghuysen. Well, I understand where we can cannibalize and reuse things; that makes sense, but I do think we ought to try to spend as much money on new initiatives and less money for decommissioning of these types of accounts. I will continue to work with you to make sure that we put the money less into decommissioning--although, obviously, those are necessary expenses--and more into continuing research opportunities.

I would like to shift, if I could, I just have a couple more minutes here. Recently, the General Accounting Office issued a report criticizing your program aimed at developing non-military jobs for Russian weapons scientists in Russia. This was reported at some length in the New York Times, initially, before the GAO report came out, so that the Russians do not leave to work for other nations unfriendly to the U.S. It is noted in that report that only 37 percent of the \$63 million spent through June 1998 on the program reached the Russian scientists. About 51 percent went to DOE for National Laboratories whose personnel administered and oversaw the individual projects. Is this what the Department envisioned for the program?

Mr. Richardson. Let me say that this GAO report also said that this is a useful program and that we need to manage it better, but that they endorsed our objective of protecting nuclear scientists from defecting and also dealing with the whole issue of proliferation prevention. They did point out some management shortfalls that we are addressing.

Mr. Frelinghuysen. But the description concluded, and it was somewhat disturbing, that the DOE Lab officials did not know how many scientists are receiving funds or whether key scientists and institutes are being targeted. I don't know whether that is accurate or not. Obviously, given that sort of conclusion, that calls out for some major changes, and I assume those are in the offing.

Mr. Richardson. Yes, well, we don't totally agree with that. They did point out some shortfalls; you mentioned one. We are trying to move the lab representation to about 50 percent rather than the 37 to 60 skew, but let me point out to you that I think that is sort of an unfair rap, because you want our lab scientists, the people that made our nuclear weapons and maintained them under the experts, to be involved in this program. They happen to be in Los Alamos and Sandia and our weapons labs, and you have to transport them to Russia; you can't move them. So, it is a little bit of a disingenuous attack, but we are addressing that. We want to spend more money in Russia with these scientists. We can assure you that on

another criticism we are trying to make sure that there is commercialization. I think there is a total of \$38 million that has been invested.

My main point is that this is a very important objective. We need to manage it better, I agree, but the tenor of the press report was that this was a problem program, that money was being wasted, and I can assure you if you read the fine print of the report, they say that this program is important; that it achieves its objectives, and that it needs to have some management improvements.

Mr. Frelinghuysen. Well, lastly, are the Russians taxing?

Mr. Richardson. Right now----

Mr. Frelinghuysen. I think that is bizarre, but----

Mr. Richardson. Yes, we are negotiating with the Russians when Primakov, the Prime Minister, comes here to meet with the Vice President next month. Hopefully, we will have a negotiation that will eliminate that tax. That has been a problem. There is a tax component; we don't think it should be in there, and we are trying to deal with it.

Mr. Packard. Would the gentleman yield on that just for a moment so we don't have to come back to this issue, because I certainly wanted to discuss that, too? You have gotten the GAO report and its concerns. Hopefully, you will act on them.

There is a lot of corruption in Russia. We know that. We would hope that this money does not filter to the wrong people. And hopefully, your oversight of the project will be sufficient to make certain that it gets to the right people.

And secondly, I certainly want to emphasize what Mr. Frelinghuysen has already done, and that is that more money needs to go to the project and not to the oversight labs here in the United States.

Mr. Frelinghuysen. I appreciate that. Thank you, Mr. Chairman.

Mr. Packard. Let me bring up one point before I go to Mr. Visclosky, and then I want to come back to my--a couple of questions that I would have.

richland reprogramming

We have the reprogramming request that we received a few days ago on the Richland reprogramming--it is \$53 million, which is a fairly sizeable reprogramming at least sizeable in what I am used to reprogramming as the chairman of other subcommittees. And it just arrived. You've had it for six months. Your people have had it for six months, and now it is laid on us to do the analysis work and to get it done in a few days or else we are going to be dismissing or laying off 700 contract employees at Hanford. That is not a good position that this committee likes to be put in. We would hope that you would tell your people not to send a reprogramming with a deadline like that. Mr. Visclosky and I do not want to be responsible for laying off 700 contract people at Hanford. And yet, we do need a little time to analyze the reprogramming. You've had it six months, and then given us a week or two. That is not the way we would like to be treated. We hope that you will improve that.

Mr. Richardson. Mr. Chairman, you are right. We need to do

better there. I have also had the same problem that Mr. Knollenberg referred to. I have some vacancies at Hanford because I want a strong team there. And it has taken me a while to move the team around and bring in some strong people. That was a factor in the delay. The head of the Richland office, the Office of River Protection, a general counsel position, the deputy--we have--we are going to be in the next 30 days moving some very strong people there.

But you are right. You are right. There was a delay that is not acceptable. We have sent a message down that this needs to move faster. There is, though, Mr. Chairman, an urgency to move on this. And it is part of the privatization project. It is part of the privatization, which you all have wanted us to do.

Mr. Packard. The merits of the request, Mr. Secretary, are not in question at all, and I think it will be processed as quickly as we can. It is just that we felt that we were treated a little bit with a hook that we didn't appreciate. And thank you very much. Mr. Visclosky?

Mr. Visclosky. I am fine, Mr. Chairman.

Yucca Mountain Nuclear Waste Repository

Mr. Packard. Thank you. Then let me go on to some other questions. I was going to talk about the weapons programs in Russia and the closed cities and so forth, but you--we have talked about that sufficiently.

The Yucca Mountain Nuclear Waste Repository has been an ongoing difficult problem for this committee and, of course, for your Department. And we recognize that. The administration has continued to oppose legislation to modify the Nuclear Waste Policy Act and provide interim storage, and that has certainly put the Federal Government into a little bit of a difficult position. As I read further material, I find that lawsuits and costs and so forth could go from a couple of billion to \$8 billion dollars or more in trying to deal with this, and that is monies that I don't know where we could ever come up with.

But at any rate, why does the Department still continue to refuse to make proposals, legislative or otherwise, in addressing this responsibility? And what is being done to literally solve the problem?

Mr. Richardson. Mr. Chairman, we will continue to oppose interim storage at Yucca Mountain. It wasn't part of the legislation. We want good science to make decisions, not political factors. We want to make sure that the viability of Yucca, the suitability, which is not to be decided until the year 2001. As you know, I recently, at the end of last year, submitted to the Congress a report that says we should continue research on Yucca. There are no showstoppers. There are some water problems with that mountain. We would have to continue studying it.

We have opposed interim storage because of the transportation factors. You have to move the waste to Yucca. We think science should make those decisions.

But, Mr. Chairman, I have proposed something new. I did it before the Senate as a starting point to discuss, to have a dialogue, rather than engage in a veto fight that I believe took place a year ago. What I have proposed is, let us discuss

ways in which we can bring environmentalists, the utilities, and the States together in a plan along this line. And this is not in concrete.

The Department of Energy takes title to the waste at the 72 sites that exist in the country. In exchange for that, we take responsibility. The utilities drop their lawsuits against us. As you mentioned, they have sued us, and we have had a couple of verdicts against us. That concerns me. That would perhaps come out of our budget. But that concerns all taxpayers.

There is a fund of \$7 billion in the utility fund that would be used to pay for this program. We think that we can achieve this. But maybe there is somebody else who has a proposal. I almost didn't get confirmed by the Senate, when I was told that we had no authority to float or negotiate. Well, I have that authority. I floated that with the Senate, and I am appearing before the Commerce Committee--Energy and Commerce now--in the next couple of weeks. And we have thrown that out. We know it is a problem, Mr. Chairman. And this committee has been positive in funding the activities at Yucca. We are spending about \$500 million at Yucca to make sure it works; that we do the proper scientific work; that there is a proper foundation. And it is a serious problem.

Mr. Packard. As you well know, Mr. Secretary, leaving the spent fuel where it is at is probably more dangerous and more problematic for us than finding an interim solution. That is my--and I am sure this committee's--biggest concern is that we just don't have a policy that the companies and the agencies can deal with. Is your proposal going to lead us to a solution on an interim basis?

Mr. Richardson. Well, I hope so. It has received mixed reviews--stony silences. It is kind of out there. I just did it last week. We are also trying to get some cost data. This is not perfect. I just don't want us to have a showdown where we are forced, in our judgement, to do something that scientifically is not sound. And that is to move ahead with interim storage. We would have to transport all the waste to Yucca. I think we can do it safely, but all I am saying is right now there is waste at these 72 sites. The utilities are managing them. They are doing a good job. What we would do is take title to them until we have permanent storage. So you are not I think dramatically changing the----

Mr. Packard. Have we agreed to pay for the cost to the utilities for storage?

Mr. Richardson. Well, there is a fund. Yes, there is a fund that the utilities contributed to for the creation of the Yucca Mountain site, \$7 billion. So there is a fund to pay for this. I just don't want taxpayers to get stuck with new funding for this.

Mr. Packard. Thank you. We will go to Mr. Edwards then. Mr. Edwards, okay. Mr. Forbes?

Cleanup of Nuclear waste

Mr. Forbes. Thank you, Mr. Chairman. Mr. Secretary, I know that you share a great priority with getting cleanup done, and I would like to visit with that a little bit more if I could for a moment.

And I do appreciate the \$100 million increase that you have requested, I guess making that a total of \$5.7 billion for cleanup at your various nuclear sites across the country. There is I think probably an institutional frustration, and I mean that both from the Department of Energy perhaps and certainly from Congress' point of view that our constituents would like to see us get these sites cleaned up yesterday. And I know because of financial constraints, we have to plod along and hope that we can maximize our cleanup with the monies given.

There was one proposal apparently that has either been presented to the Office of Environmental Management over at DOE that looked at maybe the private contractors coming in. Perhaps at the surplus defense nuclear facilities, where we are now storing some of the hazardous waste, that if we deactivated some of those sites and had a private contractor come in that some of those savings could perhaps be invested in having that contractor clean up the site, even go to the private marketplace and get dollars to expedite cleanup, and then on a fixed-base cost the Department would pay for that.

Has that idea got any currency with you in the Department, or are there other ideas that might be floated around. I know that all of our Departments and agencies had to be very creative in approaching a lot of these problems. Could you comment a little bit about that?

Mr. Richardson. You know, I don't have the specifics on that proposal, but I am ready to consider ways to make sure this cleanup works, and it hasn't. I think you were overly generous. You said perhaps funding reasons were responsible for us not doing the cleanup. We have not managed these sites the right way. We have not stayed--I think Mr. Knollenberg will tell you, we have not met our deadlines--Hanford being a big one. We have had some problems with Brookhaven, too.

So I am ready to look at all options that accelerate the cleanup, and at this upcoming session with governors and others where we look at all our objectives in the cleanup area, at all our sites. And set up some standards and funding goals and principles that we are ready to look at. We don't have a national policy. You pointed out the problem. We have separate policies, and I think use of the private sector more efficiently is important.

Now, I will tell you that some of the commercial sites, we have States not wanting us to use them, because they are not licensed in some cases by States. So we have to take that into account. We have to make sure that these sites are fully certified and that they are safe. This is a--my staff is telling me to tell you that you have a very good new idea.
[Laughter.]

Brookhaven National laboratory Employee Concerns

Mr. Forbes. I thank your staff. Thank you. Well, I take it that the Department is receptive, and I appreciate that, Mr. Secretary. I have one other quick question.

I know that some of the employees from Brookhaven National Laboratory have discussed, I believe with you directly, that some of the nuclear facility workers felt negatively impacted if, in fact, there is a reorganization, a RIF, or even a

downsizing, based on a decision out of the Chicago office that prevented them from partaking in retraining and getting priority in reappointments to other nuclear facilities and the like. Could you comment about their concern?

Mr. Richardson. We will come up and talk to you about that.

I don't see it as that big a problem. I think when I was at Brookhaven I said to you that I felt the budget would be stable there. There would be no layoffs. And I think I can stick with that. The issue of the training vis a vis the Chicago office, I am going to look into. But that is part of--that is part of why I want to reorganize this Department.

Now, I think there are good reasons perhaps why New York reports to Chicago. But maybe there is a better way. And, you know, there are these webs of reporting that have been at the Department for years, and I don't know if you remember--you were probably too young. Admiral Watkins, who was a previous Secretary of Energy, used to say that what we had was all these fiefdoms everywhere. Nobody knew what they were doing. Well, I don't think they are fiefdoms, but sometimes I have difficulty getting a handle on who reports to whom and how we can manage ourselves better. But we will come up and talk to you about that.

Mr. Forbes. I appreciate that, and I do concur with the concern about the fiefdoms. I think it is part of the reason why Brookhaven National Laboratory went through the difficult time it did, because of these cross reporting--lines of reporting, et cetera. But I thank you for taking a look at that. Thank you, Mr. Chairman.

Mr. Packard. Thank you. Mr. Knollenberg.

Solar and Renewable Funding Versus Nuclear Energy Funding

Mr. Knollenberg. Mr. Chairman, thank you again, and Mr. Secretary we will come back with a couple of more questions.

I want to focus a little bit on Kyoto and the climate change issue. And notwithstanding, of course, the position of the House and the Senate, the administration has gone ahead and signed the Kyoto Protocol, a treaty I believe is flawed. I don't think it is going to do anything to reduce CO2 emissions, and that I believe is the goal of something I want to talk about which is the CCTI, the President's initiative.

I just want to take a moment, and look at the science that is being conducted by the Department of Energy relative to CO2. In your prepared remarks, and you might have made this comment when you were making your abbreviated delivery, you mentioned the investment, you looked at this as being an investment. And I would like to look at the return on the investment with respect to the CCTI. It is true, is it not, that the CCTI is an effort to reduce CO2, greenhouse gases?

Mr. Richardson. Yes.

Mr. Knollenberg. Yes. My concern is why is the focus then on the solar and the renewables when you look at the kind of viability of those areas with respect to what we currently have on the table? For example, coal is about 50 percent. I know there have to be ways to clean coal. Nuclear is about 20 percent. It doesn't produce any CO2, greenhouse

gases. Hydro is, I think, about 10 percent and then natural gas is in that range of double digits perhaps, and that maybe I've got those backwards, but nuclear I know is 20 percent.

It seems to me that if the aim is to reduce CO₂, that we should be focusing on the areas that really do produce a minimum or zero CO₂. I think you would agree with that.

So my drive here is to, my emphasis is to put some thought on the nuclear side. And we can talk about the thrust and the achievements in the areas of wind and solar, but the fact is that they produce way less than one percent, a fraction, a tiny fraction of one percent of today's electric power. So it would seem to me that the focus should be on those things that do work, those things that are in the marketplace that are market tested. And I would wish for one that tomorrow, we could wake up and overnight solar would be a source of power that would be commercially viable and effective and that would reduce the problems we have with if CO₂ is, in fact, that problem to the world that some suspect that it is. That could be debated, of course, but I am--I just would like to have your thoughts about where can or why can't we put more focus on those areas that do work instead of those that are still as yet untried? They are tried, but they are not proven, I should say.

Mr. Richardson. Well, Congressman, let me answer it this way. First, we are not trying to implement the Kyoto Agreement through the back door by funding some of these renewable initiatives. Let me just be clear about that.

Second, if you look at our budget, we have some increases, and we recognize the importance of nuclear energy. And we also recognize, and our spokesman at the Buenos Aires conference on climate change that recently took place late last year mentioned nuclear power, the nuclear component in our discussion.

Mr. Knollenberg. And, Mr. Secretary, not to interrupt, but so did Ambassador John Rich, when we spoke with him in Europe during the month of January. So those--they are advocates, I don't mean to suggest there's not.

Mr. Richardson. But if you look at funding, we are doing well. We are doing well in the Nuclear Energy Research Initiative, and the Nuclear Energy Plant Optimization Program. I hope we can do better. Last year, we requested \$10 million for this, and it was cut out by the Congress. This is research that we think is important.

Coal research. I think--and Dan--well, this is fossil fuels--we are doing more natural gas and coal research. We think--let me tell you why we think renewables and energy efficiency reduction of carbon, some of the requests are important. They are not back door attempts to bring climate change approval through the Congress. When you invest in renewables, we think it improves our energy security. It does reduce emissions. It maintains our lead as a country in science and technology. It gives us abundant supplies of affordable energy. It creates jobs, maintains a strong national economy, so I would hope when you look at what we have proposed in renewables, and there is an increase in energy efficiency programs--there is a slight increase, that you see them as something that is important to our national energy policy and

not as climate change initiatives.

I am not disagreeing with any points that you made. Coal, when I was in New Mexico, clean coal research and coal gasification. We want to have a pollution-free power plant, coal power plant.

alternative fuel vehicles within the department

Mr. Knollenberg. Let me just interrupt here, because I agree with part of what you say. But you know in the increases, the solar and renewable increases, they are substantial, it is 73 percent. Solar thermal is 37; wind is 56 percent; and yet nuclear is way down to a pinch, hardly--it is not an increase at all. And I agree that we have done some things there.

Here's the concern I really have, and I think I could formalize this into a question. We know that DOE supports these, and you support them. But does DOE use these themselves? Do you, for example, could you supply for the record--if you can't, can somebody on your staff indicate how many automobiles that DOE has that are, in your fleet, that are electric or hybrid?

Mr. Richardson. Well, I--one of my two is gas.

Mr. Knollenberg. Yours? I mean the Department.

Mr. Richardson. Oh, but seriously.

Mr. Knollenberg. I am talking about DOE.

Mr. Richardson. No, my DOE car, my second car.

Mr. Knollenberg. Good.

Mr. Richardson. I only have--I shouldn't tell you have many cars I have. I have two. [Laughter.]

Mr. Knollenberg. Well, how much does the Department, how many vehicles does the Department have? If the Department is so strongly in favor of using solar and renewables, how many vehicles do you have?

Mr. Reicher. We are--Mr. Knollenberg, we are actually ahead of the requirements under the Energy Policy Act that was established in 1992.

Mr. Knollenberg. Well, the State of Michigan has 300 vehicles, for example, that they use that are natural gas. How many does the DOE have?

Mr. Reicher. We have hundreds of alternative fuel vehicles--natural gas, ethanol, electric. Hybrids are just coming out this year.

Mr. Knollenberg. Could I have a complete list of all of those, and specifically the kind of vehicle that it is and what it consumes?

[The information follows:]

Number and Type of Alternative Fuel Vehicles at the Department of Energy

At the end of fiscal year 1998, the Department of Energy had 650 alternative fuel vehicles in its fleet. Most of the vehicles are natural gas, but we also have ethanol, propane, and electric vehicles as shown in the table below. The vehicles are primarily pickup trucks and vans, but include some compact and mid-size sedans. We expect to add 1,000 alternative fuel vehicles to the Department's fleet during fiscal year 1999 and

our planning and acquisition efforts are well underway. Barring any unforeseen ordering or delivery complications, we expect at the end of fiscal year 1999, to have 1,650 alternative fuel vehicles as shown below.

U.S. DEPARTMENT OF ENERGY ALTERNATIVE FUEL VEHICLES

 Estimated in fleet or awaiting delivery at end of fiscal year 1998

	Compact sedan	Mid/full- size sedan	Pick-up truck	Van
Natural Gas.....	55	1	246	252
Ethanol.....		46		45
Propane.....			3	
Electric.....			2	
Totals.....	55	47	251	297

number and type of alternative fuel vehicles at the department of energy

Mr. Reicher. Yes. Absolutely. And it is the biggest mix is natural gas, and then ethanol.

national renewable energy laboratory's power sources

Mr. Knollenberg. The other question I would have and I will conclude with that, Mr. Chairman, is that we have mentioned the National Renewable Energy Laboratory in Golden, Colorado, and I've been there. If there is any place on earth that should rely solely on solar and renewables, I would think it would be that laboratory. Do they?

Mr. Reicher. Mr. Knollenberg, yes, the lab uses a fair amount of both solar derived and wind derived electricity to run the power plant, and it is, in fact, now buying green power off the grid produced by public service----

Mr. Knollenberg. What kind of green power?

Mr. Reicher. Wind produced.

Mr. Knollenberg. Totally?

Mr. Reicher. No, it is a percentage--I can get you those numbers. But the lab has an increasing amount of its power that is, in fact, renewables-based.

Mr. Knollenberg. Wouldn't you think that if that lab were totally on solar power, or renewable power of some kind that that would be a--that would be a success story that you could replicate and sell--but you're saying to me that it is not the case?

Mr. Reicher. No, it is, in fact, the case literally.

Mr. Knollenberg. Totally?

Mr. Reicher. Not totally, it is an increasing amount. And I can get you those percentages----

Mr. Knollenberg. An increasing amount I understand, but that is not the answer I am looking for. Would you be so kind as to send me or supply me with the specifics of just how much,

what percentage of power is derived--how it is derived and from what sources for that laboratory? I think it is not to damage the potential that you are striving for at all, but where are we? Let us get an assessment of where we are, and let us see if we can't move forward. But in a way, I think it is meaningful. I do come back again to the nuclear side that there should be-- and I know, Mr. Richardson, Secretary Richardson, you have advanced your support in the nuclear side. I think, however, it is being considered like a step child in terms of these percentages, because the percentages don't lie. They have increased substantially, and if you would do that for me, I would be most appreciative.

Mr. Reicher. Absolutely, and I will give you those numbers and also show you how it is progressing in other parts of the Department and other agencies as well. It is on the rise. If I could, on CCTI, I just wanted to make the point that the largest percentage of the funding in CCTI is actually for the more efficient use of fossil and nuclear-derived electricity-- more efficient use in buildings, more efficient use in industry, more efficient use in cars. The next largest is, in fact, for clean power generation. Big increases in support for hydro. Big increases in support for technologies like wind, which are making real penetration into the market. Natural gas is very heavily supported in this budget for both.

[The information follows:]

[GRAPHIC(S) NOT AVAILABLE IN TIFF FORMAT]

solar renewables investment return

Mr. Knollenberg. As well they should be. Now, when you go back to hydro, that I understand. But I begin to come back to the same feeling I had a moment ago, that you are still talking about a fraction of one percent?

Mr. Reicher. On the natural gas----

Mr. Knollenberg. That is coming--I am talking about coming from the solar and the renewables. And that is the focus--we are putting so much money into that arena, but what is the return on investment. And it has been a number of years that we have done that, so I think we have to start looking, do we really get our money's worth by continuing to fund a program that very honestly dwindles in terms of successes.

Mr. Reicher. Well, when you look at the cost curves, when you see how this, how the price of electricity has come down so dramatically----

Mr. Knollenberg. Come down, and who is going to buy it without a subsidy?

Mr. Reicher. Well, it is, in fact, being bought in States across the country. As Mr. Latham said, the largest new wind installation in the world--indeed, the largest wind installation in the world is going in Iowa and major new installations in Minnesota, Colorado, and the Dakotas are making a move.

Mr. Knollenberg. When they begin to push upward above that fraction of one percent in terms of being acceptable to the buying public, then you are going to begin to convince me. But

until then, I think we have to really evaluate how we are spending this money. I have used my time here I think to its completeness. But I, Mr. Secretary, I do, again, welcome your visit here today, and I look forward to working with you. I truly do. Thank you. Good luck to you.

Mr. Packard. Did you have any questions, Mr. Frelinghuysen?

Mr. Frelinghuysen. You could stay right there, if that is all right. Does the National Energy Policy Act mandate that we have all these different energy projects--photovoltaic, solar thermal, biomass fuel, or is it?

Mr. Reicher. No, it does not mandate those projects, you know, per se. It encourages the development. What it does----

Mr. Frelinghuysen. But the sum total of all of those in this account, and I am not here to bash any of those, what does it produce in terms of the overall energy picture for the United States?

Mr. Reicher. Well, in terms of electricity, hydro, which, as I have said, we have asked for a major increase in hydro--it is on the order of about 10 percent. Natural gas.

Mr. Frelinghuysen. No--well, the hydro account increased 279 percent. But what does hydro contribute to national energy?

Mr. Reicher. About 10 percent of U.S. electricity. And natural gas is coming on very strong. And, as I have said, we have major, major commitments to natural gas-fired production--
--

Mr. Frelinghuysen. It is interesting that nuclear energy, and I am not here to promote nuclear, represents just under 20 percent, is that right, of the nation's electricity?

Mr. Reicher. Right, and we have made a----

Mr. Frelinghuysen. And this subcommittee last year provided \$19 million for nuclear energy research, and on the other hand we provided \$54 million for photovoltaic research. I mean, to most of us, as lay people, that seems to be rather bizarre, a skewed figure.

Mr. Reicher. Well, Mr. Frelinghuysen, I think it is an energy source that is coming on strong with these prices coming down----

Mr. Frelinghuysen. I understand the expression coming on strong. I understand that what you say about real penetration. But in the overall scheme of things, it is still fairly minuscule, isn't it?

Mr. Reicher. It is, indeed, small. As nuclear was 20 and 25 years ago, and there is a growth curve, and we are expecting a growth curve--we already are seeing in wind. We are seeing it in biomass. We are seeing it in natural gas. And we think we are going to see it in solar as well. You have got to start somewhere, and the key to starting is bringing the prices down to a point where they are, indeed, competitive. And they are today competitive in the United States in certain areas, in remote areas, where there isn't easy access to the grid, they are, indeed, very competitive all across the globe.

solar energy competition for grants

Mr. Frelinghuysen. Relative to the issue of competition for grants, I know that there were some problems in the past--sort of non-competitive awards. There have been some improvements in

that area. Would you very briefly comment as to where we stand on that? I think that is a very positive development. You ought to take some credit for it.

Mr. Reicher. Well, I appreciate it. I won't bore you with the numbers, but the numbers have come up substantially in terms of the dollars that have been competed in both the energy and water account and in the interior account within our office. Not only the total dollar amount, but the number of people competing for these dollars has gone up dramatically, and the diversity of the types. You heard about Columbia University today. We had an application from them for money. We got it, and they turned out to be a very excellent applicant. And we are going to do some very significant work with them.

performance based contracts energy audits

Mr. Frelinghuysen. Competition is important, but I do think the points that Congressman Knollenberg made, I would certainly echo some of them. Thank you very much. To the Secretary, Mr. Secretary, I read with interest your announcement that the Department has entered into a performance-based contracts with industry to reduce energy costs within government. This was in, I guess, yesterday's Washington Post. Could you tell the committee, which program at DOE is providing resources for this endeavor?

Mr. Richardson. Mr. Reicher has all----

Mr. Frelinghuysen. Back again?

Mr. Richardson. Has all the money in our Department.

Mr. Frelinghuysen. And at the same time--is this the same type of initiative I read about in the Wall Street Journal about your Department selecting firms for energy projects at military bases?

Mr. Reicher. Yes. This is an approach, it is very, very interesting, and I think it holds great, great promise. This is basically energy service companies going into Federal installations, doing energy audits, and using their own dollars, their private sector dollars, investing in retrofits to those facilities--heating, insulation, lighting--and then sharing in the savings to pay themselves back. And we basically put in place now, over \$5 billion in contracting authority, the ability of the Federal Government to sign up to these private sector investments, to make the retrofits and share in the savings. And there is literally--we think on the order of a billion and a half dollars a year out of the Federal Government's \$8 billion energy bill that can be saved. Again, not using taxpayer dollars, but using private sector dollars to invest in the retrofits and share in the savings. And we are really very, very bullish about this.

Mr. Frelinghuysen. You are managing these programs?

Mr. Reicher. Correct.

Mr. Frelinghuysen. The one that was announced the day before yesterday on Tuesday as well as the one for the military bases?

Mr. Reicher. Correct.

Mr. Frelinghuysen. One might ask, why shouldn't each of the government agencies itself be required to contract with industry? Or they just don't have the--or are you such a good

manager that you have decided, somebody decided that the DOE ought to be doing it?

Mr. Reicher. What we have done----

Mr. Frelinghuysen. I am not against it. I just wondered what the rationale was?

Mr. Reicher. It is a matter of, I think, of efficiency. What we have done is put in the basic contracts. We have made it very simple. If you run a post office in Iowa, and you want to make changes to reduce your energy use, we made it----

Mr. Frelinghuysen. You could start with one in Morristown. I just moved my office out of there. The average temperature.

Mr. Reicher. I should have picked New Jersey. [Laughter.]

Mr. Frelinghuysen. The average temperature in my post office is 75 degrees year round. They have to have the air conditioning on in the winter because it was so hot.

Mr. Reicher. That is a great example.

Mr. Frelinghuysen. And I have to say for the record that one of the reasons I moved out of there is it was so demoralizing that half the employees were asleep at the back table when I came in from doing whatever I did around the district because the post office was so hot.

Mr. Reicher. To very quickly answer, responding to that specifically, that building manager, in the old days, would have to go out----

Mr. Frelinghuysen. There is no building manager for the U.S. Postal Service. [Laughter.]

Mr. Reicher. Congressman, you, in the old days, would have to call an energy service company. Engage in a two-or three-year process of entering into a contract. Maybe you would succeed. Maybe you wouldn't. We have now got that down to a point where we have standing contracts under which any Federal agency can go in a matter of three to six months, enter into a simple arrangement with one of these pre-selected companies. The beauty of this is we pre-select it on a competitive basis. These companies in six regions of the United States, and we have cut it to a three-to six-month process for sitting down, getting the audit done, getting the investment, and improving the energy use.

Mr. Frelinghuysen. Well, I think what you are doing is commendable, and my time is almost up. What are the costs to your Department to manage this program, or are they somewhat reduced by your partnerships and relationships with the private sector?

Mr. Reicher. Very much reduced. It used to be that the Congress was appropriating dollars, large dollars, to make energy retrofits to Federal buildings. That is getting close to zero now, and what we have replaced it with are these private sector dollars. The cost to us is in managing these large contracts, and the overall budget for the office. It is called the Office of Federal Energy Management Programs and is between \$20 million and \$30 million a year, bringing in over the next several years literally billions in investment, so it is a wonderful return on investment.

Mr. Frelinghuysen. Okay, we don't hear that often around here, so thank you very much. Thank you, Mr. Chairman.

Mr. Packard. Thank you, Mr. Frelinghuysen. I think we are about to wrap up, so we won't be long, Mr. Secretary. The Select Committee on National Security and Military and Commercial Concerns with the Republic of China, the People's Republic of China, headed up by Chris Cox, has not released their report yet, but press reports have indicated that there are some real concerns about security at our national labs, particularly those that are producing nuclear weapons, do you have any comments on that at this point?

Mr. Richardson. Mr. Chairman, when I came into the Department, I recognized that this was one of our biggest problems, and we have moved aggressively to try to correct that problem. The Cox report, which is still classified, indicates that basically in the 1980s there was some compromising of our national secrets, primarily to China. And what we are doing now is assessing the damage of these disclosures.

Now, we have taken some very aggressive steps in the Department of Energy to correct this problem. Number one, I have brought in an FBI counter-intelligence expert to run this program. We now have counter-intelligence people at each of the labs that we didn't have before, reporting directly to the lab director. We have basically done background checks on all visitors from sensitive countries. We have tightened our visitor procedures across the board. Now the lab director bears responsibility on who comes into the lab. There are accompanied people that go in with some of these individuals from sensitive countries. We have doubled the counter-intelligence budget, doubled the request, and we hope this committee is generous when it comes to this, although I think this is in the National Security component.

I have also instituted some very tough procedures involving polygraphs with members of my lab teams. For those that are involved in some very sensitive activities, relating to these programs.

So I believe we have responded, some say excessively, I think the problem is under control, but we suspect that over the years the Department was not as strong in security as it should have been.

Mr. Packard. When the report is released and available in full, both this committee and I am sure you and your Department will address those concerns very specifically.

Mr. Richardson. Yes.

management reform and improvements

Mr. Packard. We appreciate that. You have indicated that one of your top priorities is management reform and improvements, and in your testimony you indicated that you have got different boards and reports, the Galvin report and others, that are being used as informational tools; and that you will release this to the Congress before the end of the fiscal year. I would really appreciate if we get it as soon as you can make it available to us so that we can see what you are doing.

I have no further questions. It has been a very good hearing. You have been an excellent witness. You are very good, and I want to tell you that we have appreciated you being here.

I want to thank the staff for helping us prepare for this our first hearing. It has gone I think very well. I appreciate the support and the participation of the members. And thank you very, very much.

The hearing is adjourned.

[The questions and answers for the record follow:]

[GRAPHIC(S) NOT AVAILABLE IN TIFF FORMAT]

Thursday, March 11, 1999.

ENERGY RESOURCES AND SCIENCE BUDGET OVERVIEW

WITNESSES

DAN REICHER, ASSISTANT SECRETARY, OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

WILLIAM D. MAGWOOD, IV, DIRECTOR, OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

DR. MARTHA KREBS, DIRECTOR, OFFICE OF SCIENCE

Mr. Packard. Ladies and gentlemen, it is a pleasure to welcome you to this hearing this morning. As we announced last time, we intend to start our hearings on time; and I appreciate my Democratic colleagues being here. I have been told there are several hearings being held today and so some are divided between committees.

This important agency hearing is regarding three major areas: the Office of Energy Efficiency and Renewable Energy; the Office of Nuclear Energy, Science and Technology; and the Office of Science. We have the Directors of each of these areas, the Assistant Secretaries and Directors, and we are grateful to have the witnesses here. I have had the privilege of meeting with them individually, in most instances; and I appreciated that opportunity.

So we are going to--unless you have an opening statement, Mr. Visclosky, I think we will proceed.

I might just mention that we are anticipating a series of six votes around 10:30, and so I would kind of like to have the witnesses complete their statements by then. And then if we are interrupted in the question and answer, that is not a problem. That means that I would like you to summarize your statements.

I think most of the members of the committee have your statements. I have read them. It was not an easy night last night. I haven't read such technical information since I was in dental school. But I appreciated your statements. As I said, I read them throughout and made several notes; and we will have several questions.

I might also mention that there will be many, many questions that will be submitted for the record. We will not ask them all, of course. We will ask you or your staff to help you in submitting answers to questions for the record.

With that, I am going to ask if Mr. Magwood will begin; and then we will hear from Dr. Krebs and Mr. Reicher.

Mr. Packard. Mr. Magwood, welcome and thank you for being here.

Oral Statement of Mr. Magwood

Mr. Magwood. Mr. Chairman and Mr. Visclosky and members of the subcommittee, I am Bill Magwood, Director of the Department's Office of Nuclear Energy, Science and Technology. I am pleased to appear before you today to discuss our fiscal year 2000 budget request. I have submitted a written statement for the record, but I have a few summary points I would like to make today.

Over the last year, my office has worked very hard to focus and prioritize our programmatic activities along two primary goals: first, to reassert U.S. leadership in nuclear technology; and second, to conduct research and other activities that we believe are required to prepare for the next American century. I believe we have made considerable progress toward both goals.

nuclear energy accomplishments

First, I would like to highlight a few points. I think it is important to reflect on some of our past accomplishments to understand how the Federal nuclear R&D program can best serve the American people in the future. The Department has a rich and successful history in the development of nuclear technology, dating back to the Atoms for Peace Program. Our accomplishments have benefited the Nation in many ways.

As we all know, nuclear power technology itself was born in Federal research programs. But fewer people know that our programs also gave birth to nuclear medicine, which both saves lives and reduces health care costs. Further, as shown on this first chart, even after nuclear power was launched as a commercial business, our past work resulted in improvements that save American taxpayers millions of dollars every year.

We are also proud of our work on the advanced light water reactor program. Working with industry, we helped make a new generation of safe and cost-effective nuclear power plants available to utilities in the United States and around the world.

Today, three U.S. companies have brought three advanced technology nuclear power plants to the market. Further, any doubts that anyone may have harbored about whether these technologies would perform as advertised, need only go to Japan, or look at my next chart, to see the first two advanced BWRs in operation at the Kashiwazaki Kariwa Nuclear Power Station. This seven-unit facility is, I believe, the largest power station on the planet; and it supplies about 23 percent of Tokyo's electric capacity. These advanced plants can now be routinely built in Japan in less than 4 years. A similar, but U.S. standard plant will be built in Taiwan. Many U.S. jobs will be generated by these activities and by other advanced nuclear power projects in Korea and quite likely other nations in coming years.

These examples demonstrate how our past accomplishments have enabled the United States to maintain its leadership role in nuclear technology. However, the outlook for the future is uncertain. As you see in the next chart, the U.S. has dramatically decreased its funding for nuclear R&D over the

last 20 years. In fact, in an event that reverberated throughout the international community, our R&D budget reached essentially zero in fiscal year 1998.

The next chart shows that we have been out of step and outpaced by many of our economic competitors. The blame for this, I believe, rests with us. We did not change with the times nor did we plan sufficiently for the future.

I believe that we are now on a positive track. I think we know what is needed and what our role should be in the future. But while research dollars are not everything--we have, for example, been able to demonstrate our leadership by engaging the U.S. nuclear community and the international community in various important discussions--such funding is essential in showing that we are serious and credible participants in the international exploration of nuclear technologies.

We were, therefore, very pleased that Congress approved our proposed Nuclear Energy Research Initiative for fiscal year 1999. Universities, industry, laboratories and the international research community have shown great interest and excitement in the NERI program. We have received over \$100 million worth of research proposals for NERI's first year. Further, research organizations all over the world are anxious to re-establish cooperation with the United States through the NERI program. For the coming fiscal year, we are requesting a modest increase for NERI from \$19 million in fiscal year 1999 to \$25 million in fiscal year 2000.

We are also proposing two other new, modest programs. One, the Advanced Nuclear Medicine Initiative, is needed to apply the Department's unique expertise in isotopes to fight against cancer, arthritis and many other illnesses. The other is the Nuclear Energy Plant Optimization program.

The NEPO program is designed to conduct research into technologies that will be needed to optimize the efficiency and safety of today's nuclear power plants as they continue operating for the long term. NEPO can help assure that operating nuclear plants can continue to serve our interests in reducing harmful air emissions.

As you can see on the next chart, efficiency enhancements to nuclear power plants over the 7 years leading to the year 2000 comprise the largest contribution to utility plants' CO2 emission reductions.

The next chart demonstrates that the operation of nuclear power was essential to states striving to meet Clean Air Act requirements. Increased generation of nuclear plants in these states enabled them to meet 37 percent of the emission reduction targets required by the Clean Air Act. Operation of nuclear plants can continue to provide these benefits into the middle of the next century.

Finally, I note that we are relying, more than at any time in our history, on independent, external advice. The best example of this, was in October, 1998, Secretary Richardson established the Nuclear Energy Research Advisory Committee, or NERAC, to help us plan for the future.

As you can see on this last chart, there are 28 independent, prominent individuals on NERAC, including experts in fields such as nuclear technology, medicine, education, policy, economics and nonproliferation. NERAC is chaired by Dr.

James Duderstadt, a former president of the University of Michigan.

This group is working with us to develop a nuclear energy long-term R&D plan, a road map of the Nation's nuclear science and technology infrastructure, and a long-term isotope research and production plan. In addition, NERAC has formed a special subcommittee to analyze the long-term technology requirements of existing nuclear power plants and to guide, if approved by Congress, the NEPO program.

In closing, nuclear power and nuclear technology benefit Americans in many ways. All the members of this subcommittee come from states that depend on nuclear power plants for electricity. Nuclear medicine is a part of everyday life, with more than 36,000 imaging procedures performed in U.S. hospitals daily. We believe that nuclear energy can continue to benefit the American people in the future and that with your help, support and counsel, the Department will have a role in pointing the way.

I will be happy to answer any questions you may have.

Mr. Packard. Thank you very much, Mr. Magwood.

[The information follows:]

[GRAPHIC(S) NOT AVAILABLE IN TIFF FORMAT]

Mr. Packard. Dr. Krebs comes to this committee with a great deal of experience. She is Director of the Office of Science and has served there for several years. We are very grateful to have you and welcome you to the committee.

Oral Statement of Dr. Martha Krebs

Ms. Krebs. Thank you, Mr. Chairman.

Mr. Chairman, Mr. Visclosky, members of the subcommittee, I am delighted to be here today to describe the fiscal year 2000 budget for the Department of Energy Science programs. As a matter of perspective, it is important to keep in mind that the whole Department of Energy in terms of its investments in basic and applied research ranks second only to the Department of Defense in terms of the Federal investment in research in this country. And, within that, the Office of Science in terms of its investment in basic research with the National Science Foundation; in particular, we are a primary funder of physical science in this country by comparison to other agencies.

But more importantly, from my perspective, we are an integral part of the Department of Energy, both carrying out its science and technology commitments in terms of understanding the fundamental building blocks of the physical and living world that we are part of but, also in terms of meeting the science and technology underpinnings for the energy and the environmental missions of DOE as well as providing what we like to think of as extraordinary tools for extraordinary science in terms of the unique accelerators and reactors that we support at our national laboratories for research. And each year we get results.

office of science developmental results

Let me tell you about some of the most recent results. For example, we have new findings in corrosion resistance that will enable better protective coatings for high-temperature, high-wear environments in furnaces, turbines and engines.

We are exploring the new world of nanostructures, and we have created new materials that have 50 to 100 times more conducting power than copper. The day will come when we can show what kind of devices can use these new materials to conduct electricity.

We have been able to seek the genome of something called *deinococcus radiodurans* which we like to call ``Conan the Bacteria''. It is a thousand times more resistant to radiation than human beings and we are now systematically studying its properties because we believe it can have some long-term value in bioremediation of severely contaminated sites such as Hanford.

We have also developed the use of positron emission tomography to explore the chemical pathways of addiction; and, most recently, our scientists at the Brookhaven National Laboratory have been able to identify a drug available in Europe that is essentially a blocker of cocaine and nicotine addiction.

Science Magazine annually identifies a breakthrough of the year. Most recently, this year's breakthrough is something called the accelerating universe which was led by one of the teams at the Lawrence Berkeley National Laboratory, my old laboratory in California. That is basically the result of a 10-year effort led now by a person who used to be a postdoc when I was at the laboratory and basically has found a countervailing force to gravity that may result in the universe expanding forever as opposed to having a big bust.

Office of Science FY 2000 Funding Request

Going to this year's budget, let me simply say that our total budget request of \$2.835 billion is \$138 million above 1999; and if you take into account some one-time projects, our total investment for new activity in FY 2000 is \$184 million.

It is composed of three major elements: the increase in construction costs in FY 2000 for the Spallation Neutron Source to keep it on schedule, an increase of \$70 million for a new initiative called the Scientific Simulation Initiative, and \$10 million for an initiative in science education that I will describe shortly.

Despite these increases for major initiatives, difficult decisions were made within the base program that are defensible but not comfortable given the tight budget constraints that the Administration followed and that you are also facing. New projects and new scientific directions have to be followed. Science doesn't stand still, and it means that operation of existing facilities have to be balanced with these new initiatives and directions, as well as with the support for research and researchers that use the facilities.

So the budget request has a number of important elements. Let me talk about a few of them as briefly as I can.

Spallation Neutron Source

First, the Spallation Neutron Source, a \$1.36 billion facility located at Oak Ridge National Laboratory in Tennessee. Scheduled construction begins this year. This is scheduled for completion in December of 2005. It is a five-lab collaboration involving the Oak Ridge Lab, Argonne Lab in Illinois, the Lawrence Berkeley Laboratory in California, Brookhaven in New York, and the Los Alamos Laboratory in New Mexico.

It has been a high priority for the scientific community since 1984. It was reconfirmed as the highest priority for the material science community in the recent 1999 study by the National Academy of Sciences, and it can have major impacts on the understanding and fabrication of new and unique materials that range from metals to ceramics to polymers to magnetic materials, and it also has an opportunity for changing the way we understand biological structures and their functional properties in living systems.

We have recently had a biannual review that has been the subject of another review by the General Accounting Office that called into question and made some critical recommendations about project management. We have replaced the project director of this facility, and the project is undergoing a review that will be completed in early April that we will be ready to share with you shortly thereafter.

The new leader of the project is a Dr. David Moncton from the Argonne National Laboratory who brought in the Advanced Photon Source, one of our big facilities on time and budget. And so I believe we have moved quickly to get this project on a path that will allow us to move forward and complete this project in a responsible way.

Scientific Simulation Initiative

Let me move quickly to the Scientific Simulation Initiative. It is the Department's contribution to the President's Information Technology for the 21st Century Initiative. It is aimed at providing the science base that will build the computer and information technology for the second decade of the next century. NSF and DARPA have the primary responsibility for this long-term base development, but the Department of Energy and other mission agencies, NOAA, NASA, National Institutes of Health as part of this initiative are investing in the computers that are called terascale, or trillions of operations per second, and the software that will enable them to be used. We are investing in them for science in this initiative.

We have a special role in the Department of Energy because the Defense Programs and the ASCI program are in the process of developing these terascale machines to enable the certification of the safety and security of the stockpile and comprehensive test ban regime, because they are developing those machines, we can now foresee that tens of these teraops will be available in the next decade for science, but we have to start now investing in that science, developing the algorithms and building the models that will match the capability of those machines.

In DOE, we have chosen two primary applications to drive

the development of the machines for science: the climate modeling global systems application and combustion.

We chose those applications with three criteria in mind. We needed complex scientific problems for which an order of magnitude or several orders of magnitude increase in computing capability was going to transform our understanding of the problem. Going from, for example, just being able to say something about temperature change to what will happen in different regions of our country if the temperatures climb, if carbon dioxide continues to increase, and if it has an impact on climate.

The second criteria is a scientific community that is comfortable and sophisticated about large-scale computing and putting their problems on big computers. And then some other sort of external factors that justify choosing these applications because they need prompt development and exploitation of the coming technology.

Climate models, whatever your perspective may be on the impact of human actions on climate, we are engaged for the next decade or two in an international environment as to what the impacts might be and what or how we might mitigate or change our behavior. And the Department of Energy and the United States needs to be in that discussion in an informed and scientifically credible way, and that is what we are aimed at providing by putting our models on terascale computing soon.

Similarly, combustion, we have emission targets that are coming at us in the next decade for transportation that right now we don't fully know how to predict the behavior of engines as we know them, and this will help us do a better job of that.

In summary, for the Scientific Simulation Initiative, DOE has critical scientific problems. We are in the middle of the technology development, and we have an interagency collaboration that will help us work this problem.

In terms of other things that are in the budget, we are trying to take care of the unique facilities that we have had responsibility for. We are going to start the operation of the Relativistic Heavy Ion Collider at Brookhaven, the B-Factory at Stanford, the Combustion Research Facility at the Sandia Laboratory in Livermore. We are doing upgrades of neutron sources at Los Alamos and the reactor at Oak Ridge, and we are making successful progress on the Large Hadron Collider collaboration. That is an international high energy physics collaboration with CERN.

We are moving forward on the Next Generation Internet. I can talk further about that later.

Human Genome Program

The human program problem is funded at \$90 million. We are about to start the large scale sequencing operation. In fact, it has started. We are about to dedicate the sequencing facility Joint Genome Institute in California. We expect to be moving from 20 million base pair sequence in 1998 up to 50 million in 2000. And in the science education programs, we have a \$10 million increase to bring faculty, student teams and K through 12 teachers to our laboratories to expose them to our research programs.

In terms of program direction, I simply want to say very briefly that the people of the Office of Science are some of the best that I have ever worked with. Program direction supports them to do the work that you pay us to do. We have done a lot of work at trying to make our programs more efficient. We have gotten some kudos for it, and I won't tell you any more about that.

In closing, I would say that this is a good budget. It will enable exciting science. We believe that we are managing effectively in the face of uncertainty. There is room for improvement, and I look forward to working with you.

Mr. Packard. Thank you very much, Dr. Krebs.

Just informational, when did you serve on the staff of the Science and Tech Committee?

Dr. Krebs. I believe we overlapped. I was there from 1977 to 1983. I think it was your first term.

Mr. Packard. Thank you.

[The information follows:]

[GRAPHIC(S) NOT AVAILABLE IN TIFF FORMAT]

Mr. Packard. We are delighted to have the Assistant Secretary of the Office of Efficiency and Renewable Energy. Mr. Reicher has jurisdiction over all of the renewable programs in the Department of Energy. We are delighted to have you with us, and the time is yours.

Oral Statement of Dan Reicher

Mr. Reicher. Thank you, Mr. Chairman and members of the subcommittee. I am pleased to be here to testify on the energy and water development portion of the budget for the Office of Energy Efficiency and Renewable Energy. As you know, the other portion of our budget is funded by the Interior Subcommittee.

Mr. Chairman, 20 years ago, renewable energy was generally produced at a very high cost and in a very inefficient manner. Advanced power delivery system components and high temperature superconductivity didn't even exist, and the alternative transportation fuel sector was very immature. We have come a long, long way, Mr. Chairman.

The cost of electric power from wind turbines in 1980 ranged from 30 to 40 cents a kilowatt hour, and it has dropped as a result of aggressive R&D to between 4 and 6 cents a kilowatt hour. At this price, wind power systems are entering the marketplace, expanding from early California sites to include states ranging from Vermont to Alaska and from Minnesota and Iowa to Texas. We are also working on the next generation of turbines, which should bring wind costs to as low as 2 and a half cents a kilowatt hour by 2002.

As another example, Mr. Chairman, the first commercially available photovoltaic panels in the early 1980s produced power at a cost of \$1 per kilowatt hour. By fiscal year 2000, these PV systems will be delivering electricity for as low as 12 to 20 cents per kilowatt hour, and in the next decade it should drop to below a dime if we continue adequate support.

We now have large manufacturing plants in states as diverse as Virginia, Maryland, California, Michigan, Delaware and

Massachusetts. The solar industry is very much a growing part of the U.S. economy. However, while both domestic PV production and U.S. product sales are up, we risk losing our world market leadership, having dropped from 44 percent in 1996 to 40 percent in 1997 to 35 percent in 1998. Our potential loss of this growing market is exacerbated by a Japanese PV budget which is three times what we spend in the United States.

Production of ethanol is also on track for widespread vehicle use at very competitive prices. As you know, Mr. Chairman, the use of ethanol is a very effective means to reduce our dependence on foreign oil. To compete with today's inexpensive gasoline, our biofuels program focuses on the development of facilities which make ethanol from agricultural and forest waste and from dedicated crops. Construction recently began in Louisiana of a first-of-a-kind production plant with 80 percent cost share that will produce ethanol from sugar cane waste. We are also supporting the development of plants in California and New York that will use rice straw and municipal solid waste to produce ethanol, again which can be used in automobiles.

A final example of our technical progress involves superconductivity. Through our innovative industry laboratory R&D program, superconductivity has rapidly moved from discovery to utility scale prototypes that carry 100 times the current of conventional copper cables, and this has occurred in only 10 years. I am pleased to note that the world's first superconducting power line will be installed in Detroit in the fall of the year 2000.

While we are making tremendous strides in these technologies, we still have much work to do. The competitive revolution in power generation has led to drastic decreases in the price of electricity. Still renewable energy is already making market inroads in many states: the world's largest wind installation being developed in Iowa; major new commitments to solar energy in many states ranging from Massachusetts to Illinois to Arizona; biomass power plants in states such as New York, Ohio, Minnesota, Vermont and Indiana; and tens of thousands of new geothermal heat pumps in homes, businesses, Federal installations, and schools in States as diverse as Indiana, New Jersey, Kentucky, South Dakota, Oklahoma and Texas.

We are also aggressively pursuing integration of fossil fuel with renewable energy technologies. Projects such as hybrid wind/natural gas and co-firing of biomass with coal demonstrate the opportunities that exist between renewables and fossil fuels.

Our fiscal year 2000 budget request would help us accelerate the market's success of renewables and advanced power systems. Our request is \$325 million, up \$53 million or about 19 percent from this year's enacted level. I would note that this year's request is a small fraction of what Congress appropriated for renewables in the early 1980s.

solar and renewables budget overview

Let me quickly give you some examples of major program activities in fiscal year 2000.

The photovoltaic program will initiate development of new high-efficiency, multi-junction solar cells to capture and convert one-third of the sun's energy to electricity; and that would be up from 8 to 15 percent conversion today.

The biopower program will accelerate development of advanced conversion systems such as co-firing biomass with coal.

The biofuels program will continue its waste-to-ethanol and corn ethanol projects and advance its core conversion technology research with universities and national labs.

The wind program will place added emphasis on field testing small wind turbine prototypes to verify performance for remote sites, cold weather and off-grid energy needs.

And, as I mentioned earlier, we are working on the next generation of large turbines for major on-grid power production; and we will begin testing those as a major step towards producing power at 2 to 3 cents a kilowatt hour.

The geothermal program will focus more resources on high-priority research and technology development for electric power applications. The program will accelerate work to produce an advanced drilling system capable of economically accessing the vast geothermal resources below 10,000 feet.

These initiatives will enable the program to achieve its goal of producing power at 3 cents a kilowatt hour.

And, importantly, Mr. Chairman, I want to say in fiscal year 2000 we propose to more than double our hydropower budget request to help us maintain and enhance our Nation's existing hydroelectric generation which today provides 10 percent of U.S. electricity. With more than 200 hydro facilities up for relicensing in the next decade, early indicators suggest that environmental concerns may cause regulators to reduce generation capacities or relicense facilities unless fish mortality and water quality concerns are met. We are developing and completing testing of advanced environmentally friendly hydropower turbine prototypes that will improve water quality and reduce fish kills so we can retain our current hydropower capacity.

In fiscal year 2000, our hydrogen request will continue a strong core R&D effort to meet the goals of reducing the cost of hydrogen production, increasing the energy density and efficiency of our storage systems and developing low-cost, reliable sensors to detect hydrogen leaks. Hydrogen has a phenomenal potential for clean power production and vehicle propulsion.

management improvements

Mr. Chairman, when I became Assistant Secretary about 17 months ago I realized that the office faced many management challenges, and I made a major commitment to fix them. The subcommittee also highlighted several issues. We have listened to you, to industry and our other partners, and we have delivered.

This subcommittee said we were relying too heavily on noncompetitive mechanisms to disburse funds. We listened, and we delivered a dramatic reduction in our use of noncompetitive funding mechanisms. The Office of Power Technologies, which

represents the bulk of the funding from this subcommittee, has increased its level of competition to 93 percent, including congressionally directed activities. Close to 100 activities previously funded by sole source contracts within the energy and water account in fiscal year 1998 will now be competitively awarded.

In 1998, we competed the \$1 billion management and operating contract for the National Renewable Energy Lab (NREL), the first time it was competed in 15 years.

This subcommittee also said that our office's uncosted balances were too high. Again, we listened, and we delivered. Across all of our offices, we have reduced uncosted balances by more than 58 percent since the beginning of fiscal year 1996; and, within solar and renewables, we have reduced them by more than 62 percent since fiscal year 1996. By the end of this fiscal year, we will have reduced these balances by more than \$175 million versus the beginning of fiscal year 1996. I am very proud of this progress.

We realize that our work to improve is by no means complete, and so we have established a new management improvement team for working with the National Academy of Public Administration to improve our procurement. The National Academy of Sciences is reviewing our programs right now. And we are also trying to break down the stove pipes that have often separated our various offices, and I want to highlight one particular example, which is our bioenergy initiative which brings together our work in biopower, biofuels and bioproducts.

So in conclusion, Mr. Chairman and members of the subcommittee, we have accomplished a great deal over the last two decades. We have set some aggressive, but we believe achievable, goals for the next few years. We have requested a realistic budget, and we have improved our management, and we hope that we can earn your support.

[The information follows:]

[GRAPHIC(S) NOT AVAILABLE IN TIFF FORMAT]

Mr. Packard. We apologize for rushing you through, and we appreciate your efficiency.

We have about four and a half minutes to vote. We have six votes in a row. We may not be back for half an hour to forty-five minutes. Please enjoy yourselves until we come back.

[Recess.]

budget priorities for fy 2000

Mr. Packard. The rest of the members of the subcommittee will be returning shortly. We just completed our last vote, and we are told that we will have about an hour before the next vote, so maybe we can complete our work by then.

We certainly need to complete it by 1:00 because we have a full committee markup at 1:00. We are sorry for the delay, and we are grateful for your patience.

All three of you, I am sure, are aware that we are expecting a very tight budget this year. From all indications, we are going to be expected to live within the caps, and that is going to reduce our budget significantly from last year's

dollar level, and it means that we are going to have to do a better job perhaps this year than ever before in developing our priorities. We may not have the funds to fund all that you would like and all that the administration would like or all that we would like to fund or at the levels that we would like to fund.

If that is the case, what programs, and this is a general question for all three of you, what programs or projects would you feel, and maybe it might be better to answer this for the record and have you give some thought rather than have you off the top of your head identify those low on your priority list and those high on your priority list.

Maybe you can simply comment, though, what areas you feel are crucial, that would be really hard hit if we had to reduce funding. Let's approach it from that aspect. Then, for the record, if you would maybe list those areas and projects, construction projects and activities, particularly those where you have called for increases over 5 percent, if you would provide a list of those and also those that you feel would--if necessary, could afford to be cut in your judgment.

Maybe we can start with you, Mr. Magwood. What are your top priorities in your budget presentation?

Mr. Magwood. Well, since you have given us the opportunity to think about this, I think I will not list anything. But I would indicate that, in my opinion, the pantry is empty in our office, and I don't know that there is a place that I can recommend significant cuts. As a matter of fact, as I think you know, there are several parts of our budget that even with the request, do not have the level of funding that we think is necessary.

But I will give some thought to it and provide that information.

Mr. Packard. That is fine.

Dr. Krebs, do you have any comments?

Dr. Krebs. I am in the same position as Mr. Magwood. We have some fairly significant increases, but they are very important items, with respect to the Spallation Neutron Source construction and the new initiative in simulation. But in order to accommodate those, we also took reductions that I think are not going to make everybody happy. And, as I said, they are defensible, but not comfortable. So I will take the advantage of response for the record.

Mr. Packard. And I appreciate that.

As you perhaps know, the Congressional Budget Office has estimated the administration's proposal, of which you are a part, is about \$30 billion over the caps; and so we feel that if we are expected to live within the caps, we are not going to have the level of funding that you had in your budget request.

Mr. Packard. Mr. Reicher?

Mr. Reicher. Mr. Chairman, I also appreciate the opportunity to get back to you on this in writing. We would spread the cost generally, rather than taking specific cuts in program areas, the appropriate balance that we might take on the R&D side versus cuts in some of more of the demonstration projects. So we will get back to you on that.

[The information follows:]

[GRAPHIC(S) NOT AVAILABLE IN TIFF FORMAT]

employment level

Mr. Packard. One area that you certainly will want to look at, I suspect, will be FTEs. Your employment levels, they obviously carry a significant portion of your budget, as most agencies do, and the Department has called for a lowering of FTEs, and yet the budget as it is presented calls for an increase in funding for FTEs. That would be an area that I would hope that you would look at as well. Any comment?

Mr. Reicher. Just briefly. Overall, the Department has come down substantially in FTEs over the last few years. What Secretary Richardson has put forward is an initiative to, in key areas, build back some key Federal staff because we found that as we have lost large numbers of people, particularly in key technical areas; and in some cases where budgets have gone up, we have not had the people we need to supervise the work.

My office is down somewhere between 25 and 30 percent in FTEs, and our budget has gone up somewhat. We are hoping to get support for some funding to allow some key hiring back in some special technical positions where we really need help.

Dr. Krebs. I would like to make a comment as well.

There are increases in my program direction budget proposed, but they reflect two things: not that we are expecting to have significant increases in FTEs, but, in fact, over the last few years we have come down from about 320 people at our headquarters staff to about 270. We have an issue where in prior years we were working off prior year balances in our program direction, and we can no longer do that and maintain our business.

And we also, as a result of the Scientific Simulation Initiative, do not have on board the expertise in the particular areas that we need to develop in order to manage and move forward with this program. The increases that are proposed in our program direction are very carefully thought out and do not represent significant growth at all, and we have come down significantly in the last 5 years.

[The information follows:]

Program Direction Increases

The Office of Science increase in Program Direction funding for FY 2000 is mostly attributable to funding for several full-time-equivalents (FTEs) above the FY 1999 level. Increased funding for FTEs includes five FTEs for the Scientific Simulation Initiative, and two FTEs for the Spallation Neutron Source Project Office at the Oak Ridge Operations Office.

Mr. Magwood. May I just make a very, very brief comment? The Office of Nuclear Energy has downsized from about 260 employees in 1993 down to less than 100 today, and there are some areas where I believe we currently don't have adequate technical coverage to manage some of the programs that you are well funding. So I believe we not only need to hold the line but we need to come up in a few areas. So I hope you take a careful look at our program direction request.

Mr. Packard. Thank you very much.
Mr. Visclosky.

Environmental Safety Concerns at Argonne National Lab

Mr. Visclosky. Dr. Krebs, if I could ask about the management of the various lab facilities and the external regulation of them by the DOE and if I could focus in on the issue of environmental safety, you have a lab at Argonne?

Dr. Krebs. Yes.

Mr. Visclosky. And you have an environmental safety staff at Argonne, right?

Dr. Krebs. Yes.

Mr. Visclosky. And the Department of Energy has a Chicago field office?

Dr. Krebs. Correct.

Mr. Visclosky. And they have supervisory function as far as Argonne?

Dr. Krebs. They oversee the implementation of contracts. They have responsibilities as well if you are leading in this direction to assist with oversight, departmental oversight of the environmental health and safety activities at the lab.

Mr. Visclosky. So you would have people in the Chicago office doing environmental safety for Argonne?

Dr. Krebs. Oversight. Not actual implementation. They have different roles at the lab. The lab has people who actually assist the scientists in maintaining control of their waste management activities. They actually implement waste management activities, for example. They do not--whereas the Chicago office would exercise oversight to assure that they are paying attention to the agreed-upon rules.

Mr. Visclosky. Okay. Then you would manage the environmental safety office and function out of DOE in Washington?

Dr. Krebs. Correct.

Mr. Visclosky. Would they oversee the Chicago office or Argonne directly?

Dr. Krebs. There are--it is not my part of the Department, you know, and what they do is they establish policy for the general set of environmental health and safety activities for all of the sites in the Department and then there is a staff that does exercise what we call independent oversight.

Mr. Visclosky. So they would bypass the Chicago office and deal directly with Argonne?

Dr. Krebs. Correct.

Mr. Visclosky. And the University of Chicago is also involved, right?

Dr. Krebs. Correct.

Mr. Visclosky. Would they have a staff dealing with environmental safety as well for Argonne?

Dr. Krebs. They do a certain kind of oversight. I do not believe that they maintain a separate environment health and safety staff with a separate environment health and safety expertise.

Mr. Visclosky. I realize that it is a technical question, and if you can provide an answer for the record with the University of Chicago and their relationship with Argonne as

far as environmental safety.

[The information follows:]

Implementation and Oversight of Environment, Safety and Health at
Argonne National Laboratory

There is no redundancy or overlap in implementation and oversight of Environment, Safety and Health (ES&H) at the Argonne National Laboratory-East (ANL-E).

The DOE Role: The Argonne Group (ARG) of the Chicago Operations Office (CH) provides day-to-day operational oversight of activities at ANL-E. ARG, therefore, is the CH line manager for ES&H oversight at ANL-E. There are several DOE Headquarters offices (e.g., SC, EM) that fund work at ANL-E. These program offices facilitate resolution of ES&H issues that require HQ involvement and maintain operational awareness of ES&H activities at ANL-E, but do not perform day-to-day oversight of the laboratory. The Office of Environment, Safety and Health (EH) provides independent oversight of ES&H activities at ANL-E and carries out the Department's function under the Price-Anderson Amendments Act of 1988 for enforcement of potential nuclear and radiological safety violations. EH does not maintain day-to-day surveillance of ANL-E.

The Contractor Role: ANL provides day-to-day implementation of ES&H activities at ANL-E. The University of Chicago operates ANL-E under contract with DOE. The University's Board of Trustees has established a Board of Governors (BOG) at ANL. The BOG has a Safety and Environment Committee that reviews the Laboratory activities in worker and public safety of nuclear operations and the protection of the environment, but does not provide day-to-day implementation or oversight of activities at ANL-E.

Mr. Visclosky. Are you satisfied that there is no overlap or looseness here that we could tighten up for you?

Dr. Krebs. There is always a struggle, I think, to assure ourselves that the activities at these laboratories are safe for workers and for the public and for the environment.

The Department made a commitment, in fact, Secretary O'Leary made a commitment to work to reduce unnecessary requirements in oversight with respect to a lot of different activity at headquarters and in the field so we could reduce unnecessary expenditures. We have made a great deal of progress on that, and I think it requires eternal vigilance.

Mr. Visclosky. And I don't mean to be argumentative, but I think that it requires more than vigilance. We had Secretary Pena and now we have Secretary Richardson and that is two secretaries removed from when the commitment was made. You have four different offices exercising some role as far as environmental management here at just one lab.

Dr. Krebs. I think the important thing that hasn't changed from one secretary to another is the commitment to the approach to environment, health, and safety, namely integrated Safety management. And it was developed under Secretary O'Leary and committed to by Secretary Pena and by Secretary Richardson, and my own sense is--and I have basically really supported the notion of Integrated Safety management, and it is within that

framework if we have the correctly tailored approach that we can assure environmental health and safety at our laboratories and also maintain the quality of science.

Mr. Visclosky. I think we all agree that we want to have an environmentally safe agency and laboratories. The question is, how can we provide that in the most efficient fashion possible? And I think it is also an example that is systemic of other overlapping and duplicative management functions. We have the labs saying it is the Department's fault and the Department comes in and says, well----

Dr. Krebs. I don't think that you would necessarily have the Department saying that it is the laboratories fault. And it is hard for me to make an authoritative statement here, to be perfectly honest, because in general what I am paying attention to is the execution of my programs. I work very hard in my stewardship role with respect to the laboratories to put in place systems that will meet the tests that are established for them by the EH organization inside the Department of Energy as well as what is going on at the field offices.

Mr. Visclosky. Thank you.

Thank you, Mr. Chairman.

Mr. Packard. Mr. Knollenberg called me, and he asked me if he could go quickly because he has something else, and I am going to ask Mr. Frelinghuysen, who normally would be next, if he would yield to him for questions.

Mr. Frelinghuysen. I yield.

Nuclear Energy Projections

Mr. Knollenberg. Thank you very much, Mr. Chairman and Mr. Frelinghuysen.

Welcome, Mr. Magwood, Dr. Krebs and Mr. Reicher.

To begin with--and this might be a question for you, Mr. Magwood, it relates to the nuclear industry. We have about 105 nuclear plants that are operating. Is that right?

Mr. Magwood. One hundred and four.

Mr. Knollenberg. We are reducing by the minute. We better get a clock.

The March 8 National Journal's daily energy briefing stated that DOE projects our global nuclear capacity to fall by 50 percent in the next two decades. Is that an accurate description perhaps of DOE's plan?

Mr. Magwood. I would not say that it is DOE's plan. There are projections which have been made by somebody in the Energy Information Administration that would indicate that there could be some decline in nuclear capacity over time, particularly in the United States. I think the current events, particularly the success of NRC's efforts in renewing licenses for nuclear power plants, may lead to some recalculation of those projections.

Mr. Knollenberg. You have produced a chart that indicates the problem that could occur if relicensing isn't granted, and even if it is granted on a 75 percent basis what would happen, and it trails off to some very, very startling low figures. So without a change in nuclear policy in terms of relicensing, we could be in for a reduction in the amount of power generated by nuclear facilities; is that a fair statement?

Mr. Magwood. If some of the early projections proved out,

there would be a very significant decline in nuclear capacity. As I mentioned, I think that NRC has done a very good job, and we work closely with them in thinking about these issues, and they have done a very good job in proceeding with the renewal of licenses.

Just as an example, Baltimore Gas and Electric had been projecting that it would take about 4 years to get a new license for its Calvert Cliffs plant, and I believe it will be completed in less than half that time. So there is actually a success story there.

Mr. Knollenberg. I think we as a nation are going down the wrong path by not optimizing our existing nuclear plants and, in fact, should be working toward building more facilities if the marketplace so desires. And I especially encourage this direction, that is to say the marketplace direction, if they must exist under any kind of severe CO2 reductions which is part of the Kyoto treaty which is embraced by the Administration. And so, to meet the Kyoto reduction targets without a change in policy, we are not going to get there without nuclear energy. You know as well as I do that over 50 percent of the electrical energy is produced by coal, some 14 percent by natural gas, thereabouts, 18 percent by nuclear, and it was 20 I think at one time, and 10 percent by hydro.

Dr. Krebs I know is very enthusiastic about fusion, but I don't know if that is going to get there as fast as we want. That is not going to be the silver bullet, is it?

So here is what I am going to come down to. It appears with these things in mind, Mr. Reicher, you are going to have a lot of ground to make up. The Energy Information Administration states that to comply with the Kyoto proposal the U.S. must reduce coal-produced electricity by 77 percent. And, furthermore, Mr. Magwood may be pleased to know that the EIA will also increase the amount of electricity produced by nuclear energy, but I am not convinced that the Clinton administration has changed their policy on nuclear energy as a way to get us there, and then there is the matter of hydroelectric and what is going to happen to that over the next two decades.

So what we are pointing up here is a scenario if we emphasize in terms of R&D, and you and I have talked about this a number of times, greater emphasis on solar and wind when they produce literally 2/10ths of 1 percent of the country's electricity, and with the expectation that we have to meet those target deadlines in 2008, assuming Kyoto becomes a reality.

I guess I just wonder how we get there from here with that in mind. In a free and open marketplace, the ideas--I didn't mention biomass, by the way, which includes wood, does it not? That is about 2.72 percent, but we have to look at this from the standpoint of return on investment. There are good investments and bad investments, but how are we going to get there, I don't know. I see it as a very, very difficult situation.

Before I come to you on this question, Mr. Magwood, how much would it cost to build a new nuclear plant, and how much of a megawatt facility would that be?

Mr. Magwood. I think the best estimates that we have, as

indicated earlier that the Japanese have built plants with the type of technology that we are thinking about, a large nuclear power plant of about 1,300 to 1,400 megawatts probably would cost on the order of \$2.2 billion, which by the way we think is still too high. We are thinking more work needs to be done in that area.

wind farm construction costs

Mr. Knollenberg. Let me ask Mr. Reicher, how much would it cost to build a new wind farm, using the same megawatt capacity as a nuclear power plant which Mr. Magwood just described?

Mr. Reicher. A wind farm can vary in size from a couple of megawatts to hundreds of megawatts. What I can tell you that you can today produce electricity from a wind turbine at about 4 to 6 cents a kilowatt hour.

Mr. Knollenberg. But you can't give me the information on what it would cost?

Mr. Reicher. The turbines vary in size so greatly from a very tiny turbine that you could power a house with to one that you could power a very large community with.

Mr. Knollenberg. I have been told that it would cost over \$3 billion.

Mr. Reicher. What size would that be? How many megawatts?

Mr. Knollenberg. I don't know.

Mr. Reicher. I can get you the per megawatt cost, and I am sure one of my colleagues here has that.

But what is important to note is that we can produce wind energy, wind-generated electricity at quite a competitive rate today, and that is why we are seeing major growth in that industry.

Mr. Knollenberg. How long would that facility last?

Mr. Reicher. It is \$1 billion for a thousand megawatts. So that is a lower figure than we have heard.

Mr. Knollenberg. Where did that figure come from?

Mr. Reicher. From one of my colleagues in the wind office.

Mr. Knollenberg. For the record, can we have the gentleman's name?

Mr. Reicher. Dan Adamson, and he is the Deputy Assistant Secretary for the Office of Power Technologies.

Mr. Knollenberg. How long would such a facility last once you got it built?

Mr. Reicher. These turbines operate for many, many years and with regular upkeep----

Mr. Knollenberg. Because we don't know how long they would last because we don't have experience.

Mr. Reicher. We have experience from 1980, and many of the turbines are doing quite well. Some are in the 20 to 30 year range.

Mr. Knollenberg. Some work better in gusty wind conditions and some don't?

Mr. Reicher. Yes.

Mr. Knollenberg. The efficiency of the plant would be better in gusty wind situations?

Mr. Reicher. Higher sustained winds, but one of the things that they are working on the in the R&D is to make them more efficient in a whole range of winds.

Mr. Knollenberg. Well, my time has expired here. I do have some other questions relative to this whole matter.

What I am saying, Mr. Chairman, and I do appreciate your courtesy here, is that we really should look at all of these options and we should concentrate, I think, on which options work today. Cleaning up coal would be one thing. More nuclear would be another. If CO2 is something that we should reduce, let's get there as economically as we can, but let us not put too much emphasis on products that have not already proved themselves.

I will submit additional questions regarding these issues.

Mr. Packard. You can submit questions for the record.

Mr. Packard. I would like to remind the members that we would like to hold to the 5-minute rule on the questions if we can.

Mr. Edwards?

Mr. Edwards. Mr. Magwood, today's technology--I don't know what the barometer is, if it is oil, natural gas, coal. If you use oil prices as a barometer, what price for a barrel of oil--would a new nuclear power plant, given today's technology, be competitive in a deregulated electricity market?

Mr. Magwood. I can't give you a precise answer to that at this point, but for new nuclear power plants we don't believe that the current prices of oil or natural gas or coal, for that matter, would tend to make a utility choose a nuclear power plant on an economic basis at this stage.

Clearly, more work needs to be done to reduce the construction time of nuclear power plants, to reduce the initial capital investment. Because if you look at the actual operation costs for existing nuclear power plants, they are extremely competitive; and utilities are now, as you have probably seen in the press, buying used nuclear plants and buying the most efficient capacity on the grid right now. Some nuclear plants produce power at around 1 cent per kilowatt hour, which is very good. But to build a new plant, would be a big investment; and unless the industry is successful in dramatically reducing the construction time and construction costs of plants, I don't believe that they will be competitive.

Mr. Edwards. Is there any ballpark figure that you can guess?

Mr. Magwood. I would like to try to get you that information for the record.

Mr. Edwards. Good.

[The information follows:]

Nuclear Power Plant Costs

Although nuclear is competitive with oil today and is expected to remain so, its real market competitors for new capacity are natural gas and coal. The competitive position of nuclear may improve if fossil generating capacity is required to internalize all its costs as nuclear is required to do; cost of nuclear generation includes costs of waste disposal and decommissioning. Nuclear also does not produce any harmful air emissions. Compliance with the Clean Air Act is likely to add to the cost of producing electricity from fossil fuels but will not affect nuclear generation costs.

Perhaps a more meaningful measure for assessing cost competitiveness of new Advanced Light Water Reactors (ALWR) would be to compare the costs for nuclear energy with coal and natural gas rather than oil alone, because oil is used for only 2 percent of the electricity produced in the United States. If one looks at the generation costs excluding capital costs (operating and maintenance plus fuel costs) for each of these fuel sources, we find that nuclear (1.91 cents per kilowatt-hour [kwh] in 1996) is comparable to coal (1.83 cents per kwh). Natural gas costs an average of 3.38 cents per kwh and oil is 4.14 cents per kwh. Including capital costs makes nuclear energy more expensive than coal or gas electric generation. A new 1350 MWe advanced nuclear power plant will cost \$2.2 billion to \$2.5 billion to build. A comparable new gas-fired advanced combined cycle plant would cost about one-fourth as much. Most new electrical generation plants being built today in the U.S. are gas-fired. For nuclear to become competitive with natural gas and coal, prices for these fuels would have to increase by 28% and 71% respectively. In other words, with all other things remaining unchanged new nuclear power plants become competitive if the price of gas increases above \$3.43 per thousand per thousand cubic feet (compared to \$2.69 today) or if the price of coal increases above \$44.74 per short ton (compared to the current price of \$26.16).

Nuclear can also become competitive if its capital costs can be reduced. Reduction in capital costs can be achieved through the application of advanced technologies through all phases of design, licensing, fabrication, construction and operation. The activities proposed in our Nuclear Energy Research Initiative and Nuclear Energy Plant Optimization programs would make the option of nuclear energy more competitive in the future.

References: 1. Energy Information Administration, Annual Energy Outlook 99; 2. Energy Information Administration, Annual Energy Review 1997; and 3. Nuclear Energy Institute, Fact Sheet on U.S. Nuclear Power Plant Performance, <http://www.nei.org/library/infobl.htm>.

commitment to nuclear research

Mr. Edwards. That is not an argument to not proceed with nuclear research. I think when you put in the cost of the Persian Gulf War and whatever the next war will be in the Middle East, the real price of a barrel of oil is much more expensive than it is on the open market.

Dr. Krebs, where are we today in terms of our commitment to basic research that doesn't have a short-term consumer or political payoff compared to 20 years ago?

Dr. Krebs. I can get you the numbers that show the commitment to 10 or 20 years ago. I don't have those in my head.

[The information follows:]

BASIC RESEARCH [B/A in millions--as spent]

Total	Total
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Fiscal year	Department of Energy	Office of Science
1978 Actual.....	441.3	441.3
1979 Actual.....	464.9	464.0
1980 Actual.....	522.5	519.9
1981 Actual.....	597.0	587.5
1982 Actual.....	775.5	766.7
1983 Actual.....	762.5	729.3
1984 Actual.....	830.8	791.0
1985 Actual.....	938.4	890.6
1986 Actual.....	961.0	899.2
1987 Actual.....	1,059.3	987.5
1988 Actual.....	1,171.2	1,093.3
1989 Actual.....	1,382.7	1,293.9
1990 Actual.....	1,502.5	1,401.5
1991 Actual.....	1,684.5	1,570.6
1992 Actual.....	1,712.6	1,645.2
1993 Actual.....	1,732.7	1,596.1
1994 Actual.....	1,619.5	1,551.7
1995 Actual.....	1,622.3	1,556.7
1996 Actual.....	1,918.3	1,803.7
1997 Actual.....	2,045.2	1,946.4
1998 Actual.....	2,097.5	2,005.2
1999 Estimate.....	2,228.1	2,138.8
2000 Request.....	2,283.5	2,195.7

Mr. Edwards. Generally, are we going down or are we maintaining a commitment to basic research?

Dr. Krebs. Within the Office of Science in the Department of Energy, if you look back 15 years or so, we have steadily increased the investment in basic science. There is an issue, however, because part of what we are good at in the Office of Science is building big machines and so we have built some big machines in High Energy and Nuclear Physics and also for accelerators for materials and biological research.

And then the challenge is always to balance the operation of those facilities with the research that is carried out at those facilities. When you are in a situation, a job like mine or a job like yours, you will hear different people come to you and say, we need to operate our facilities at the right level, and we haven't kept up, or we need--we are not operating research at the right level, and we need to keep up. And so overall in this last 15 years, there has been at the bottom line some growth.

But what has also become clear in the last 15 years is exactly the extent to which basic science makes a difference to our economy. And both the Congress and the Administration have made a commitment in the last few years to see increases in these programs, and certainly over the last 2 years the President has made major increases in the Office of Science, 8 percent last year, 5 percent this year.

science education program

Mr. Edwards. Good. Can I ask for a brief answer since I

want to respect the time? Does your science education program do anything to encourage women and minorities to go into science and engineering? Are we in just as poor shape as when I was in the Texas legislature when 3 percent of engineering school students were women and minorities? Is that Department of Education or does the Federal Government not have any programs in that area?

Dr. Krebs. The Federal Government has programs, but let me--I don't have all of the numbers in my head about all of the different disciplines. I can talk about women in physics because that is me.

When I was in graduate school, it was 3 percent of the total were women. And now overall it is 9 percent, and if you look under 35 or so it is about 15 percent. So there has been improvement as the young people are coming along.

To some extent what we have done in our education programs is to develop a broad solicitation process, make sure that women and minority institutions are well aware of the opportunities that we provide at our laboratories; and we have in fact, over the last few years, increased the number of women--provided increased opportunities for women and minorities for research experiences at our laboratories.

[The information follows:]

Science Education Program

Our core program the Office of Science--Energy Research Undergraduate Laboratory Fellowship Program (ERULF), which started in the summer of 1998 provided research appointments for over 500 undergraduate students at eleven DOE-Science Laboratories. The demographic profile of the students who participated is as follows: 40 percent female, 12 percent African American, 8 percent Hispanic and 1 percent Native American. These results exceed the population base of these students who are enrolled in science and engineering at U.S. universities and colleges. The Office of Science--ERULF is a national program available and accessible to any student of good standing enrolled in a U.S. Higher Education Institution. The Office of Science, Science Education staff has made a concerted effort to communicate and distribute information regarding the ERULF program to all science and engineering faculty located at Historic Black Colleges and Universities, Hispanic Serving Institutions, Native American and Tribal Colleges and female faculty across the country including women colleges.

Mr. Edwards. Thank you both for your answers, and I thank you for the work you do.

Mr. Packard. Mr. Frelinghuysen.

Tokamak Decontamination and decommissioning

Mr. Frelinghuysen. Thank you, Mr. Chairman. It was a pleasure to yield to Mr. Knollenberg. My personal energy source this morning is Starbucks and Fig Newtons, so I will try to control myself.

My questions are to Dr. Krebs, relative to fusion. Dr.

Krebs, last week I think you are aware I discussed with Secretary Richardson the rationale behind including the decontamination and decommissioning funds for the Tokamak in the program account for fusion energy sciences. I think I have a better understanding of why these funds were put in this account. However, in an effort to clarify the Department's position, I wanted to ask you if the main reason for putting these funds in the program accounts centers around the fact that D&D of the Tokamak does not include the demolition of the existing building?

Dr. Krebs. That is correct.

Mr. Frelinghuysen. If these D&D funds were included in the EM budget, how would the current decontamination and decommissioning plan change?

Dr. Krebs. The general policy, and you know you can always develop exceptions, but the general policy for accepting D&D in the Environmental Management program is that they take charge of the facility and they do a complete from the ground up disassembly and decontamination of the facility and there is not much left for reuse. So that would mean that some of the equipment that currently is available on the TFTR which we would like to reuse for other facilities would not be available. It might mean that the NSTX that is in the current building that the TFTR is also in could not use some of the TFTR support systems. That would cause a problem if complete decontamination from the current policy perspective of the environmental management program was implemented.

Mr. Frelinghuysen. So some of the Tokamak's components will or will not be used in other fusion machines and experiments?

Dr. Krebs. The intention--since the D&D for TFTR is in the Office of Fusion Energy, we intend to decontaminate the facility in such a way that it would permit reuse of certain components and would permit reuse of the space at a later date.

Mr. Frelinghuysen. As you are aware, D&D of the Tokamak is a top priority of mine and also of my State. You have reviewed the plan?

Dr. Krebs. Not in detail, sir.

Mr. Frelinghuysen. What about the whole issue about whether it can be accomplished in a 3-year time frame? In your testimony you make reference on page 27 to the fact that it is a 3 year effort.

Dr. Krebs. That is correct. And we have a commitment within the administration to accommodate that cost profile.

Mr. Frelinghuysen. What would be the projected savings by undertaking this initiative in that----

Dr. Krebs. I don't have that in my head. I will provide it for the record.

[The information follows:]

TFTR Cost Savings

By completing the Tokamak Fusion Test Reactor Decontamination and Decommissioning in 3 years instead of 5 years, the Department will save \$13.2M.

Mr. Frelinghuysen. Also, as I discussed with the Secretary, has the inclusion of these D&D funds squeezed other elements of

the fusion energy science program?

Dr. Krebs. As you will recall, essentially the fusion energy budget is essentially flat between 1999 and 2000. The Committee gave direction in the 1999 budget to terminate the activities associated with the international Tokamak activity. We will have completed that, and in some respects you can view that funding as now being redirected within the program for the cleanup.

Mr. Frelinghuysen. You could use additional funds, obviously.

Dr. Krebs. Right.

Mr. Frelinghuysen. How would you use them if you could get them?

Dr. Krebs. The fusion community and other outside organizations such as TCAS has recommended that the fusion program be funded at least at \$250 million without regard to the TFTR D&D, and so there certainly is good research that could be supported with additional funds.

Mr. Frelinghuysen. Changing----

Mr. Packard. Would the gentleman yield on fusion?

Mr. Frelinghuysen. Yes.

Mr. Packard. Dr. Krebs, I have had a keen interest in fusion work for a great many years, and Princeton has been cooperative with much of our fusion work in San Diego so it has been of keen interest. We have noted that it has been a flat budget and again projected to be so this year.

When the decommissioning is done at the Tokamak, is it intended then that those funds would be diverted back to research or is that going to be dropped from your budget request?

Dr. Krebs. That is my hope, sir. I think it is also fair to say, another way, to say what has happened in fusion in the year 2000 is that it was fairly widely held knowledge that was published in trade press that the target going into the fiscal year 2000 budget construction was \$190 million, and in a sense we were able to build that back to a flat budget. And my goal would be to maintain at least that, if not more, in the outyears.

Mr. Packard. And as we close out ITER that is also planned or hoped to go back into the research program?

Dr. Krebs. In the long run.

Mr. Packard. Thank you for yielding.

spallation neutron source

Mr. Frelinghuysen. Thank you. It is great to share with the Chairman what Mr. Knollenberg doesn't feel quite is true, that this is a potential silver bullet.

One last question. Can you tell me the status of the Spallation Neutron Source being constructed in Oak Ridge and has the Department spent the funds provided by our committee?

Dr. Krebs. The Spallation Neutron Source is--as I indicated earlier, we had a review, which is our standard review on a biannual basis of a big construction project, and this was the first review that occurred after the initial funding was available from the committee, and they found, and it was not a surprise to us, that the management of the project was not

quite at the stage that they would--they feel is optimal. We made managerial changes, and I believe that this will get the project on track.

It is the case that right at this moment we are spending at about 60 percent of the rate that was originally projected. We are undertaking a review with the new technical project manager and the new project director, I need to be careful about the terminology here, but the new project director is on site doing the review.

He will have a title 1 baseline done by July, as was requested by our review. We will not spend at the expected rate in the next few months, but it is the case and we will know better when we have the report from the new project director just what the rate will be, but we expect to see significant obligation of funds in the last part of this year and through 2000. I am not prepared to say that there is a lot to take there.

Mr. Frelinghuysen. Thank you, Mr. Chairman.

Mr. Packard. The gentleman from South Carolina, Mr. Clyburn.

Mr. Clyburn. Thank you, Mr. Chairman.

fellowship program

Let me begin by asking Mr. Magwood a question if I may. I would like to ask you about the fellowship program that you have. I want you to know that I support the program very much and know that it is a pretty low-budget activity and I want to know what the future holds for it?

Mr. Magwood. I consider this to be one of the more important parts of the university program for which we did ask for a modest increase this year from \$11 million in fiscal year 1999 to \$11.3 million. The fellowship program is a little bit lower than the previous year, but there were just a lot of priorities we had to deal with in that budget this year.

I consider the fellowship and scholarship program to be one of the most important parts for two reasons:

One, we have standing commitments with a large number of students who are attending nuclear engineering programs, graduate and undergraduate. There are some students in historically black colleges and universities who receive some funding from us, and I think it is critical that we maintain that support while those students are progressing.

The reduction that we show this year reflects the fact that some of those students have graduated and moved on, and we simply did not add more students because of the budgetary pressure. But I think that is some of the most important money that we spend in the whole budget, and I would like to increase as much as we can.

Mr. Clyburn. Thank you very much. I do support that, and I know that you have met with my staff, and I want you to know that I support it.

Dr. Krebs, I don't profess to be able to understand all that you testified to here today.

Dr. Krebs. I don't either.

Mr. Clyburn. Anytime I hear somebody has found a way to counteract gravity, I am ready to leave the room, but I want

you to know that I understand the great contribution that all of your work means to western civilization. We wouldn't be where we are without your work, and I want you to know that I admire the work, but I want to say to you that I am particularly interested in your being very, very careful with these indirect costs. It is a problem for me. I know that my fellow colleagues, we sometimes sweat bullets when we see the headlines in newspapers about indirect costs. Although I do support what you do, I ask you that you be very, very careful with the indirect costs.

experimental program to stimulate competitive research (epscor)

Now, let me talk about something that I am particularly interested in and that is your program to stimulate competitive research. I am very interested in that. I think in South Carolina we have been very much involved in a lot of your work. My alma mater, South Carolina State University, is involved in it. Can you tell me what the future is for that program?

Dr. Krebs. We have sustained that at a fairly steady level over these last 3 to 5 years at around \$7 million.

Certainly within the Administration and within the Office of Science we think that the EPSCOR program, as we call it, is really a very good way to build research capability and a research experience into universities that are in a sense pre-competitive. What we want to do is the students who attend schools throughout the Nation need to have an environment in which they can be exposed to faculty pursuing research because that is what would lead them on to a career in research.

To the extent that we can assist the States and these institutions in attracting high-quality research faculty and at the same time make that research experience available to their students which otherwise might not have happened, that really for me is the purpose of the EPSCOR program.

We work with our colleagues in NASA and NSF, and NSF has a significantly larger program, to make the appropriate investments in areas of research that are relevant to the Department of Energy.

Mr. Clyburn. So I can gather from your answer that you do envision that this program has a significant future?

Dr. Krebs. You bet.

renewable energy production incentive program

Mr. Clyburn. Mr. Reicher, as you know, the Renewable Energy Production Incentive program was created to encourage public power to invest in renewables, and you may also be aware that public power has a very large presence in my home State of South Carolina, and I notice in your written testimony that you plan to revisit, I think is the word you use, the 62.5 percent reduction in the program in the year 2000. What do you mean by revisit?

Mr. Reicher. Mr. Clyburn, there has been a great deal of concern expressed by people from the public power community to the proposed cut in the Renewable Energy Production Incentive line this year, and we are going back to see what we can do about that to support--potentially support greater funding for

it.

Mr. Clyburn. Increase the funding?

Mr. Reicher. Yes.

Mr. Clyburn. So revisit is to try to increase. There have been some revisits around here that----

Mr. Reicher. That is a fair question. With an eye towards supporting in fiscal year 2000 an increase over what we have asked for.

We are also supporting a little further down the road a rewriting of the overall approach to REPI, to make it much more useful to public power, to make it much more predictable so they know what money will come in the door to encourage the use of renewables in the United States. I think if we do both, do what we can in terms of this current proposal and improve the underlying program going down the road, I think we will be in much better shape.

Mr. Clyburn. Thank you. I was hoping that would be your definition of revisit.

Thank you, Mr. Chairman.

Mr. Packard. Mr. Forbes.

Mr. Forbes. Thank you, Mr. Chairman, and thank you all for being here today.

high flux beam reactor at brookhaven national lab

Dr. Krebs, I particularly appreciate your leadership and your help as head of the Office of Science in relation to the many problems that Brookhaven National Laboratory has endured. And, as you know, I have been especially critical of the environmental transgressions. But, having said that, I think that Brookhaven remains one of the Nation's preeminent research facilities. I am a thousand percent behind the laboratory and its wonderful multi-science disciplinary activities there, and I thank you for your leadership on this question.

As you know, I have been especially concerned about the nuclear reactor at Brookhaven National Laboratory, the so-called High Flux Beam Reactor, and that reactor having been shut down almost 2 years ago, and it was expected to go back on-line or a decision was to be rendered, I guess, as of January, 1999, about the High Flux Beam Reactor going back on-line. I stated my opposition to the restart.

Having said that, I was wondering if you can share with us a little bit of the insight, the record of decision on why the future of the High Flux Beam Reactor had been delayed so long? I guess now it is projected that a decision will be made at the end of the year, December, 1999.

And I would ask you also how does the delay affect the cost and the complexity of any attempt to restart? Would that be the decision of the Secretary later this year?

And also let me ask, originally, as we noted, the decision was supposed to be in January of 1999 and now it has been put off to later this year, and I was wondering also what alternatives the Department might be considering if, in fact, because of this delay and the decision having been postponed, and I know there are people associated with the High Flux Beam Reactor working there, and I would like some of your insights in regard to those specific areas.

Dr. Krebs. I will try to make this brief and provide you with any additional information for the record.

The delay has basically occurred as we have put the development of the Environmental Impact Statement through the reviews inside the Department, and some natural delays occurred as a result of that.

But, more recently, Secretary Richardson determined that he would extend the public review period that would be required and, as a result, we are delaying putting out the final Environmental Impact Statement until I think October/November of this year, which would then--that is the driver to delay the final record of decision until at the earliest December of 1999.

In terms of the cost--what this does is in any scenario once a decision--if a decision were to restart was made, it would take about 16 months to restart the reactor. The original schedule was that the reactor would be back on-line in 3 and a half years. If the record of decision is to restart in December, then it would be in the middle of 2001 before it would be back on-line. The longer you delay restarting, it does induce issues associated with training of staff and that sort of thing. These machines need to be exercised, and so there are some concerns the longer we delay.

The alternatives, I think you are referring to what other things have happened, what has the neutron research community been doing in the meantime?

Mr. Forbes. Right, because of the delay.

Dr. Krebs. Some of them are using other facilities, other reactors at Oak Ridge Laboratory, overseas in France. They are also using some of our spallation sources at Los Alamos, and some are rethinking about the way of doing their research as the facility has--you know, has continued to be off-line.

There is still a fairly strong feeling among some members of the community that this is a unique facility and should still operate. We don't have many reactor ports for neutron science in this country, and so they would like to see it, and they are waiting for it to come back.

Mr. Forbes. I think DOE's own Basic Energy Science Advisory Committee had advised that restarting would not be practical or feasible from a technical and economic standpoint unless it operated at increased power, at 60 megawatts. I think they said in their report, "It should restart at 30 megawatts and move immediately to 60 megawatts in a timely manner. All of the actions required for this move should be completed before start-up. If the start-up were to be at 30 megawatts with no clear plan to move to megawatts, it should not be done."

And, as you know, the community, and I would share this view, that moving from 30 to 60 megawatts is something that is opposed by many of the people on Long Island. I know that the scientific community would like that to happen.

Even if the Administration decided to restart the High Flux Beam Reactor, how realistic is it to think that you could run the HFBR at 60 megawatts as recommended when the HFBR did not run at 60 megawatts for some 17 years? And I guess what would be necessary to make sure that that were happening if the Secretary were to decide to restart?

Dr. Krebs. I will have to get back to you for the record on

some of the specifics there. My understanding is that there are no technical issues with restarting up to 60 megawatts. And the desire of the Basic Energy Science Advisory Committee was to move to 60 megawatts because the intensity of the beam would be that much stronger and would allow them to do a different set of experiments which were highly desirable.

So the details of what it would take to get to the point of being able to go to a 60 megawatt start-up is something that I am going to have to provide you for the record.

[The information follows:]

Record of Decision Delayed for the High Flux Beam Reactor

During the Environmental Impact Statement (EIS) scoping process a year ago, the community requested that the Department expand analysis of the reactor's potential environmental impacts. To ensure that a comprehensive review is conducted, the Department has taken additional time for analysis and evaluation. The scheduled activities have been delayed to address issues of importance to the environment of Long Island, and the health and safety of workers and the public. The Draft EIS is now scheduled for public comment in April 1999, and the Final EIS is expected to be published in November 1999. The change in schedule for the Draft EIS and Final EIS will delay the Record of Decision, which is scheduled to be issued no earlier than December 1999.

Secretary's Decision to Restart HFBR

HFBR was upgraded in 1982 with new heat exchangers to support an increase in operating power from 40 megawatts (MW) to 60 MW. The reactor operated satisfactorily at 60 MW until 1989 when questions were raised about certain postulated accidents. Analysis done since then has resolved these questions. DOE would follow normal practice for restarting a reactor after a long shutdown, including operator training, an Operational Readiness Review and setting safety set-points, and updating administrative paperwork for 60 MW operation. No decision to restart at any power level has been made.

relativistic heavy ion collider

Mr. Forbes. Is the RHIC, relativistic heavy ion collider, still on schedule to begin operations in August of this year, and has the Department of Energy fully funded its operations at BNL?

Dr. Krebs. The RHIC is on schedule to start. I trip over the word ``fully.'' I think there will always be disagreements between what is fully and what is adequate under constrained circumstances, but I think we are providing a fairly significant increase for RHIC operations. It is going to be \$106 million some in fiscal year 2000 with \$12 million for research. We think that this meets, I believe, the recommendations of the advisory committee.

impact of bates laboratory decision

Mr. Forbes. Just quickly, I know there had been reversal decisions as applied to Bates Laboratory at MIT. I am just wondering if the nuclear physics budget is impacted, because now there is an additional demand on that budget after the Department reversed itself on Bates?

Dr. Krebs. The actual details of the budget amendment are not completed within the Administration, but it is not expected that it would affect nuclear physics except through an increase. We will take care of Bates by an increase to the nuclear physics budget.

Mr. Forbes. Nor the RHIC project itself?

Dr. Krebs. That is correct.

Mr. Packard. I will yield to my colleague.

solar and renewable investment accountability

Mr. Visclosky. We have talked in the past about renewables and accountability, if you would. Would you want to address that issue as to how we on the committee can judge whether or not the investment is paying off if sharp decisions are being made to terminate some programs if they in fact are not going to lead anywhere?

Mr. Reicher. Thank you, Mr. Visclosky.

Let me say the following, just to put a couple of numbers on the table. Renewables today are about 2.2 percent of U.S. electricity, that is geothermal, biomass, solar, wind, those kinds of sources, about 2 percent.

What we are very proud of are the cost curves. Back 20 years ago people talked about where we needed to get over 20 years in terms of bringing the prices of these various renewables down, and what I would like to submit for the record are these very impressive cost trends for wind, for geothermal, for wind, for biomass and photovoltaics; and we made a huge amount of technological progress; and we have seen some growth in the use of these renewables.

[The information follows:]

[GRAPHIC(S) NOT AVAILABLE IN TIFF FORMAT]

solar and renewable investment accountability

Mr. Reicher. The thing that I really want to stress and I have done some thinking about this since we met is that energy technologies take time and take investment, often Federal, to become a major contributor to our overall energy picture. I want to give you some perspective.

Let's talk about hydro. We really got going with hydro in 1920 with the Federal Power Commission and the Federal Power Act. It took us about 70 years, 1920 to about 1990, to get to 74,000 megawatts or 10 percent of U.S. electricity today. We spent in as-spent dollars, not inflation adjusted. We spent on the order of \$20 billion through the Power Marketing Administration territory and many billions more through TVA or well in excess of \$20 billion to get us to 10 percent.

The nuclear area we started in 1950, the Shipping Port

Reactor in Pennsylvania, it took us 45 years to get to the 110,000 megawatts or 18 percent of U.S. electricity that we have got today, and in excess of \$20 billion, and those are inflation adjusted dollars, 1997 and 1998 dollars, in excess of \$20 billion to get there.

Let me just pick one technology that you have heard me talk about which is wind. We had virtually no wind capacity in this country, 10 megawatts in 1980. And we are now at 2,000 megawatts in the United States, about, and we are about to hit 10,000 megawatts worldwide. Just in 1 year, between 1997 and 1998, we saw 2,000 megawatts added worldwide. The Europeans are on a trajectory to build 40,000 megawatts of new power. The average coal plant is 200 or 300 megawatts. So when you look at 40,000 megawatts of new power that the Europeans are intending to put on-line, you understand that we are only 20 years into what in the case of hydro was a 70-year cycle, in the case of nuclear has been a 45-year cycle.

Thus, the need for some continued Federal support. We are at 4 to 6 cents a kilowatt hour. With some Federal support we think that we can bring this down to 2 to 3 cents a kilowatt hour in the next 2 to 3 years. With that we will see the increasing growth take off even more in this country and indeed around the world.

We think that it is very good for our economy. There are new wind plants, not just the turbine but wind manufacturing facilities, being built in this country. There are new jobs being created. It is a good response, a good way to reduce traditional air pollution and global warming gases.

When all is said and done, we need to support coal, to improve the combustion of coal. We need to improve our work with natural gas. We need to continue to support nuclear. But what we have in wind and some of the other renewables are technologies that are taking off as we speak, where the real growth is from now going forward and not the last 20 years, which have been devoted to bringing them down to a price where the other technologies had to get in their growth curves over much longer periods of time.

So that is my answer and that is why I think the requests we have made to support these technologies make a great deal of sense, because the next decade and two decades is when we are going to see real penetration by these technologies.

Mr. Visclosky. I tend to land in Mr. Knollenberg's camp, although I have set aside all of my fusion questions because he has now left and there are only three of us here.

I guess the problem in my mind and that all of us on the committee have to resolve is that I do appreciate what you have said and I do appreciate you coming back with the information as far as getting your costs down. Part of this, and it has been a positive development, contrary to what most of us would have anticipated in the early 1970s, the cost of energy has continued to decline and so the target that renewables have had to hit and other forms of energy have had to hit has been a moving target in a positive direction, what is good today may be bad tomorrow.

On the other hand, we are short on cash and, from my own personal assumption, we are about \$1.80 billion short on the subcommittee. The chairman may have a different perspective on

that, but we have a very tight budget.

Under renewables there are some significant increases as far as the request. Mr. Magwood has a request for a new program, and we turned you down last year on the optimization.

You have facilities here that potentially today are producing energy at 1 cent, others that we would like to get down to 1 cent. Is that \$5 billion better spent there or somewhere else? I do appreciate the point that you raise and I do have an open mind, but I think we have an obligation to strike a balance between the mature, efficient sources that we have today as well as continuing to make progress to get the prices down on renewables and to hold your feet to the fire. And if some of these are not going to pan out, we have to put some additional resources in the ones that are most promising. If you would want to make a final comment.

Mr. Reicher. Well, I wanted to say, you talk about the cost of energy. What we see are many things that go into this calculation of the cost of energy, and what I think we are going to see over time is fossil fuels tend to go in cycles. They go down and up in price. I think with the increasing environmental imperatives that we are seeing, the regulation of air emissions and other kinds of environmental constraints, we are going to see increases in the price of fossil fuels. And it is in the renewables that we see the opportunity to put in place very clean power sources that are not depending upon the vagaries of fuel prices.

I want to urge you to take a careful look at the fact that these are technologies that are increasing their role in the marketplace today and are at a point in time much earlier in their development as was hydros and renewables several decades ago. We are there with a fairly modest investment. We can push these to a point where they will be very good for the economy and the environment and make a major, major contribution going into the next century.

Mr. Packard. Mr. Frelinghuysen?

Mr. Frelinghuysen. Just a few comments. I thought that the institution TVA would never be mentioned in this committee again. I sort of wrote a note to the chairman here, if any rescissions are considered or any offsets to supplementals, and I guess the chair has been good enough to offer up a few, willingly or unwillingly. I hope that he takes a look at the amount that we continue as a subsidy for the TVA last year. If any of your lobbyists are here, I don't forgive myself for saying this and for our refinancing a third of a portion of their bonding capacity.

Mr. Reicher, I don't want to pick up where Mr. Knollenberg left off, but I can't help doing a little bit of that. You referred in your remarks to environmentally friendly hydroelectric power. I assume when you are talking about environmentally friendly, you are talking more about to fish than to taxpayers and the history of subsidization?

Mr. Reicher. Yes, to their impacts on fish and water quality generally.

Mr. Frelinghuysen. From time to time this committee takes a close look at these costs of subsidy, and certainly in some cases there may be some validity, and since we are joined by the good gentleman from Ohio, I will stay away from his area,

but in the hydro area there has been a long history of subsidization.

Relative to Japan, I know that sometimes people highlight Japan and you mentioned in your remarks Japan has three times the budget that we do I guess in the renewable area?

Mr. Reicher. In the area of photovoltaics.

Mr. Frelinghuysen. Generally speaking, I don't think that Japan has any oil, does it?

Mr. Reicher. That is correct.

Mr. Frelinghuysen. I think we need to be aware that, while Japan may have some brainpower assets, they don't have a lot of natural resources, other than perhaps photovoltaic and perhaps wind.

Mr. Reicher. We are importing an increasing amount of our oil as well. We are now in excess of 50 percent and headed onto 60 and perhaps 70 percent over the next decade; and that is one of the primary reasons, from a national security standpoint, that support for technologies that can rely on----

Mr. Frelinghuysen. I understand that we have a greater reliance, and certainly the prices have come down remarkably, but I think it is fairly well known that when wars are fought to protect that oil supply, these that you hold out as perhaps--those that we ought to emulate don't do a lot to contribute towards those military efforts. I like you and you are excited about the work that you do and I am not against solar and ethanol, but I do think that we need to take a look at how productive these investments are.

Thank you very much, Mr. Chairman.

Mr. Packard. Mr. Forbes, please.

Mr. Forbes. Thank you, Mr. Chairman.

national synchrotron light source

Dr. Krebs, the National Synchrotron Light Source at BNL is perhaps the most heavily used light source in the country. It is a valuable resource for industry as well as academia, and I understand that the Energy Department is collaborating with the National Institutes of Health and that the overall budget for the synchrotron light source has been increased by 15 percent. But I also understand that is not operating money, that is really construction money. I was wondering your reaction. At BNL there seems to be great difficulty in meeting the needs of the user community who are anxious to take advantage of the synchrotron light source. What is DOE's share of the operating budget for the national synchrotron light source?

Dr. Krebs. I think we provide the whole operating budget of the synchrotron light source. Indeed, we value the synchrotron--NSLS--very highly. It was recommended for increases in Basic Energy Science Advisory Committee review; and I believe that in 1998 we provided them with additional funding, not the full level that BESAC recommended but something like two-thirds of the increase; and I will provide you with the detail for the record.

[The information follows:]

National Synchrotron Light Source

The Department of Energy provides the total operating budget for the NSLS. As a result of recommendations from the Basic Energy Sciences Advisory Committee (BESAC) based on 1997 report ``Synchrotron Radiation Sources and Science'' [Professor Robert Birgeneau (MIT), Chair; Professor Z.-X. Shen (Stanford), Vice Chair], BES provided a \$2 million increase in funding for operations to NSLS in FY 1998. This rapid action showed our commitment to addressing the problems identified by BESAC. We provided an approximate cost-of-living increase in FY 2000. Through the Birgeneau/Shen study, we identified and addressed the most serious problems with our light sources. Furthermore, the study identified the growing numbers of users in macromolecular crystallography. Partially as a result of that report, NIH entered into serious discussions with DOE about how they might better serve their community of users. In FY 1999, NIH is planning to add funds for beamline upgrades at NSLS and has agreed to put an additional \$4 million to upgrade the NSLS x-ray storage ring itself.

Dr. Krebs. But in fact they also recommended that increases be provided for other of our synchrotron light sources as well, and upgrades. And the value of the NIH funding is that they will allow us to do upgrades for the biological community where there is an intense demand for this kind of facility, structural biology.

Mr. Forbes. I have one other brief question, and then I will submit the balance of my questions for the record, Mr. Chairman.

High Flux Beam Reactor

For the High Flux Beam Reactor, the monies which have been requested or set aside for the High Flux Beam Reactor, is there any hope that some of that money, since the High Flux Beam Reactor is closed, some of the dollars that are allocated for that and of course cannot be spent currently on operation, some of those dollars could be used to enhance or expedite to whatever small degree that might be the cleanup at the laboratory?

Dr. Krebs. Currently, the funding for--there is \$23 million worth of funding that is being expended on HFBR-related activities at the laboratory today.

Mr. Forbes. That \$20 million is being used for a closed down facility?

Dr. Krebs. For the maintenance and surveillance, for modifications and repairs that are necessary, whether we restart or shut it down. And so those funds are fully utilized in 1999, and approximately the same amount of funding would also be required in year 2000 independent of a decision to restart or shut down.

Mr. Forbes. What was the expenditure on the High Flux Beam Reactor before it was shut down?

Dr. Krebs. It was more than \$20 million. In fact, what we have done as a result of the constraints that were placed on the neutron science community, we used--some of those dollars to do upgrades at the Los Alamos Neutron Science Center, a small spallation source. We also used it for some of the

upgrades we are undertaking at the High Flux Isotope Reactor at Oak Ridge as well.

Mr. Forbes. So some of the \$20 million is being used at other facilities?

Dr. Krebs. There is not more than \$5 million, maybe \$6 million. I would need to get you the exact funding. But, basically, we used it to accommodate--to try and prepare to accommodate the needs of the neutron science community at other facilities.

[The information follows:]

High Flux Beam Reactor Funding Before Shutdown

In FY 1996, the last year of full operation, HFBR was funded at a level of \$26.3 million. In FY 1997, the funding was \$34.4 million for HFBR remediation activities. In FY 1998, the funding was \$22.6 millions. In FY 1999, the funding is expected to be \$22.6 million and the FY 2000 request is also \$22.6 million. As a result of the unavailability of HFBR, we have performed upgrades at the Los Alamos Neutron Science Center, a small spallation source, and the High Flux Isotope Reactor at Oak Ridge. These upgrades have been identified in our budget requests.

Mr. Forbes. Is that the kind of funding that needs to come to the committee for reprogramming?

Dr. Krebs. I don't believe that it is within the framework of our authorities.

Mr. Forbes. Thank you, Dr. Krebs.

Thank you, Mr. Chairman.

Mr. Packard. Mr. Latham.

Biomass

Mr. Latham. Thank you, Mr. Chairman; and I will be very brief.

When the Secretary was here, I mentioned about Iowa State working on a biorenewables consortium at the Ames lab; and they will be looking at agricultural commodities for energy sources; and there are some other farm States that also attempted to use the crop residue for energy, as an energy source.

It appears that obviously the cost of going back and retrieving it is expensive. I just wondered, while biomass really appears to be promising, is there any data available as far as cost effectiveness or are there--of harvesting the crop residue or are there any particular crops that you have data on to show to be of much more value or usable? Maybe not as residue but as initial crop?

Mr. Reicher. Mr. Latham, we are looking at dedicated energy crops, switch grass, for example, and looking at all sorts of residue from agriculture, waste from corn and the sugar cane industry.

Mr. Latham. That would be post-processing waste? What waste?

Mr. Reicher. This might be waste left in the field, waste that comes out of a processing in a factory. There is a whole host of waste sources.

Within the last couple of weeks we have put out a solicitation to the corn industry, basically to corn ethanol. Today we make ethanol from corn out of the corn kernel itself. We have technology that can use the rest of the corn plant, the stalk, the leaves, that sort of thing; and we have some of the corn ethanol companies that are very interested in taking this technology and bolting it onto existing corn ethanol plants and be able to make use of the rest of the plant which would greatly improve corn ethanol economics and use what, in many cases, would be a waste. So that is an example where we can make a lot of progress.

We are also making good progress on using municipal solid waste to make ethanol, and that would be a major breakthrough. We spend large amounts of money paying to get rid of solid waste today, and a plant in New York State is going to demonstrate that we could make a lot of progress.

Mr. Latham. You don't think that I would get any resistance from my corn farmers at all?

Mr. Reicher. If we can grow the whole ethanol business, making it out of the corn plant and solid waste, we can do lots of good for the ethanol industry and reduce our reliance on imported oil. The cheaper you can make it, the more it can compete in the market.

Mr. Latham. The potential market is big enough for everyone if it is developed?

Mr. Reicher. The potential market is potentially endless.

Mr. Latham. More corn.

There is a provision to allow fuel use credits to be allocated for biodiesel in last year's omnibus appropriation bill, and I am curious to know if the Department is considering to look at this soybean-based product further and its relationship to cleaning up diesel engine emissions in any other areas? Where are we?

Mr. Reicher. We are very interested in the biodiesel area. It has some very good potential for using crops from farm country. We are in the midst of a rulemaking now on biodiesel, and we will have an interim rule out in the next couple of months that governs the credits one can get for biodiesel, and then we will have a final rule out sometime I believe in the fall of this year. So this is going to be a way of really pushing biodiesel but, at the same time, making sure that we get the energy benefits from it and that we do the right accounting of it, so we are very bullish about it.

Mr. Latham. Thank you, Mr. Chairman.

Chairman Packard's Concerns

Mr. Packard. We now have a vote on, and for the subcommittee we have a full committee markup in the full committee room.

Unless there are some urgent questions I would like to wrap up with some comments and questions of my own before we have to leave for the vote.

I listened to the questions that Mr. Visclosky had of you, Mr. Reicher, in regard to the priorities of the Energy Department and where our monies and our emphasis go. I couldn't help but notice that we funded the renewable budget to the tune

of about \$399 million last year--no, \$336 million, and that includes the \$60 million in the omnibus bill, and you are asking for a 35 percent increase from that. That is of concern, of course, with the funds that we have.

In addition, I noticed also that 20 percent of our electricity is coming from nuclear energy and 3,000ths of a percent--0.003--percent is coming from photovoltaics and yet you are asking for a \$54 million budget for photovoltaics and that--and only \$19 million for nuclear energy. It almost sounds like our priorities are in the wrong place in terms of actual output of energy. I guess my question is, how do you justify that? And I would like it in two sentences.

Mr. Reicher. We spent in excess of \$20 billion on nuclear R&D over 45 years to get where we are today. In the case of--I will give you the best example that I have at my fingertips. In the case of wind, we have spent about \$650 million, a tiny percentage of that, to get us where we are today. And with respect to wind, photovoltaic, geothermal, we are on the beginning of an amazing growth curve as we bring these prices down; and that is why I think it is so important that we continue to fund these.

I just wanted to say one thing, Mr. Chairman. You cited the 45 percent increase. We obviously look at the final enacted level in the omnibus, and when you look at it there it is a 19 percent increase.

I also just wanted to be sure that we could enter the previous documents that I referred to into the record.

Mr. Packard. Of course. Thank you.

Two or three comments that I want to make.

One, on nuclear plants, it is going to be very difficult for us to see additional nuclear generating plants built in the near future and maybe even in the long-term future. I don't expect that we will see any major new hydro plants built in our lifetime. So I sense that we are moving or will be in the long term moving away from hydro, which has been a very efficient and very I think environmentally good direction to go, and nuclear which we are moving away from those which obviously means we are moving in the long term toward fossil fuel; and that, of course, is of great concern to me.

I sense that we need a greater emphasis on building new nuclear plants. I know that has almost been heresy in the past, but I think we are reaching the point where your Department and this committee more and more are going to have put the message out that nuclear energy is still a very good direction for us to go in this country.

I would hope that I would live long enough to see a new nuclear power plant built in this country. Five years ago I would have said that I wouldn't, but I think the attitude is changing and minds are changing. Those of us who have some say agree about the direction that we should go. I am concerned that we are moving away from what we have historically tried to move towards supporting, nuclear powers.

Secondly, I would like to encourage, not just the three of you, but the entire Energy Department to seek ways to get things done, to improve things and allow agencies move forward rather than looking for ways to prevent them from doing their work.

Many of our government agencies--and this is a soapbox of mine. Many of our agencies, particularly our regulatory agencies, look for ways to fine, to penalize, to prevent, to imprison, to entrap, to try to find ways to hurt business and the private sector and even sometimes the public sector.

I would like to see a mind change in our departments, particularly our regulatory departments, where it is not to find ways to penalize or entrap people in noncompliance but try to find ways to help people comply with the rules. No one is asking them to break the rules, but particularly in our environmental agencies, I have found where it appears that their goal is to entrap people into strict obedience and then to fine, to penalize, to hurt.

I would like government to be in the business of trying to help people comply with the rules and the regulations and help find ways for them to do so, not to put them into lawsuits and terrible positions.

That is an attitudinal change. It needs to start at the top of our agencies, but it is desperately needed at the field level of our agencies, and I would hope that it could start here. I don't think that you are the offenders like I see in other agencies, and I have made this pitch before to them.

But I want you to know that is where I feel government people should be working, to help people follow the rules and get the work done. We are in the business of helping people perform services for our citizens. You are in the business of helping people and agencies and organizations and businesses to provide services to our people. That is a great service. We ought to be in the business of helping them to do so and not prevent them from doing so.

Lastly, one last question of Dr. Krebs. How do we determine the projects and science programs that our labs do?

Dr. Krebs. Within the Office of Science, let me speak to that, which is a strong amount of what they are asked to do, the big facilities we build are subject to the scrutiny and recommendation of the external scientific community. And the--so we do not proceed with big facilities without external peer review; and with respect to the small projects, we also do external peer review. We do not place research at these laboratories without external peer review.

[The information follows:]

Laboratory Science Missions

The mission of each of the major laboratories is reviewed each year by the Program Secretarial Officers, as part of the Institution and Planning process. Currently, the Laboratory Operations Board is preparing a Laboratory Profile Report that describes the labs' mission.

Mr. Packard. The reason that I am asking the question is maybe to get a message across more than to get an answer to the question.

I am a little concerned about our labs, although the work that they do is fine, that they develop projects and science that perpetuate themselves. I think the reverse ought to take place. I think we ought to determine what kind of science and

projects need to be done for the good of our country and for the good of our citizens, and then determine which labs are more suitable to do it. I am concerned that our labs are in the business, often, of finding programs to self-perpetuate themselves and may not be the best science or the best projects that need to be done.

I would like you to give some thought as to how that can be restructured so we determine what our labs ought to be doing, rather than the labs coming up with their own projects, thus self-perpetuating themselves.

Lastly, I am very concerned about the lobbying efforts going on in the Department of Energy, where we pay our people out of taxpayer money within the Department to lobby Washington. That needs to stop.

I think the Department, if they need to do lobbying, they need to put that new authority in the budget and hire a professional lobbyist to do your job. I hope the day will come when we will see no paid staff or paid people in your departments that do lobbying, and can that is what they are supposed to do in Washington or anywhere else. We would like to see that phased out. If you need lobbying, you can request authority in your budget to hire professional lobbyists, just like any other city or county or agency would do. I don't believe that the taxpayers ought to be paying for the lobbyists of this Department.

And I will now close the hearing.

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W I T N E S S E S

	Page
Krebs, Dr. Martha.....	355
Magwood, W. D., IV.....	355
Reicher, Dan.....	355
Richardson, Hon. Bill.....	1

I N D E X

	Page
Accelerated Strategic Computing Initiative.....	243
Acceptance of Spent Fuel.....	64
Adequacy of Y2K Funding.....	190
Advanced Computation Technology Initiative.....	160
Advisory Committees Budget Information.....	277
Aging Workforce and Infrastructure at Production Plants.....	27
Aircraft.....	274
Alternative Fuel Automobiles.....	50, 189
Alternatives to Centralized Interim Storage.....	63

American Textiles Partnership.....	161
Approved Contractor Litigation Costs.....	320
Balance Between Laboratory and Plant Budgets.....	213
Biodiesel Rulemaking.....	35
Biorenewables Research Consortium.....	34
Brookhaven National Laboratory Employee Concerns.....	48
Brookhaven National Laboratory Environmental Cleanup.....	193
Brookhaven National Laboratory.....	29
Cancer Research.....	195
Characterization of Yucca Mountain.....	242
Chemical and Biological Weapons.....41, 228,	238
Chiles Commission Report.....	27
Civil Service Excepted Authority.....	84
Cleanup of Nuclear Waste.....	47
Closure Fund.....37,	219
Conference Attendance.....	279
Conferences Sponsored by DOE.....	279
Congressional and Intergovernmental Affairs.....	339
Construction Project Management.....	67
Contract Competition.....	79
Contractor Employment Levels.....	266
Contractor Support to Congress.....	315
Control of Soviet Nuclear Materials and Chemical and Biological Weapons.....	39
Corporate Management Information Program.....	25
Cox Committee Report.....57,	68
CTBT and Production Plant Maintenance.....	214
CVNX Reactor Design Work.....	227
Decommissioning Activities.....	200
Decommissioning Costs.....	43
Defense Education Programs.....	223
Department of Energy Leased or Owned Aircraft.....	274
Departmental Administration Questions.....	244
Departmental Foreign Travel.....	335
Distribution of Public Affairs Federal and Contractor Staff Outside Washington, DC.....341,	351
DOE Cancer Research.....	195
DOE Management Structure.....69,	70
Dual Revalidation.....	207
Education Funding.....	31
Education Support for New Mexico.....	31
Electricity Generation Under Kyoto Protocol on Climate Change....	181
Electricity Restructuring.....	153
Electrometallurgical Treatment.....	221
Employees Assigned to the White House.....	244
Energy Efficiency & Renewable Energy.....	226
Enhanced Benefits to Contractor Employees.....	165
Environment, Health and Safety.....	5
Environmental Cleanup.....	150
Environmental Management.....219,	220
EPA and NRC Standards.....	65
External Regulation of DOE Facilities.....	72
Facility Decommissioning.....	43
Federal Acquisition Regulation in Contracts.....	163
Federal Employees/M&O Contractor Employees/Support Services Budgets.....	85
Federal Research & Development to Address the Threat of Chemical	

and Biological Weapons.....	41
Fleet Automobiles.....	188
Foreign Energy Technology Programs.....	336
Foreign Travel.....	335
Functional Support Cost Report.....	252
Fusion Energy Funding.....	42
Fusion Energy Sciences.....	202
FY 2000 Funding Levels.....	26
FY 2000 Funding Priorities.....	25
GAO Report on Employment for Russian Scientists.....	43
GAO Report on Nuclear Nonproliferation.....	231
General Counsel.....	319
Global Climate Change.....	162
Headquarters Support Contractors.....	313
High Flux Beam Reactor at Brookhaven National Laboratory.....	29, 191
Hispanic-Serving Institutions.....	321
Historically Black Colleges and Universities.....	321
Human Resources and Administration Training.....	316
Initiatives for Proliferation Prevention Program (IPP).....	43, 60, 231, 235
Internal Reprogramming and Use of Prior Year Balances.....	248
Kansas City Plant Infrastructure.....	208
Kyoto Protocol.....	181, 187
Laboratory Directed Research and Development (LDRD).....	154
Listing of Major Contracts.....	81
Litigation Costs.....	319
Lobbying Provisions.....	167
Long-Term Plan for Production Plants.....	215
Mail Service Contract.....	352
Maintaining Production Plant Workforce.....	216
Management & Operating Contractor Employees Supporting DOE in Washington, DC.....	86
Management and Administration Advisory Committees Budget.....	276
Management and Administration Corporate Management Information Program.....	253, 259
Management and Administration Staffing Levels.....	262
Management and Administration Year 2000 Mission Critical Systems.....	261
Management and Operating Contractors in Washington, D.C.....	84, 313
Management and Operating Contractors.....	81
Management Concerns.....	38
Management Reform and Improvements.....	58
Managing our Workforce.....	5
Materials Protection, Control and Accounting Program.....	225, 239
Mercury Emissions Control Technology.....	206
National Renewable Energy Laboratory's Power Sources.....	51
National Security.....	3
Naval Reactors.....	227
Next Generation Internet.....	155
Noncompetitive Awards.....	76
Nuclear Energy Plant Optimization (NEPO) Program.....	186
Nuclear Waste Cleanup.....	5
Number and Type of Alternative Fuel Vehicles at the Department of Energy.....	50
Office of Public Affairs.....	340
Office of the Secretary.....	244
Oil Imports Into the United States.....	338
Pantex Plant Infrastructure.....	209
Partnership for a New Generation of Vehicles.....	156

Performance Based Contracts Energy Audits.....	55
Personnel Management.....	84
Pit Production.....	224
Power Marketing Administration.....	33
Prime Contractor Employment by Site and Program.....	267
Priorities.....	25
Privatization of Nuclear Deactivation Projects.....	198
Production Plant Maintenance.....	212, 215
Production Plant Workforce.....	216
Programs to Aid Russian Weapons Scientists.....	60
Public Affairs Staff in DOE.....	341
Public Law 105-245, Section 301(b).....	79
Public Law 105-245, Section 302.....	163
Public Law 105-245, Section 303.....	164
Public Law 105-245, Section 305.....	166
Public Law 105-245, Section 501.....	167
Purchase Power and Wheeling.....	177, 241
Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory.....	30, 194
Release of Prior Year Appropriation.....	229
Renewable Energy Costs To Be Competitive.....	184
Renewable Energy Budget Increases.....	179
Report of Uncosted Balances.....	247
Reprogrammings.....	44, 248
Richland Reprogramming.....	44, 59
Roll Call Vote.....	24
Savannah River Plant Infrastructure Investment.....	210
Schedule ``C'' Employees.....	310
Science Education.....	31, 158, 223
Science.....	222
Scientific Simulation Initiative.....	203, 222
Section 3161 Benefits.....	164, 197
Small Business Access to Cleanup Contracts.....	150
Solar and Renewable Energy Competitive Grants.....	233
Solar and Renewable Funding Versus Nuclear Energy Funding.....	48
Solar and Renewable Funding.....	4
Solar Energy Competition for Grants.....	55, 233
Solar Renewable Investment Return.....	54
Solar Roofs Program.....	32
Staffing Levels.....	262
Statement--Oral--Secretary Richardson.....	3
Statement--Written--Secretary Richardson.....	7
Stockpile Stewardship.....	4
Supercomputing Initiatives.....	83
Tokamak Decommission.....	42
Tokamak Fusion Test Reactor.....	201, 204
Training Costs.....	316
Tritium Production.....	75, 205
Tritium.....	217
Use of Renewable Power at the National Renewable Energy Laboratory.....	53
Viability Assessment.....	66
Waste Acceptance Storage and Transportation.....	230
Waste Management Program.....	5
Wind Energy Tax Credit.....	34
Worker Health and Safety.....	74
Worker Retraining--Paper, Allied-Industrial and Energy	

International Union.....	197
Working Capital Fund.....	352
Y-12 Plant Infrastructure.....	211
Y2K Funding.....	190
Y2K Mission Critical Systems.....	261
Yucca Mountain EPA Standards.....	65
Yucca Mountain Funding.....	229
Yucca Mountain Interim Storage.....	63
Yucca Mountain Nuclear Waste Repository.....	36, 45, 230, 242

Energy Resources and Science

Advanced Nuclear Medicine Initiative.....	800
Advanced Radioisotope Power Systems.....	780, 782
Advisory Committees Funding Profile.....	671
Aluminum Matrix Composite.....	777
AmeriFlux Program.....	822
Anti-Lobbying Prohibition.....	670
Arizona State University.....	869
Atmospheric Radiation Measurement.....	820
Basic Energy Sciences.....	825, 828
Bates Accelerator.....	813
Biography--Martha Krebs.....	398
Biography--Dan W. Reicher.....	437
Biography--William Magwood.....	359
Biological and Environmental Research.....	819, 822
Biomass Feedstock Development Centers.....	732
Biomass.....	501, 728, 736
Black Liquor Gasification.....	880
BPX-AT.....	851
Broad-Based Solicitations.....	693
Brookhaven National Laboratory General Facilities.....	839, 914
Brookhaven National Laboratory Renewable Energy Programs.....	922
Budget Priorities for FY 2000.....	469
Chairman Packard's Concerns.....	502
Climate Change Technology Initiative (CCTI).....	511
Co-generation Plants.....	728
Commitment to Nuclear Research.....	482
Competitive Versus Non-Competitive Awards.....	690
Computational and Technology Research.....	840
Coordinated Biomass Energy Research and Development Plan.....	729
Coordination Between the Office of Science and Departmental Missions.....	802
Cost Trends for Renewable Energy.....	884
Departmental Staffing.....	510
Educational Initiatives at the Department of Energy.....	915
Electric Energy Systems and Storage--Transmission Reliability....	771
Electricity Deregulation.....	887
Electricity from Renewables.....	885
Electricity Restructuring.....	746
Electrometallurgical Technology.....	792, 899
Employment Levels.....	475
Energy Research Analyses Evaluations.....	844
Energy Storage Systems.....	776
Environment, Safety and Health at Argonne National Laboratory..	476, 477
Environmental Concerns.....	720
Environmental Impacts of Renewable Energy.....	720

Environmental Meteorology Program.....	819
Experimental Program to Stimulate Competitive Research (EPSCOR).....	487, 864, 873
Facilities Operations Budget.....	812
Facility Operations.....	806
Fast Flux Test Facility.....	798
Federal Standard for Direct Current Power Sources.....	919, 921
Fellowship Program.....	486
Funding for Non-Governmental Organizations--Office of Nuclear Energy.....	612
Funding for Non-Governmental Organizations--Office of Science....	582
Funding for Non-Governmental Organizations--Solar and Renewables.	615
Funding Increases--Solar and Renewables.....	679, 681, 687
Funding Increases.....	677
Fusion Alternatives.....	848
Fusion Energy Sciences.....	847, 851, 862, 900, 908
Geothermal Heat Pump Deployment.....	763
Geothermal Resources.....	923
Global Change Education Program.....	821
Global Change Research Education Program.....	821
Historically Black Colleges and Universities.....	906
High Energy Physics.....	812
High Flux Beam Reactor at Brookhaven National Laborat.....	488, 490, 500, 909
High Flux Beam Reactor Funding Before Shutdown.....	501
High Flux Beam Reactor.....	839, 909
High Temperature Superconductivity.....	773, 774, 825
How Funds are Spent--Office of Nuclear Energy.....	537
How Funds are Spent--Office of Science.....	513
How Funds are Spent--Solar and Renewables.....	543
Human Genome Program.....	397, 815, 883
Human Interactions.....	823
Hydrogen Projects.....	765
Hydrogen Research Coordination.....	768
Hydrogen.....	765, 768, 828
Impact of Bates Laboratory Decision.....	491
Implementation and Oversight of Environmental, Safety & Health at Argonne National Lab.....	477
Increases in Programs, Construction Projects and Activities.....	506
Integrated Process Development.....	731
International Spending--Office of Nuclear Energy.....	659
International Spending--Office of Science.....	658
International Spending--Solar and Renewables.....	661
International Thermonuclear Experimental Reactor (ITER).....	851, 855
Isotope Production Facility at LANL.....	801
Isotope Support.....	797, 799
Laboratory Science Missions.....	504
LANSCE Construction.....	825
Large Multi-Year Projects--Solar and Renewables.....	695
Leased Space at NREL.....	760
Magnetic Fusion Research Funding History.....	847
Management Improvements in the Office of Energy Efficiency and Renewable Energy.....	435
Management of Grants.....	669
Markets for Photovoltaics.....	722
Medical Isotope Program at Brookhaven National Laboratory.....	918
Merit Review Procedures for Grants.....	513
Million Solar Roofs.....	725

Mound EIS.....	783
Multi-Year Funding of Projects.....	695
NASA Missions.....	780
National Institute for Global and Environmental Change (NIGEC).....	817, 877
National Renewable Energy Laboratory.....	760, 762
National Synchrotron Light Source at Brookhaven National Laboratory.....	499, 913
Neutrinos at the Main Injector Experiment.....	814
New Characterization of the Department's Research & Development Portfolios.....	803
New Nuclear Power Plants.....	893
Next Generation Internet.....	856
Next Generation Wind Turbine.....	741
Non-Governmental Organizations Funding.....	582
Nuclear Energy Accomplishments.....	356
Nuclear Energy Plant Optimization (NEPO) Program.....	896
Nuclear Energy Projections.....	478
Nuclear Energy Research Initiative (NERI).....	789, 898
Nuclear Energy.....	907
Nuclear Physics--Bates Accelerator.....	813
Nuclear Power Plant Costs.....	481
Office of Science Developmental Results.....	394
Office of Science FY 2000 Funding Request.....	395
Partnerships for Academic-Industrial Research.....	827
Photovoltaic Energy Systems.....	724, 890
Photovoltaic Research & Development Program.....	869
Photovoltaic Solar Electric Plant.....	890
Plasma-Based Radioactive Waste Separation.....	853
Plutonium-238 Needs.....	782
Program Direction--Solar and Renewables.....	778
Program Direction Increases.....	475
Program Taxes--Office of Science.....	804
Program Terminations.....	662
Progress in Photovoltaic and Other Renewable Energy.....	871
Promoting Renewable Energy to Native American Tribes.....	867
Public Outreach Funding.....	693
Radiochemistry Program.....	786
Record of Decision Delayed for the High Flux Beam Reactor.....	490
Regional Biomass Energy Program.....	733
Relativistic Heavy Ion Collider at Brookhaven National Laborato.....	491, 912
Renewable Energy Production Incentive Program.....	488, 744, 865
Renewable Indian Energy Resource.....	770
Request for Proposals.....	668
Request to Office of Management and Budget (OMB)--Solar and Renewables.....	901
Roadmaps.....	802
Science Education Program.....	483, 866
Scientific Simulation Initiative.....	396, 841
Secretary's Decision to Restart High Flux Beam Reactor.....	490
Site Descriptions and Narratives.....	687
Site Descriptions for Solar and Renewables Programs.....	688
Solar and Renewable Investment Accountability.....	491, 497
Solar and Renewables Budget Overview.....	434
Solar and Renewable Increases.....	502
Solar Buildings Research.....	903
Solar Cell Technology.....	868
Solar Energy Programs.....	722, 903, 904

Solar Energy Support--Electricity Restructuring.....	746, 753
Solar International Programs.....	750, 753
Solar Technology Transfer.....	759
Spallation Neutron Source.....	395, 486, 832, 835, 838, 857, 861
Staffing Levels.....	510
Statement--Oral--Dan Reicher.....	433
Statement--Oral--Dr. Martha Krebs.....	394
Statement--Oral--William Magwood.....	356
Statement--Written--Dan Reicher.....	438
Statement--Written--Dr. Martha Krebs.....	399
Statement--Written--William Magwood.....	360
Superconductivity.....	925
Termination Costs--Office of Nuclear Energy.....	666, 792, 795
Terminations--Office of Science.....	662
Terminations--Solar and Renewables.....	667
Test Reactor Area Landlord.....	787
TFTR Cost Savings.....	485
Tokamak Decontamination and Decommissioning Cost Savings.....	485
Tokamak Decontamination and Decommissioning.....	484
Transmission Reliability.....	771
Travel Funding for Solar and Renewables Energy Program.....	755
U.S. Initiative on Joint Implementation.....	750
University of Texas.....	908
University Reactor Fuel Assistance and Support.....	785
Unrealistic Funding Increases--Solar and Renewables.....	677
Use of Facilities by Federal Agencies Other Than the Department of Energy.....	811
User Facilities.....	906
Wind Energy.....	739, 741, 888, 905, 906
Wind Farm Construction Costs.....	479
Y2K and Next Generation Internet.....	856

Federal Energy Regulatory Commission

Ad Valorem Tax Refunds by Kansas Natural Gas Producers.....	1076
Administration Comprehensive Electricity Competition Plan.....	1061
Alternative Licensing Process for Hydro Projects.....	1072
Authorizing and Monitoring Energy Projects.....	933, 939
Budget Justification for FY 2000 Request.....	942
Consumer Impact of Electric Power Industry Restructuring.....	1063
Consumer Impact of Natural Gas Industry Restructuring.....	1075
Dam Safety.....	1073
Developing Employees.....	940
Electricity Price Spikes.....	1068
Environmental Review Offices.....	1068
FERC First.....	1054
Gas Pipeline Certification.....	934
Gas Policy Initiative.....	931
Hydropower Administration.....	935
Industry Changes Challenge the Commission.....	930
Industry Structure.....	932
Information Technology Improvements.....	1059
Management Review Initiatives.....	1054
Managing Information Technology.....	940
Merger Review Policy.....	1070
Natural Gas and Electric Power Program Budgets.....	1059
Overview.....	928

Promoting Competitive Markets.....	939
Proprietary and Non-Proprietary Receipts.....	1077
Protecting Customers.....	933
Public Power Reforms.....	1062
Questions and Answers for the Record.....	1054
Regional Transmission Organizations.....	931, 1065
Regulating Energy Markets.....	930
Reliability of the Electric Power Grid.....	1066
Resolving Disputes.....	939
Statement for the Record, James J. Hoecker, Chairman.....	928
Strategic Planning.....	939
Year 2000 Software Problem.....	1060

U.S. Nuclear Regulatory Commission

Atomic Vapor Laser Isotope Separation (AVLIS).....	1105
Appropriations Legislation.....	1150
Bilateral and Multilateral Activities.....	1113
Budget and Performance Plan.....	1133, 1159, 1357
Budget Highlights.....	1088
Cross-cutting functions with Other Government Agencies.....	1347
Decommissioning.....	1110, 1269
Enforcement Program.....	1095, 1196, 1249
Export Licensing.....	1112
External Regulation of Department of Energy.....	1106, 1252
Fuel Facilities Licensing and Inspection.....	1233
Hanford Tank Waste Remediation System Program.....	1107
High Level Waste.....	1108, 1262
Inspector General Activities.....	1122, 1147, 1311
International Activities.....	1111, 1114, 1147, 1278
International Safety Conventions.....	1114
Investigations.....	1126, 1197, 1250, 1319
Key External Factors.....	1362
Legislative Program Projections.....	1374
Low Level Waste.....	1268
License and User Fees.....	1090, 1390, 1411
License Transfers.....	1100
Management and Support.....	1115, 1147, 1286
Materials Safety.....	1102, 1146, 1220
Medical Regulation.....	1104
Mixed Oxide Fuel (MOX).....	1105
Nuclear Waste Safety.....	1107, 1147, 1254
Performance Assessment.....	1092, 1179, 1189
Planning, Budgeting and Performance Management Process.....	1084, 1143, 1356
Probabilistic Risk Assessment.....	1395
Reactor Inspection.....	1187
Reactor Licensing.....	1096, 1181
Reactor License Renewal.....	1099, 1186, 1392
Reactor Safety.....	1091, 1101, 1145, 1170
Reimbursable Work Agreements.....	1376
Report to Congress on Drug Testing.....	1375
Research.....	1242, 1399
Risk-Informed Performance-Based Regulation.....	1091
Spent Fuel Storage.....	1102, 1236
State Programs.....	1241
Strategic Plan.....	1164
Streamlining the Organization.....	1086

Uranium Recovery Licensing and Inspection.....	1261, 1275
Written Statement of:	
Shirley Ann Jackson.....	1081
Hubert T. Bell.....	1120
Verification and Validation of Measured Values.....	1339
Year 2000 Implementation.....	1115, 1124

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