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NOMINATION OF PHILLIP BOND TO BE UNDER SECRETARY FOR TECHNOLOGY AT THE DEPARTMENT OF COMMERCE AND JOHN MARBURGER TO BE DIRECTOR OF THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

OCTOBER 9, 2001

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

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NOMINATION OF PHILLIP BOND TO BE UNDER SECRETARY FOR TECHNOLOGY AT THE DEPARTMENT OF COMMERCE AND JOHN MARBURGER TO BE DIRECTOR OF THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

TUESDAY, OCTOBER 9, 2001

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 2:40 p.m. in room SR–253, Russell Senate Office Building, Hon. Ron Wyden, presiding.

OPENING STATEMENT OF HON. RON WYDEN, U.S. SENATOR FROM OREGON

Senator WYDEN. The Committee will come to order. Today the Committee considers the nomination of Dr. John Marburger for Director of the Office of Science and Technology Policy and to serve as the President's Science Advisor, and the nomination of Mr. Phillip Bond to be the Under Secretary of Commerce for Technology. We will give these two distinguished individuals a more formal introduction in just a few moments, and we are also pleased to have a number of our colleagues from the House, particularly my old friend Chairman Sherwood Boehlert here with us today, and Sherry, we are very pleased that you are here as well.

Since the attacks of September 11, the role of science and technology has become even more important than ever before. Just yesterday, some news organizations were reporting that anthrax from American labs was sent to Iraq in the 1980's as part of a scientific effort. While the report did not mention Government involvement in this effort, the inherent risk of such action is unmistakable.

I am of the view that it is important that intellectual security be seen as an integral part of any national security approach. Given the possibilities for the misuse of science, I also see tremendous potential in harnessing science and technology in a protective effort, from developing the technology to direct airplanes from a control tower instead of a cockpit, to using science to quickly develop antidotes and vaccines to potential bioterrorism agents, taxpayer money can be smartly invested in advances that ultimately reward and benefit the safety and peace of mind of all Americans. We intend to look very closely at what happened on September 11 with

a mind toward making sure the preventive steps are in place so as to do everything possible to eliminate the prospect of such tragedies again, and also to take those steps to try to repair and recreate a damaged technology infrastructure.

I proposed in recent days what I have called the technology equivalent of the National Guard, made up of the brains and talent in this country's leading technology companies, that have indicated to me and other Members of Congress that they would be happy on essentially a volunteer basis to step in and try to both prevent such tragedies and to repair and recreate damaged communication systems.

Suffice it to say that while these companies made Herculean efforts after September 11 to help, sending people and equipment and resources to New York City, it is now quite clear that there are many significant gaps in the way these matters are handled.

For example, yesterday, in meetings that I held at home in Portland, Oregon, I was advised by many of the leaders in our technology companies that they and others had tried to donate people and equipment in New York City to try to respond to the problems, and New York City just was not set up to handle it. They were not in a position to try to use those resources.

I came away with a feeling that if nothing else was done in this country but to set up a clearinghouse where you could readily get the information about the brains and the equipment and the companies and the people who could assist in the event of such tragedies, that that alone would be a very valuable contribution.

This Subcommittee intends to hold hearings on the situation in New York City in terms of the response on the technology side very soon, perhaps as soon as next week, and we are looking forward to exploring a variety of the proposals that have been made with respect to both the private and the public sector.

While we work to coordinate with the private sector to respond to threats, coordination in the public sector is also required to prevent terrorist threats from becoming a reality. The General Accounting Office recently released a troubling new report entitled, "Combatting Terrorism". One of the sections of the General Accounting Office report dealt with a lack of coordination among science agencies in conducting counterterrorism research. For example, it found that the Coast Guard was conducting research on detection of chemical attacks on cruise ships, and was unaware of similar research being conducted by the Defense Department.

The General Accounting Office recommended development of a strategic plan for research and development on the counterterrorism front that would prevent duplication and leverage our resources, and so we intend to ask you, Dr. Marburger, about how you would participate in the development and execution of such a plan. Obviously, to put such a plan together, it will have to be closely coordinated with new Office of Homeland Security.

I am very pleased that Governor Ridge is going to head up that office. Sherry Boehlert, Tom Ridge and I teamed up quite often over the years on these kinds of issues involving science and technology policy, and I think he is going to do a superb job in that position, but one of the keys to his success will be to coordinate the 40 or so agencies involved in antiterrorist activity, and one of the

things we intend on this Subcommittee to look at is the possibility of convening a meeting among the technology officers of the pertinent intelligence divisions, Tom Ridge's Office of Homeland Security and congressional leaders to look at ways for technology to assist in coordinating and sharing intelligence in a safe and secure way, and determine how the Congress can be most helpful to the administration in achieving that outcome.

Finally, one last area that I have had a special interest in over the years is to ensure that science policy and science and technology issues are addressed so as to promote sound science, real science as apart from junk science, and one of the things that we intend to do is to try to look and see whether it may be possible to define a set of core principles that would be used to try to best identify what constitutes sound science. I have begun such discussions already.

There are obviously some ideas that already come to mind, such as ensuring, for example, that there is thorough peer review of scientific judgments. Dr. Marburger, I intend to explore with you, as well, some of your ideas about how, at a time when science is more important than ever before, we can see if we can come up with some principles that will help to guide us and keep us away from junk science that is dictated perhaps more by parochial or boardroom decisions than real scientific merit. I will have some questions for you this afternoon about that as well.

We are anxious to hear from our colleagues in the House, but first I am very pleased that Senator Brownback is here. He has had a great interest in these issues over the years as well, and we would be happy to hear from you.

STATEMENT OF HON. SAM BROWNBACK, U.S. SENATOR FROM KANSAS

Senator BROWNBACK. Thank you, Mr. Chairman. Thank you for holding the hearing. I appreciate the comments, and appreciate that you are doing this and putting this hearing in front of the rest of the Senate. We are considering two of the President's nominations, and very important I consider science and technology positions, Phillip Bond to be Under Secretary of Commerce for Technology, and John Marburger to be Director of the Office of Science and Technology Policy.

Both Mr. Bond and Mr. Marburger are clearly qualified to fulfill the responsibilities of these positions, and I look forward to getting them into office just as soon as possible. Certainly, with everything that has transpired since September 11, I think it is safe to say that the importance of these positions will be underscored as Congress seeks to address matters of an urgent nature and square away the budget.

Working in conjunction with the Federal Communications Commission and the National Telecommunications and Information Administration, both of these positions will play an important role in certain areas where Congress is perhaps not as disposed to act, for obvious reasons, and I say that in reference to the telecommunications industry we have had some difficulties in deploying certain technologies in telcom. Deployment of broadband infrastructure seems to be slowing. This, in turn, is having a drastic impact on

other parts of the technology sector. It is bad for consumers, and it is bad for the economy, and we are going to need to right that ship, and you are going to be in positions to help influence that policy creation and implementation. In my view, the state of the industry today indicates that the creation of a national broadband policy is important and long overdue.

As we in Congress continue to address the budget, and the immediate priorities associated with the war on terrorism, I urge you gentlemen to engage your colleagues in Government and to seek to create a broader national dialog on spurring technology, technology development—particularly the broadband deployment that I think can be a very important part of our technology growth and our communication—and our infrastructure for security in this country.

Sometimes simple discussion can be as productive as rulemaking authority. I urge both of you to be involved in that task. I welcome both of you. I do not anticipate there will be any problem in getting you cleared on through and into these positions. It is important that you get there and you get there soon to engage the battle front, and I welcome you here.

Thank you, Mr. Chairman, for holding the hearing.

Senator WYDEN. Thank you, Senator Brownback.

Senator Nelson.

STATEMENT OF HON. BILL NELSON,
U.S. SENATOR FROM FLORIDA

Senator NELSON. Mr. Chairman, thank you. I just want to say to my old friend Sherry Boehlert that I am delighted to see him, and you have got such an important position now in the House as Chairman of the Science Committee. I am glad you are here on behalf of these gentlemen, and just by way of introduction I would say that OSTP is one of the most important appointments in the Federal Government.

For example, one thing that you would have some influence over is the conundrum that is now faced by NASA, where the Chairman has a hearing on this in all of the cost overruns on the space station, the starvation diet that NASA is being put on, actually delaying or canceling the safety upgrades for the space shuttle, and his hearing on this was the first week of September. Well, now after September 11, we do not have a choice, because we have to have assured access to space, and your risk factor for catastrophic failure on something like the Titan is 1 in 20.

I do not have to tell you what happens if a Titan pad was knocked out. Your only assured access to space then would be the shuttle, until they could get the EELV's, but none of them have been flown, so the assured access to space now takes a whole new importance, and a dimension, and OSTP is clearly in a position to influence that.

Now, I have spoken directly with Chairman Boehlert and my old friend, now the Vice President, about this, but he needs, and others in the administration—and this is just one thing we are talking about, Mr. Bond. In the area of space commercialization, you know, there was at one point this rush to say that people were going to put platforms at sea, right on the equator, and we were going to launch so we did not have to pay the fuel penalty.

Well now, look at the vulnerability of those platforms to terrorist activity, when you have to have assured access to space with regard to commercial ventures, which now become so important to us from the standpoint of national and international security. So there again, you have a very important position with regard to making sure that all of this commercial activity of getting to space does not leave the United States.

So thank you, Mr. Chairman, for letting me join in and giving my 2 cents, and to say also hello to Chairman Boehlert.

Senator WYDEN. Thank you, Senator Nelson, and obviously we are very pleased you are on this Subcommittee as a passionate advocate for these space issues, and you raise the critical concerns for the Office of Science and Technology Policy.

We have a plethora of people who want to introduce our two distinguished nominees. We could probably chew up the afternoon with just the introductions. I am going to offer a brief introduction and then turn it over to Senator Allen, who, like myself, has a special relationship with Phil Bond, and then we are going to turn it over to our colleagues from the House as well.

Dr. John Marburger is the nominee for the Office of Science and Technology Policy and the President's Science Advisor. He is joined today by his wife, Carol, his sister, Mary Hoffman, and her husband, Robert, their sons Robert and Daniel, as well as other friends and colleagues.

Dr. Marburger, maybe we could persuade your family to stand and let us recognize them at this time.

[Applause.]

Senator WYDEN. Welcome, and we are very pleased that you are with us here today. Dr. Marburger is a physicist by training and has had a long and distinguished career in science, most recently as Director of the Department of Energy's Brookhaven National Laboratory. Dr. Marburger came and met with me early on, and we expect him to play a major role in the Office of Science and Technology Policy with the President's Council of Advisors on Science and Technology, known as PCAST, and with the council's president, Floyd Kvamme, who I respect very much, and so we welcome you as well.

We also have Mr. Phillip Bond, who is nominated to be the Under Secretary of Commerce for Technology. He is joined today by his wife, Dianne, and his daughters Jacqueline and Jessica, and hopefully we can get the Bond delegation to stand.

[Applause.]

Senator WYDEN. Welcome, and Mr. Bond is a distinguished graduate of Linfield College, in my home State of Oregon. Northwest members of the congressional delegation I think have been tripping over themselves to introduce Phil Bond. Senator Murray wanted very much to be here as well. We are going to make her statement of support a part of the hearing record in its entirety, and we expect Phil Bond to play a major role on technology questions, be it Internet taxes, some of the issues we are going to be looking at with respect to responding to what happened in New York City, and we sort of consider Phil Bond an honorary Oregonian, and we are very glad you are here.

My friend and colleague George Allen also goes way back with Mr. Bond. Before we turn to House Members, I want to recognize Senator Allen for his comments.

STATEMENT OF HON. GEORGE ALLEN, U.S. SENATOR FROM VIRGINIA

Senator ALLEN. Thank you, Mr. Chairman, and thank you for having this very important nominations hearing today. The Department of Commerce, technology and particularly the administration thereof, is obviously very important for our scientific and technological advancements, and that analysis is vitally needed in our Federal Government, not just for the Government but for our economy, and we have two very highly qualified individuals, capable individuals today, seeking our confirmation, which I am sure they will receive, and I do want to welcome Dr. Marburger. Thank you for coming, and your willingness to serve. I also want to spend a bit of my time to introduce Mr. Bond.

Phil Bond is the President's nominee for the post of Under Secretary of Commerce for Technology. I know Secretary Evans is very interested in our competitiveness as a country, and I find technology—and I know the Chairman shares my view—I find technology to be a key for success as a Nation, and Phil Bond has the capabilities, the background, and experience to give good advice to the White House as well as to us in the House and the Senate.

I will say that he is very qualified. You say he started in California. I started in California as well. That is where I was dropped, and then we moved around the country, but never through Oregon. I was educated, my higher education was in Virginia, but Phil Bond also for the last 15 years has resided in the Commonwealth of Virginia with his wonderful wife Dianne, and I suspect that Jacqueline and Jessica were born in Virginia, is that correct?

Mr. BOND. That is correct.

Senator ALLEN. Good.

[Laughter.]

Senator ALLEN. Mr. Bond served several times on Capitol Hill, serving as chief of staff for both Congresswoman Jennifer Dunn of Washington, and Congressman Rob McKuen of Oregon. He served also in the Department of Defense in the Reagan administration and in the first Bush administration. In the latter case, Mr. Bond served as a Principal Deputy Assistant Secretary of Defense for Legislative Affairs with then-Secretary Dick Cheney.

Phil's work in the public sector is well-known, also the private sector, having worked for Hewlett-Packard, the Information Technology Industry Council, which represents all of the leaders in the technology community, and that is important, and makes him an ideal choice to be the President's principal voice on domestic and international technology issues.

He will also oversee the Office of Technology Policy, the National Institute of Standards and Technology, otherwise referred to as NIST, the National Technical Information Service, and the Office of Space Commercialization, which I know our colleague Senator Nelson of Florida has a great deal of knowledge and interest in.

This position, Phil, as you well know, is going to take extensive coordination between the Government or public sector, as well as

the private sector. I know that you will bring your many years of private experience, your knowledge beyond your years, because you are still young, but nevertheless you have that energy, you have that knowledge, you have the experience, and thank you for coming back to service for your country and, indeed, for our economy and our quality of life in this country.

So Mr. Chairman, it is my great pleasure to present Mr. Phil Bond to this Committee for favorable consideration, and I thank Mr. Bond for his service.

Senator WYDEN. Thank you, Senator Allen. I very much appreciate all of your interest and involvement. You made it clear with respect to aviation technology that there are a number of areas where this Subcommittee could team up with the administration, and we are going to do that, and we appreciate that.

All right, let us wrap up our introductions by having the distinguished chairman of the Science Committee, Mr. Boehlert and Mr. Grucci, make their comments.

STATEMENT OF HON. SHERWOOD BOEHLERT, U.S. REPRESENTATIVE FROM NEW YORK

Mr. BOEHLERT. Thank you very much, Mr. Chairman. It is a pleasure to appear before the Committee and three valued friends regarding the nomination of Dr. John Marburger as Director of the Office of Science and Technology Policy. As a New Yorker and as chairman of the Science Committee, I can attest to Dr. Marburger's outstanding qualifications for this very important post, that I think it is evident to all who have examined those qualifications that he deserves prompt confirmation by the Senate.

I have had the opportunity to spend a fair amount of time in New York since the President announced his intention to nominate Dr. Marburger as Science Advisor, and I can tell you this, no one can spend any amount of time with him without walking away just very favorably impressed. He is thoughtful, he is articulate, he is straightforward, traits that are all too rare around this town. He is an excellent manager, someone who inspires confidence, someone who is a natural leader, someone who is able to rally people around him while still being self-deprecating. These, too, are rare abilities, and ones that frankly he will need to work very hard with the turf-conscious R&D agencies and the Office of Management and Budget.

Dr. Marburger has an exemplary career as a scientist and an educator. He holds a B.A. in physics from Princeton, and a Ph.D in applied physics from Stanford University, where he developed an expertise in nonlinear optics. His teaching activities included Frontiers of Electronics, a series of educational programs broadcast Nation-wide by CBS.

In 1980, he assumed the presidency of SUNY Stony Brook. During his 14-year tenure the university opened University Hospital, established a national reputation for work in the biological sciences, and increased its Federal research portfolio until it exceeded that of any other public university in the Northeast. Recognizing the importance of technology transfer, he also established the Long Island technology incubator.

In 1997, Dr. Marburger became president of Brookhaven Science Associates, a partnership between SUNY Stony Brook and Batelle,

which was awarded the contract to manage Brookhaven Laboratory for the Department of Energy. Brookhaven continues to thrive under his leadership, and is doing important work in particle physics imaging and neuroscience and genomics.

I would also note that the lab has been recommended for an ISO 14001, the international standard of excellence for environmental management, something that is near and dear to my heart. Dr. Marburger must draw upon all of these experiences in order to meet the challenges that will face the Science Advisor over the next several months and years.

What must we do to better integrate research and education so that our children remain international leaders in math and science? How do we ensure that policy decisions regarding health and safety and energy and the environment, are based upon, Mr. Chairman, as you pointed out, on good science and not junk science?

Finally, in the wake of the terrorist attacks waged against this country on September 11, how do we marshall our public and private research resources in service of the effort to protect our citizens and prosecute the war against terrorism?

These questions are not easy to answer. They require a lasting commitment, and are demonstrably not amenable to short-term solutions. They will require careful thought and a steely resolve to persevere when public attention shifts, as, in time, it will, to other seemingly more pressing problems.

I am confident Dr. Marburger is up to this challenge, that he will work to build consensus around these and other difficult matters. It is my pleasure to present Dr. Marburger for nomination to this Committee with the hope and expectation that there will be prompt approval and confirmation by the Senate.

Thank you.

Senator WYDEN. Sherry, thank you for an excellent presentation, and Dr. Marburger is lucky to have a passionate advocate like you, and we will continue, as you know, to work closely with you.

Congressman Grucci.

STATEMENT OF FELIX GRUCCI, JR., U.S. REPRESENTATIVE FROM NEW YORK

Mr. GRUCCI. Thank you, Mr. Chairman. I am proud to see Dr. John Marburger, Director of the Brookhaven National Laboratory, in my congressional district, as President Bush's nominee as Director of the Office of Science and Technology Policy, the Nation's highest-ranking science position. Dr. Marburger will be a tremendous asset to the Bush White House and to the Nation. He brings sterling credentials, firmly grounded in some of our Nation's finest educational and scientific facilities.

After a distinguished career as the President of State University of New York at Stony Brook from 1980 to 1994, Dr. Marburger became Director of Brookhaven National Laboratory in March 1998. I have had the distinct pleasure to work closely with Dr. Marburger in my former position as supervisor of the town of Brookhaven, a town of 450,000 people, and he has proven to be the utmost professional and good friend. I look forward to working with

him in his new position at the White House Office of Science and Technology Policy.

Dr. Marburger has overseen an era of exciting scientific advances at Brookhaven National Laboratory, as well as playing a significant role in the environmental restoration at the laboratory.

Dr. Marburger is a great communicator of science. Using his skills as an educator, Dr. Marburger has restored the community's trust in the Brookhaven National Laboratory by affirming their faith in the Federal Government scientific programs, and by showing them how it helps them, their families, and their children.

Dr. Marburger is exactly the type of person we need at the White House as the White House Science Advisor. A gifted scientist, a highly regarded educator, and a concerned citizen, he will bring new ideas to get the job done. Science research and discovery know no boundaries or political affiliations, and I say these words not as a Congressman who represents the district and represented the Marburger family, but someone who has known Dr. Marburger now for the better part of 20 years.

Working with him when he was the president of Stony Brook University, I watched as he laid the foundation for that learning institution to become one of the country's more predominant and more premier learning facilities. It has now garnered some of the attentions of some of the highest educators from around the country.

I watched as he took the Brookhaven National Laboratory during some turbulent times, when there was some real concern about things happening at the laboratory that might have grave environmental concerns to the community, and impacts to our drinking water. I saw Dr. Marburger take the helm of that facility and turn around the fears of the community, restore that facility back to its greatness, and march forward to where it is today, as one of the leading laboratories in the country, when at a time it could have fallen apart and become something less than what it is today.

I can think of no greater person, no man of moral character, no one of a higher education, no one more committed to not only the sciences but to this great country, than to ask you to seriously consider the name of Dr. John Marburger for this position.

Thank you.

[The prepared statement of Mr. Grucci follows:]

PREPARED STATEMENT OF HON. FELIX GRUCCI, U.S. REPRESENTATIVE FROM NEW YORK

I am proud to see Dr. John Marburger, Director of Brookhaven National Laboratory in my Congressional District, as President Bush's nominee as Director of the Office of Science and Technology Policy—the nation's highest ranking science position.

Dr. Marburger will be a tremendous asset to the Bush White House and the nation. He brings sterling credentials firmly based in some of our nation's finest educational and scientific facilities.

After a distinguished career as the President of State University of New York at Stony Brook from 1980–1994, Dr. Marburger became Director of Brookhaven National Laboratory in March 1998. I have had the distinct pleasure to work closely with John Marburger in my former position in Brookhaven, NY and he has proven to be the utmost professional and good friend. I look forward to working with him in his new position at the White House Office of Science and Technology Policy.

Dr. Marburger has overseen an era of exciting scientific advances at BNL, as well as playing a significant role in the environmental restoration at the Laboratory.

Dr. Marburger is a great communicator of science. Using his skills as an educator, Dr. Marburger has restored the community's trust in the Brookhaven National Laboratory by firming their faith in the Federal Government's science programs and by showing them how it helped them, their families, and their children.

Dr. Marburger is exactly the type of person we need as the White House's Science Advisor: a gifted scientist, a highly regarded educator, and a concerned citizen, he will bring new ideas to get the job done. Science, research, and discovery know no boundaries or political affiliations.

Senator WYDEN. Congressman, thank you for your presentation. You go way back with Dr. Marburger. Thank you for your presentation, Chairman Boehlert. For you and your colleague I do not think we have any questions. We thank you both for your excellent presentation and for coming over this afternoon. We will be working with you.

Gentlemen, I think we are at the point where you finally get to say your piece, and I am sure you are anxious to do it. We will begin with you, Dr. Marburger, and my inclination is that we will have Dr. Marburger first, and then Mr. Bond next, and then we will start in with questions for both of them after the presentations.

Dr. Marburger.

STATEMENT OF JOHN MARBURGER III, NOMINEE TO BE DIRECTOR OF THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Dr. MARBURGER. Thank you, Mr. Chairman. I have a short written statement I would like to make. It is an honor for me to appear before this Committee as President Bush's nominee for the Director of the Office of Science and Technology Policy.

I approach this opportunity and the profound responsibilities it carries with a mixture of humility and pride, humility in view of the distinguished scientists who have gone before me, and pride in this Nation's unmatched scientific establishment. Science and technology have long provided us with increased security, better health, and greater economic opportunity, and will continue to do so for many generations to come.

At this point, I would like to congratulate Mr. Bond on the success of the Department of Commerce. They have recently been informed that they own two-thirds of the Nobel prize in physics that was announced this morning, just a tremendous advance in applied physics, for which this country ought to take great pride. All three recipients of the prize were working in America at the time.

I believe my professional career over the past three decades as a professor of physics and electrical engineering, as a university dean and president, and as the director of the Department of Energy's Brookhaven National Laboratory, has provided me with the knowledge and experience to meet the needs and expectations of this office. Should I be confirmed, I look forward to a close and productive relationship with Congress and particularly with this Committee, which has long provided bipartisan and enduring support of our world leading science and engineering enterprise.

The counsel and support of Members of Congress is essential for continued U.S. leadership in science and the science-based technology. We must make important choices together, because we have neither unlimited resources nor monopoly of the world's sci-

entific talent. While I believe we should seek to excel in all scientific disciplines, we must still choose among the multitudes of possible research programs. We must decide which ones to launch, encourage and enhance, and which ones to modify, reevaluate, or redirect in keeping with our national needs and capabilities.

Today, the most pressing of these needs is an adequate and coordinated response to the vicious and destructive terrorist attacks of September 11, a response in which science and technology are already playing an important role. America's scientific and technical communities have signaled their commitment to this urgent national need, and now coordination and evaluations of programs that are being proposed are increasingly important to realize their full potential.

The struggle against terrorism has many fronts, and science and technology pervade them all, from instruments of surveillance that are consistent with our Nation's love of individual freedom, to basic advances in science that feed technologies important for long-term economic strength, and the international collaborations that awaken in other cultures the spirit of objectivity and the quest for truth. The security of our Nation depends upon management of our scientific and technical resources. It is our joint responsibility to ensure that our science and technology portfolio is responsive to Presidential and congressional intent, that our cross-cutting programs are well-coordinated, and that our research and development funds are efficiently used.

Since its inception, the Office of Science and Technology Policy has played an important national role not only in enhancing the connections between fundamental research and their overarching national goals, but also in sustaining and nurturing America's unmatched scientific enterprise. If I am confirmed as the President's Science Advisor, I will seek the counsel and wisdom of the best minds in the science and engineering communities in both the public and private sectors, and provide the most knowledgeable advice to the President for his deliberations and decisions.

I also would hope to organize the office in a way that builds upon the impressive progress made by my distinguished predecessors. As part of the Executive Office of the President, OSTP has the unique position and perspective that enables it to assess the vast sweep of scientific endeavors of our various Federal agencies and Departments.

The complexity of this activity, the diversity of its impacts, and the intensity of its many advocates, mask an underlying machinery of the scientific enterprise whose parts must work in balance to effect the smooth functioning of the whole. Our joint responsibility is to identify the crucial parts, evaluate their effectiveness, and ensure their continuing strength through all the mechanisms available to National Government.

The roots of this governmental role go deep in science. More than any other Nation, we have used science and technology, and science to drive technology wisely to create peace, advance democracy, and provide for the well-being of our citizens. I know these are also President Bush's goals as he seeks to support and encourage diverse scientific research and development in our Nation's univer-

sities, national laboratories, and industries, and I look forward, with your help, to achieving these goals.

The written version of my statement contains more details about specific science and technology areas of current importance, and I will be pleased to answer any questions that you may have.

[The prepared statement of Dr. Marburger follows:]

PREPARED STATEMENT OF DR. JOHN H. MARBURGER III, NOMINEE TO BE DIRECTOR OF THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

It is a great honor and privilege to come before you as President Bush's nominee for Director of the Office of Science and Technology Policy within the Executive Office of the President.

I approach this opportunity and profound responsibility with a mixture of humility and immense pride—humility in the wake of the distinguished American scientists who have gone before me, pride in this nation's unmatched scientific establishment. Science and technology have long provided us with increased security, better health, and greater economic opportunity and will continue to do so for many generations to come.

I believe my professional career over the last three decades—as a Professor of physics and electrical engineering, as a university Dean and President, and as the Director of the Department of Energy's Brookhaven National Laboratory—has provided me with the knowledge and experience to meet the needs and expectations of this office.

Should I be confirmed, I look forward to a close and productive relationship with the Congress and particularly with this Committee, which has long provided bipartisan and enduring support of our world-leading science and engineering enterprise. The counsel and support of Members of Congress is an essential element of continued U.S. leadership across the frontiers of scientific knowledge.

We must make important choices together because we have neither unlimited resources, nor a monopoly of the world's scientific talent. While I believe we should seek to excel in all scientific disciplines, we must still choose among the multitudes of possible research—programs. We must decide which ones to launch, encourage, and enhance and which ones to modify, reevaluate, or redirect in keeping with our national needs and capabilities.

Today the most pressing of these needs is an adequate and coordinated response to the vicious and destructive terrorist attacks on September 11, a response in which science and technology are already playing an important role. The scientific and technical communities have signaled their commitment to this urgent national need, and functions of coordination and evaluation of proposed programs are increasingly important to realize their full potential.

The struggle against terrorism has many fronts, and science and technology pervade them all. From instruments of surveillance that are consistent with our nation's love of individual freedom, to basic advances in science that feed technologies important for long term economic strength, and the international collaborations that awaken in other cultures the spirit of objectivity and the quest for truth, the security of our Nation depends upon thoughtful management of our scientific and technical resources.

It is our joint responsibility to ensure that our science and technology portfolio is responsive to Presidential and Congressional intent, that our cross-cutting programs are well-coordinated, and that our research and development (R&D) funds are efficiently used.

Since its inception, the Office of Science and Technology Policy (OSTP) has played an important national role not only in enhancing the connections between fundamental research and our overarching national goals, but also in sustaining and nurturing America's unmatched scientific enterprise.

If confirmed as the President's science advisor, I will seek the counsel and wisdom of the best minds in the science and engineering community in both the public and private sectors and provide the most knowledgeable advice directly to the President for his deliberations and decisions. I also would hope to organize the office in a way that builds upon the impressive progress made by my distinguished predecessors.

As part of the Executive Office of the President, OSTP has a unique position and perspective that enables us to assess the vast sweep of scientific endeavors of our various Federal agencies and departments. The complexity of this activity, the diversity of its impacts, and the intensity of its many advocates mask an underlying machinery of the scientific enterprise whose parts must work in balance to effect the smooth functioning of the whole. Our joint responsibility is to identify the cru-

cial parts, evaluate their effectiveness, and ensure their continuing strength through all the mechanisms available to national government.

The roots of this governmental role in science go deep. More than any other nation, we have used science and technology wisely to create peace, advance democracy, and provide for the well being of our citizens. I know these are also President Bush's goals as he seeks to support and encourage diverse scientific research and development in our nation's universities, national laboratories, and industries.

Economists tell us that fully half of our economic growth'in the last half-century has come from technological innovation and the science that supported it. It is no accident that our country's most productive and competitive industries are those that benefited from sustained Federal investments in R&D—computers and communications, semiconductors, biotechnology, aerospace, environmental technologies, energy efficiency.

The Federal role is crucial. Economists estimate that rates of return on private sector R&D spending average about 30 percent. But societal rates of return on public R&D investments—the economic benefits that accrue to our entire society—are twice as large. As much as half the return on a particular firm's R&D investment goes to other companies and competitors—not to the investing company. This "spillover" effect means that private industry cannot and will not commit the level of resources to R&D that is best for society.

From satellites to software to superconductivity, the Federal Government has supported—and must continue to support—exploratory research, experimentation, and innovation that would be impossible for individual companies or even whole industries to afford. These partnerships in pursuit of innovation enable the private sector to generate new knowledge and develop novel technologies that ultimately lead to commercial success, increased jobs, and healthier and more productive lives for all Americans.

Balance in this broad research portfolio recognizes that advances in one field, such as medicine, are often dependent on gains in other disciplines. Diversified investments across the full spectrum maximize our returns, both financial and technical.

Medical diagnosis, treatment and research are continuously transformed by new methods and insights derived from fields as seemingly disconnected from health as physics, chemistry, engineering, computing, and mathematics. In the years ahead, networked supercomputers, linked with the life sciences, that operate at speeds of over one thousand trillion operations per second will have implications as profound as the industrial revolution's spread of technology.

Two immense forces have emerged in recent decades to transform the way all science is performed, just as they have altered the conditions of our daily lives: access to powerful computing, and the technology of instrumentation which provides inexpensive means of sensing and analyzing our environment. These have opened entirely new horizons in every field of science from particle physics to medicine. Nanotechnology, for example—the ability to manipulate matter at the atomic and molecular level—and molecular medicine—the ability to tailor life essential substances atom by atom—both owe their capabilities to advances in computing and instrumentation.

These forces are influencing ourapproach to each of the grand challenges we face in the national missions of security, environmental protection, healthcare, and education:

National Security. Many factors have changed the face of war over the past decade. And our expectations about terrorist attacks on U.S. soil have been dramatically altered since September 11. Science and technology can help the country through innovations in detection technology, newly developed vaccines, and advances in weaponry for our warfighters. Defense technologies today depend increasingly on the commercial sector, not only to make cutting edge technologies available, but also to reduce the cost of defense procurements. For the last half century, possession of superior technology has been the cornerstone of our military preparedness. Such a strategy requires a sustained investment in science and technology to enable us to succeed in high priority missions, to minimize casualties, and to mobilize all of our military services in coordinated action. New technologies are necessary to strengthen our efforts in counterproliferation, counterterrorism, peacekeeping, and the stewardship of a safe and reliable nuclear weapons stockpile.

Environment. Creating new scientific knowledge and technology to help us avoid environmental damage and its consequences is one of the great challenges facing our research enterprise. Recent advances in environmental science and technology hold enormous promise for the creation of a sustainable future in which our environmental health, our economic prosperity, and our quality of life are mutually reinforcing. At the same time, our growing knowledge has revealed vast gaps in our un-

derstanding of many environmental issues, particularly the human influence on the global climate. In the next 30 years, our population will grow by 60 million people, almost 40,000 individuals per week. During that same time, our economy is expected to double. Given such trends, we must develop a new generation of technologies that can supply the goods and services our society needs with less energy, fewer materials, and far less environmental damage.

Health Care. Medical advances have lengthened our average life expectancy more than 60 percent beyond what it was nearly a century ago. Scientific and technological breakthroughs are providing new approaches to solving many of the longstanding mysteries of life and its damaging diseases. Genetic medicine offers us the greatest hope, but the ethical, legal, and social implications of human genome research must also be addressed in parallel with the scientific exploration and in a manner that encourages maximum public involvement. The public sector has a dual role—to facilitate the advances and to protect the interests of the public, and in both ways serve as an advocate of the public good. Our newest technologies must always incorporate our oldest and most cherished human values. We will need to reassess our public investments and adjust our science and technology portfolio to reflect the new realities.

Education. Our children carry our hopes for the future, and preparing them for the twenty-first century is one of our most important national priorities. More than half of our basic research support has a dual benefit in that it is invested in our universities where, in addition to generating new knowledge, new talent is being trained for the future. In grades K–12, new research can determine which educational technologies actually work and how they can be improved. The degree to which our Nation flourishes in the twenty-first century will rest upon our success in developing a well-educated citizenry and workforce able to embrace the rapid pace of technological change. Quality of education and equality of educational opportunity are central to our political future. Yet as we work to develop the finest scientific and engineering workforce, we must also address its composition. Achieving diversity throughout the ranks presents a formidable challenge; women and minorities are grossly underrepresented in science and technology even though we are becoming a more diverse society. If our scientific workforce is to truly reflect the face of America, we must draw upon our full talent pool.

These scientific and technological challenges along with so many others that' we face in the years ahead are enormous—but so are the combined strengths and resources of the American people. If we sustain our investments in basic research, we can ensure that the United States remains at the forefront of scientific capability, thereby enhancing our ability to shape and improve the world's future.

I am grateful for the opportunity to serve this Administration and my nation. I recognize the responsibilities and challenges of this high office as Congress has prescribed them, and I resolve to work as hard as I can to strengthen our scientific enterprise to help our country reach its full potential.

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

A. Biographical Information

1. Name: Arden L. Bement, Jr.
2. Position to which nominated: Director, National Institute of Standards and Technology, Department of Commerce.
3. Date of nomination: N/A.
4. Address: Not released to the public.
5. Date and place of birth: May 22, 1932, Pittsburgh, Pennsylvania.
6. Marital status: Married to Louise C. (nee: Capestrain) Bement.
7. Names and ages of children: Kristine Marie Clayton (DOB: 6/15/53) 48 years old; Kenneth James Bement (DOB: 10/2/54) 46 years old; Vincent Lloyd Bement (DOB: 9/4/56) 45 years old; Cynthia Ann Smart (DOB: 3/19/58) 43 years old; Mark Francis Bement (DOB: 9/17/59) 42 years old; David Alan Bement (DOB: 5/7/61) 40 years old; Paul Andre Bement (DOB: 8/19/63) 38 years old; Mary Loretta Swope (DOB: 2/1/65) 36 years old; Kim Kellogg Smiley (DOB: 9/24/49) 52 years old; Robert Kevin Smiley (DOB: 5/18/54) 47 years old; and Susanne Courtland Smiley (DOB: 2/27/59) 42 years old.
8. Education: Washington Junior High School, New Castle, PA, 1944–1947, Diploma May 1947; New Castle High School, New Castle, PA, 1947–1949, Diploma May 1949; Colorado School of Mines, Golden, CO 1950–1954, E. Met. May 1954; University of Idaho, Moscow, ID, 1956–1959, M.S., May 1959; University of Michigan, Ann Arbor, MI, 1959–1963, Ph.D., May 1963.

9. Employment Record: 1954–1955 Research Metallurgist, Fuels Development Operation, Hanford Laboratory, Hanford Atomic Products Operation, General Electric Company, Richland, WA.; Responsible for nuclear reactor fuel characterization and process design for the Hanford production reactors.

1955–1957 Reactor Project Engineer, Hanford Irradiation Processing Department, Hanford Atomic Products Operation, General Electric Company, Richland, WA.; Responsible for the successful design, installation, and acceptance testing of reactor process instrumentation and process water chemical addition facilities.

1957–1965 Senior Research Fellow, Metallurgy Research Operation, Hanford Laboratories, Hanford Atomic Products Operation, General Electric Company, Richland, WA.; Responsible for basic investigations on the effects of nuclear radiation on the fundamental properties of reactor fuels and reactor structural materials.

1965–1968 Manager, Metallurgy Research Department, Battelle Northwest Laboratories, Richland, WA.; Responsible for direction of the research and development activities of approximately 50 scientists, engineers and technicians in programs in metallurgy research and the effects of irradiation on the mechanical and physical properties of nuclear reactor fuels and structural materials. Coordinated the national USAEC program in Irradiation Effects in Reactor Structural Materials involving ten participating laboratories. Member of the U.S. Libby-Cockcroft Exchange on the Effects of Irradiation on Structural Materials and the USAEC Heavy Section Steel Technology Program.

1968–1970 Manager, Fuels and Materials Department, Battelle Northwest Laboratories, Richland, WA.; Responsible for direction of the research and development activities of approximately 100 scientists, engineers and technicians in programs in metallurgical research, nuclear structural materials, defense weapons technologies, biomaterials, manufacturing technology, isotope power sources, and the design, fabrication, and irradiation testing of advanced nuclear fuel elements. Member of USAEC international technology exchange programs with the U.K., Canada, Japan, Sweden, Denmark, and Norway.

1970–1976 Professor of Nuclear Materials, Massachusetts Institute of Technology, Cambridge, MA.; Developed academic and research programs in support of advanced energy conversion technologies, fuel management and physical metallurgy. Supervised research programs in in-situ radiation creep, proton scattering in solids, materials development for magnetohydrodynamic (MHD) power systems, nuclear fusion and fission reactor materials, and reactor safety. Served as a member of the U.S.-U.S.S.R. Bilaterial Exchange Program in MHD and as principal investigator for the MIT Fusion Technology Program. Was co-director of the MIT Summer Course in Reactor Safety.

1976–1979 Director, Materials Science Office, Defense Advanced Projects Agency, Department of Defense, Arlington, VA.; Responsible for sponsored research programs in structural, optical and electronic materials for advanced defense systems. Supervised five project managers in major programs in advanced materials, fiber-optic sensors, compound semiconductors, very-large-scale integrated circuits, laser optics, and advanced armor and anti-armor materials.

1979–1980 Deputy Under Secretary of Defense for Research and Engineering, Department of Defense, The Pentagon, Washington, DC; Responsible for overall management of the science and technology programs of the Department of Defense to include the OSD program offices for directed-energy weapons and very-high-speed integrated circuits (VHSIC). Was also responsible for related activities, such as the Manufacturing Technology Program and the monitoring of Defense Federal Contract Research Centers, the Independent Research and Development Program, and the Small Business Innovation Research (SBIR) Program. These programs had an aggregate budget of more than three billion dollars. Served as DOD Principal on the OSTP Federal Coordinating Council on Science, Engineering and Technology and the Committee on International Science, Engineering and Technology. Also, was the principal DOD representative on the Technical Cooperation Program (TTCP), the Synthetic Fuels Task Force, and the NATO Defense Research Group.

1980–1988 Vice President for Technical Resources, TRW Inc., Cleveland, OH; Responsible for identifying and evaluating emerging technologies and for recommending product, material, and process development projects. Responsibilities included the development of special relationships with selected universities and the recruiting of key individuals in new technologies of interest to TRW.

1988–1992 Vice President for Science and Technology, TRW Inc., Cleveland, OH.; Responsible for leading company wide programs in the acquisition and use of advanced technologies of high leverage for TRW businesses. Responsibilities included strategic technology planning, technology resource sharing, international technology alliances, university programs, technical consulting with business units, the company's purchasing function, information technology function, and environmental con-

trol and quality functions. Supported CEO leadership in the implementation of the Malcolm Baldridge National Quality Award criteria.

1992–1988 Basil Turner Distinguished Professor of Engineering, School of Materials Engineering and School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN.; Responsible for academic and research programs in high temperature superconductors and ferroelectric materials. Also, directed the Midwest Superconductivity Consortium of the USDOE, involving the collaborative research activities of six major Midwest research universities, to include R&D partnerships with sixteen participating companies and federal laboratories.

1988 David A. Ross, Distinguished Professor of Nuclear Engineering and Head, School of Nuclear Engineering, Purdue University, West Lafayette, IN.; Responsible for a department of ten faculty members, sixteen technical and administrative staff members, and over one hundred undergraduate and graduate students. The School conducts over six million dollars of research in two-phase flow, reactor safety, nuclear reactor simulation, nuclear medicine, complex adaptive systems, and direct energy conversion. Sponsors include DOE, NRC, US Navy, NASA, NSF, and industry.

10. Government Experience: 1968–1970 Councilman, City of Richland, WA.

1966–1969 Technical Coordinator, Irradiation Effects to Reactor Structural Materials Program, Division of Reactor Development and Technology, USAEC.

1967–1970 Member, Program Review Committee, Heavy Section Steel Technology Program, USAEC.

1968–1970 Member, Working Group on Fast Reactor Cladding, USAEC.

1970–1973 Member, Radiation Effects Subcommittee, Technology Committee, Division for Controlled Thermonuclear Reactors, USAEC.

1970–1976 Consultant, Advisory Committee for Reactor Safeguards, U.S. Nuclear Regulatory Commission.

1972–1973 Technical Coordinator, MHD Materials Program, Office of Coal Research, USDOI.

1980–1986 Member, Advisory Panel to the Congressional Task Force on Technology Policy, Congressmen McKay and Packard, Co-chairmen.

1980 Member, Study Committee for the Energy Research Advisory Board, USDOE and the Office of Technology Assessment on the Mission of Weapons Laboratories.

1980–1986 Member and Chairman, NIST Statutory Visiting Committee, USDOC.

1980–1986 Consultant, Defense Science Board, USDOD

1989–1995 Member, National Science Board, National Science Foundation (served on the Program, Polar Research, Inspector General and Science and Engineering Indicators (chaired) Committees).

1992–1998 Member, Technology and Commercialization Advisory Committee, NASA.

1995–1998 Member, Space Station Utilization Advisory Subcommittee, NASA.

1998–1991 Member, Board of Overseers, Malcolm Baldridge National Quality Award Program, USDOC.

1996 Chairman, NSF Workshop on the Urban Infrastructure.

1994–1995 Member, Board of Assessment, State of Texas Research Fund.

1996–1997 Member, Board of Assessment, State of Ohio Instrumentation Program.

1996 Member, Advisory Committee for the Organization of the Air Force Laboratory, USAF.

1997–2001 Member, Visiting Committee for the Directorate for Social, Behavioral and Economic Sciences, NSF.

1998–2001 Member and Chair, State of Nebraska Research Program Review Committee, University of Nebraska (1998–2001).

1999–2001 Member and Chairman, Advanced Technology Advisory Committee, NIST, USDOC.

11. Business relationships: *Corporate Directorships.* Director, Keithley Instruments, Inc., Solon Ohio (1984–2001), Membership on Audit, Strategy, and Compensation Committees; Director, Lord Corporation, Cary NC (1987–2001), Membership on Strategy, Human Relations, and Compensation Committees.

Consulting Positions: Industry. Battelle Memorial Institute (1970–1976), The Materials Property Council (1970–1983), Wah Chang Albany Corporation (1970–1973), Atomic Power Development Associates (1970), Babcock and Wilcox (1972), United Technologies Corporation (1980–1988), TRW (1990–1997), Lockheed Martin: Idaho Engineering and Environmental Laboratory (1999–2001), Member, Science Advisory Committee, Al Ware, Cleveland, Ohio (1984–1987), Chair, Exploratory Research Advisory Committee, Electric Power Research Institute (1990–1995), Member, Nuclear Operating Committee, Commonwealth Edison Co. (1994–1998), Member, Advisory Committee for Strategic R&D, Electric Power Research Institute (1995), Member, Science Advisory Committee, Oryx Technologies, Fremont CA (1990–1998), Member,

Science Advisory Committee, Midwest Superconductivity, Inc., Lawrence KA (1996–1998), Member, Science and Technology Advisory Committee, Howmet International Corporation (1999–2001).

Consulting/Advisory Positions: National Laboratories. Member, Visiting Committee, Materials Science Division, Argonne National Laboratory (1970–1973); Member and Chair, Visiting Committee, Metallurgy and Ceramics Division, Oak Ridge National Laboratory (1972–1975); Member, Visiting Committee, Materials Technology Division, Lawrence Livermore National Laboratory (1974–1975); Member and Chair, Visiting Committee for the Materials Science and Technology Division, Los Alamos Scientific Laboratory (1996–1999); Member, Visiting Committee for the Chemical Technology Committee, Argonne National Laboratory (1998–2001); Member, Board of Overseers, Fermi National Accelerator Laboratory, University Research Association, Inc. (1999–2001) Membership on Administration and Audit Committees of the Board.

Consulting Advisory Positions: Universities. Chair, Science Advisory Committee, Howard University (1981–1984); Chair, Advisory Committee for the School of Engineering, Cleveland State University (1982–1986); Member, National Advisory Committee to the School of Engineering, The University of Michigan (1980–1986); Member, Advisory Committee to the School of Engineering, The Ohio Sate University (1980–1984); Member, Visiting Committees to the School of Engineering, MIT:

- Department of Aeronautics and Aerospace Engineering (1989–1992)
- Department of Materials Science and Engineering (1992–1995)
- Department of Mechanical Engineering (1995–1998);

Member, Visiting Committee, Department of Nuclear Engineering, University of Wisconsin (1992–1995); Member, Advisory Committee for Engineering Center of Design, Carnegie Mellon University (1982–1984); Member, Advisory Committee, Case Institute of Technology, CWRU (19801985); Member, Steering Committee, Center for Integrated Design and Manufacturing, Purdue University (1981–1986); Member, Board of Visitors, Software Engineering Institute, Carnegie Mellon University (1983–1991); Member, Advisory Committee, University Technologies, Inc., Case Western Reserve University (1990–1992); Member, Advisory Committee for the Establishment of a College of Engineering, Rowan College of New Jersey (1993–1994); Member, Advisory Committee, School of Engineering, University of California at Berkeley (1992–98); Member, Advisory Committee for the Executive Course on Technology Policy, George Mason University (1994); Chair, Assessment Committee for the Institute for Advanced Technology, University of Texas, Austin (1996); Member, Assessment Committee for the Center for Electromechanics, University of Texas, Austin (1996); Member, Visiting Committee, Center for Risk Management, University of Virginia (1997–98); Member, Program Review Committee, Nuclear Engineering Program, University of Missouri, (1999); Member, Program Review Committee, Department of Materials Science and Engineering, The University of Michigan (2000); Member, Visiting Committee, Department of Materials Science and Engineering, Northwestern University (1999–2001).

12. Membership: *National Research Council.* Member and Chairman, National Materials Advisory Board (1982–1986); Chairman, Commission for Engineering and Technical Systems (1986–1992); Member, Board on Science and Technology for International Development (1983–1984); Member, Board on Army Science and Technology (1984–1986); Member, Engineering Research Board (1984–1986); Member, Advisory Committee on Advances in Materials Research and Development (1985–1987); Co–Chairman, Steering Committee for Materials Science and Engineering Field Study (1985–1989); Member, Committee on Space Policy (1987–1988); Member, NRC Finance Advisory Committee (1987–1988); Member, Committee on Key Issues in the Future Design and Implementation of U.S. National Security Export Controls (1989–1991); Member, NAS–Japan Study Committee for the Promotion of Science (1991); Member, Committee on International Intellectual Property Rights in Science and Technology (1991–1993); Member, NRC Board of Assessment of NBS Programs (1976–1980); Member, Committee on Materials for the 21st Century (1991–1992); Member, U.S. National Committee on Theoretical and Applied Mechanics (1989–1992); Chairman, Workshop on Research Progress Measurement and Management Decision Making (1992); Member, Corporate Council for Mathematics and Science Education Executive Committee (1992–1993); Chair, Project Guidance Group on Careers in Science and Engineering, Committee on Science, Engineering and Public Policy (1995–1996); Member, Board on Air Force Science and Technology (1996); Chair, Panel on International Benchmarking of U.S. Materials Science and Engineering Research (1997–98); Chair, Transportation Research Board Committee for the Review of the National Automated Highway System Consortium (1997–98); Member, Report Review Committee (1998–2001); Member, Committee on Integration of Commercial and Military Manufacturing in 2010 and Beyond (2001).

Community Service. Councilman, City of Richland WA (1968–1970); Founder and Commissioner, Benton-Franklin Regional Arts Commission, Benton and Franklin Counties, WA (1969–1970); Chairman, Boards of Public Health, Mental Health and Mental Retardation, Benton and Franklin Counties, WA (1969–1970); Member, Board for Community Action, U.S. Office of Economic Opportunity, Benton and Franklin Counties, WA (1969–1970); President, Allied Arts Council for the Mid-Columbia Region, Richland, WA (1968–1970); Member, Board of Trustees, Cleveland Opera Company (1980–1992); Member, Board of Trustees and Chair, Architectural Committee, Great Lakes Science Museum (1990–1992); Member, Steering Committee for Adventure Place, Akron, Ohio (1990–1992); Member, Board of Trustees, Society for the Prevention of Violence, Cleveland, OH (1988–1992); Member, Steering Committee, Cleveland Advanced Manufacturing Program (1986–1992); Member, Lafayette Symphony Orchestra Board of Trustees, (1999–2001).

International Activities. Member, U.S.-U.K. Libby Cockcroft Exchange on Irradiation Effects to Reactor Structural Materials (1966–1969); Member, U.S.-Japan Exchange on Radiation Effects in Metals and Structural Materials (1968–1971); Member, U.S.-Scandinavian Exchange of Radiation Effects on Reactor Structural Materials (1968); Lecturer, Summer School on Radiation Effects in Matter, Romanian Institute for Atomic Physics (1971); Lecturer and Technical Advisor, Instituto Nacional de Energia Nuclear, Mexico (1971–1975); Technical Advisor, National Research Council, Taiwan (1973–1975); Member, U.S.-U.S.S.R. Bilateral Exchange on Magnetohydrodynamics (1973–1975); Member, USAID Mission to Thailand under the U.S.-Thailand Scientific Agreement (1983); Member, Special Committee to Assess Graduate Engineering Programs at the National University of Mexico (UNAM) (1996).

13. Political affiliations and activities: (a). List all offices with a political party which you have held or any public office for which you have been a candidate. Councilman, City of Richland, WA (1968–1970): filled an unexpired term by vote of the council and was reelected unopposed. (b). List all memberships and offices held and services rendered to all political parties or election committees during the last 10 years. None. (c). Itemize all political contributions to any individual, campaign organization, political, political action committee, or similar entity of $500 or more for the past 10 years. Life membership in the National Republican Committee, $750.00 in July 2001.

14. Honors and awards: *Professional Society Fellowships.* American Society of Chemists (1969), American Nuclear Society (1973), and ASM International (1978).

Leadership and Career Awards. Engineers Citation Award, University of California at Los Angeles (1985); Rackham Hall of Fame, The University of Michigan (1986); Doctorate Honorious Causa (Engineering), Cleveland Sate University (1989); Melville F. Coolbaugh Memorial Award, Colorado School of Mines (1991); Alumni Hall of Fame, University of Idaho (1991); Outstanding Alumnus Award, The University of Michigan Club of Cleveland (1992); Alumni Society Merit Award, College of Engineering, The University of Michigan (1993); National Materials Advancement Award, Federation of Materials Societies (1997); Distinguished Life Membership, ASM International (1998); Honorary Membership, American Ceramics Society (1999).

Awards of Appreciation. U.S. Air Force Laboratories (1980); U.S. Department of Defense (1980); U.S. Department of Defense, for Outstanding Contributions to the Defense Equal Opportunity Program (1981); Federation of Materials Societies (1984); Cleveland State University (1985); National Institute for Standards and Technology (1991); Department of Commerce (1992); National Research Council (1992); Electric Power Research Institute (1993); Department of Commerce (1993–1996).

Performance Awards and Medals. Outstanding Performance Award, Defense Advanced Research Projects Agency (1977); Distinguished Federal Executive Award (1980); Distinguished Civilian Service Medal, U.S. Department of Defense (1980); Outstanding Service Award, Department of Commerce (1995).

Lectureships and Commencement and Keynote Addresses. Keynote Speaker, Cleary Scientific and Schwartz Engineering Awards Banquet, U.S. Air Force Materials Laboratory (1980); Commencement Speaker, Gonzaga University (1984); Distinguished Lectureship in Materials and Society, ASM and AIME (1986); Regents Professorship, University of California at Los Angeles (1987); McBride Global Currents Lecturer, Case Western Reserve University (1987); Comencement Speaker, Cleveland State University (1987); Commencement Speaker, University of Idaho (1991).

Biographical Listings. American Men and Women of Science; Marquis Who's Who: In the World, In America, In the Midwest, In Science; Federal Staff Directory (1976–1982); Strathmore's Who's Who (1998–1999)

15. Published writings. *Books:* A.R. Rosenfield, G.T. Hahn, A.L. Bement, Jr. and R.I. Jaffee, Dislocation Dynamics, McGraw Hill Book Company, NY (1968); and D.G. Franklin, G.E. Lucas and A.L. Bement, Jr., Creep of Zirconium Alloys in Nuclear Reactors, ASTM Spec. Tech. Pub]. 815, (1983).

Monographs. A.L. Bement, Jr., "Void Formation in Irradiated Austenitic Stainless Steels," *Advances in Nucl. Sci. & Eng.,* 7, Academic Press, New York (1973).

Book Contributions. A.L. Bement, Jr. and J.E. Irvin, "Automatic Processing of Mechanical Properties Data," *Computer Applications in Metallurgical Engineering,* American Society for Metals, Metals Park, Ohio (1964); R.A. Oriani and A.L. Bement, Jr., "Interstitial Phases and Solutions," *Phase Stability in Metals and Alloys,* McGraw-Hill, New York (1967); F.A. Smidt, Jr. and A.L. Bement, Jr. "Thermally Activated Dislocation Motion and its Application to the Study of Radiation Damage," *Dislocation Dynamics,* McGraw-Hill, New York (1968); A.L. Bement, Jr., F.A. Smidt, Jr. and R.G. Hoagland, "Fracture Mechanisms and Radiation Effects," *Engineering Fundamentals and Environmental Effects,* Vol. III, *Fracture, An Advanced Treatise,* edited by H. Liebowitz, Academic Press, New York (1969); A.L. Bement, Jr., "Biomaterials", *Encyclopedia of Chemistry,* Third Edition, C.A. Hampel and G.G. Hawley, eds., Van Nostrand Reinhold Co., New York (1973); A.L. Bement, Jr. and E.C. Van Reuth, "Quo Vadis—RSR," *Rapid Solidification Processing, Principles and Technologies—II,* Claitor's Publishing Division, Baton Rouge, LA(1980).

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1994). (14). A. L. Bement, Jr., "On the Midwest Superconductivity Consortium," Testimony before the Energy and Water Development Subcommittee on Appropriations, U.S. House of Representatives (March 28, 1995). (15). A. L. Bement, Jr., "On H.R. 1756, the Department of Commerce Dismantling Act," Testimony submitted for record to the Committee on Science, U.S. House of Representatives (September 12, 1995). (16). A. L. Bement, Jr., "On the Midwest Superconductivity Consortium," Testimony before the Energy and Water Development Subcommittee on Appropriations, U.S. House of Representatives (February 29, 1996). (17). A. L. Bement, Jr., "On the Midwest Superconductivity Consortium," Testimony before the Energy and Water Development Subcommittee on Appropriations, U.S. House of Representatives (March 31, 1997).

16. Speeches: Provide the committee with two copies of any formal speeches you have delivered during the last 5 years which you have copies of on topics relevant to the position for which you have been nominated.

"Guidelines for Innovation: The Role of Research and Development Policy," presented at the *Workshop on Germany and the United States—Partners in Science and Technology,* Konrad Adenauer Foundation, Berlin, July 17, 2000.

"One Hundred years of Excellence and Still Improving . . . A View from the Outside," presented at the NIST Centennial Symposium, Gaithersburg, Maryland, March 5, 2001.

17. Selection: (a) Do you know why you were chosen for this nomination by the President? I believe it was because of my performance record in technology and research leadership positions with government, industry and academia and my extensive networking with high-ranking leaders in all three sectors. (b) What do you believe in your background or employment experience affirmatively qualifies you for this particular appointment? I believe that my experience in research and leadership positions in industry, government, and academia along with my long-term service to the scientific and engineering communities at large qualify me for this position.

B. Future Employment Relationships

1. Will you sever all connections with your present employers, business firms, business associations or business organizations if you are confirmed by the Senate? Yes.

2. Do you have any plans, commitments or agreements to pursue outside employment, with or without compensation, during your service with the government? If so, explain. No.

3. Do you have any plans, commitments or agreements after completing government service to resume employment, affiliation or practice with your previous employer, business form, association or organization? No.

4. Has anybody made a commitment to employ your services in any capacity after you. leave government service? No.

5. If confirmed, do you expect to serve out your full term or until the next Presidential election, whichever is applicable? Yes.

C. Potential Conflicts of Interest

1. Describe *all* financial arrangements, deferred compensation agreements, and other continuing dealings with business associates, clients or customers.

- Deferred board fee compensation, Keithley Instruments, Inc.
- Consulting agreement, Howmet Research Company

2. Indicate any investments, obligations, liabilities, or other relationships which could involve potential conflicts of interest in the position to which you have been nominated.

- Stock ownership in street name with: Keithley Instruments, Inc.; Lord Corporation; Sprint PCS; Sprint FON; Alltel, and Oryx Technologies.
- Stock options with Keithley Instruments, Inc.
- Stock loans with Lord Corporation.
- Loan from Raymond James & Assoc. Financial Services (Regulation T margin loan secured by Keithley Instruments, Inc. stock).

3. Describe any business relationship, dealing, or financial transaction which you have had during the last 10 years, whether for yourself, on behalf of a client, or acting as an agent, that could in any way constitute or result in a possible conflict of interest in the position to which you have been nominated. None.

4. Describe any activity during the past 10 years in which you have engaged for the purpose of directly or indirectly influencing the passage, defeat or modification of any legislation or affecting the administration and execution of law or public policy. None.

5. Explain how you will resolve any potential conflict of interest, including any that may be disclosed by your response to the above items. (Please provide a copy of any trust or other agreements.) I will consult with ethics officials and take any actions required by my ethics agreement or advised by legal counsel.

6. Do you agree to have written opinions provided to the Committee by the designated agency ethics officer of the agency to which you are nominated and by the Office of Government Ethics concerning potential conflicts of interest or ant impediments to your serving in this position? Yes.

D. LEGAL MATTERS

1. Have you ever been disciplined or cited for a breach of ethics for unprofessional conduct by, or been the subject of a complaint to any court, administrative agency, professional association, disciplinary committee, or any other professional group? If so, provide details. No.

2. Have you ever been investigated, arrested, charged or held by any Federal, State, or other law enforcement authority for violation of any Federal, State, county, or municipal law, regulation or ordinance, other than a minor traffic offense? If so, provide details. No.

3. Have you any business of which you are or were an officer ever been involved as a party in interest in an administrative agency proceeding or civil litigation? If so, provide details? No.

4. Have you ever been convicted (including pleas or *nolo contendere*) of any criminal violation other than a minor traffic offense? No.

5. Please advise the Committee of any additional information, favorable or unfavorable, which you feel should be considered in connection with your nomination. I believe I have led my life respecting the law.

E. RELATIONSHIP WITH COMMITTEE

1. Will you ensure that your department/agency complies with deadlines set by congressional committees for information? Yes.

2. Will you ensure that your department/agency does whatever it can to protect congressional witnesses and whistle blowers from reprisal for their testimony and disclosures? Yes.

3. Will you cooperate in providing the committee with requested witnesses, to include technical experts and career employees with firsthand knowledge of matters of interest to the committee? Yes.

4. Please explain how you will review regulations issued by your department/agency, and work closely with Congress, to ensure that such regulations comply with the spirit of the law passed by Congress. It is my understanding that NIST seeks legal counsel relative to federal from the Department of Commerce and Congressional staff members to understand the intent and spirit of laws passed by the Congress. I will establish a policy of meeting frequently with appropriate Congressional staff members to obtain interpretations of the law as they apply to Department regulations.

5. Describe your department/agency's current mission, major programs, and major operational objectives. The mission of the National Institute of Standards and Technology is to develop and promote measurements and standards and advanced technologies that enhance productivity and quality, facilitate trade, and contribute to the economic well being of the nation.

The major programs and operational objectives at NIST are the following:

• Provide U.S. private and public sectors with measurements, standards, and information services that increase competitiveness and facilitate trade.

• Conduct long-term research in measurement science and develop and promulgate standards and standard reference data for electronics and electricity, chemical science and technology, and materials science and engineering.

• Demonstrate evaluation techniques, testing methods and standards to enable U.S. industry to use interoperable products for information technology.

• Develop interfaces, recommended practices, and associated technology to the manufacturing industries.

• Provide laboratory assistance in the increased usefulness, safety and economy of buildings and the prediction, prevention, measurement, and control of fires.

• Provide assistance to industry and to other public benefit organizations in the development of technology and procedures to improve U.S. quality and competitiveness through the *National Quality Program.*

• Work with the Secretary, Deputy Secretary and Under Secretary for Technology to make the *Advanced Technology Program* stronger and more sustainable.

• Develop as a joint venture with State and local governments technical assistance with smaller U.S. manufacturers to strengthen their global competitiveness through the *Manufacturing Extension Program*.

6. Are you willing to appear and testify before any duly constituted committee of the Congress on such occasions as you maybe reasonably requested to do so? Yes.

F. GENERAL QUALIFICATIONS AND VIEWS

1. How have your previous professional experience and education qualified you for the position for which you have been nominated? I believe the following factors are salient:

• Senior R&D and technology leadership positions in industry, academia, and government.

• Business experience in directing high-technology companies.

• Experience in technology policy development and execution in the Department of Defense, Department of Commerce, NASA, and the Congress.

• A record of research achievements leading to membership in the National Academy of Engineering and membership on the National Science Board.

• Extensive advisory committee experience with NIST to include the statutory Visiting Committee for Advanced Technology (chair), the Board of Overseers for the Malcolm Baldrige National Quality Award Program, and the Advanced Technology Program Advisory Committee (chair).

• Research contributions in the field of materials science and engineering.

• A breadth of exposure to emerging technology developments and basic research at national laboratories, universities and industry leading to an understanding of what constitutes outstanding research and research performance.

2. Why do you wish to serve in the position for which you have been nominated? I am strongly committed to the mission of NIST. I believe that its continued strength in performing its mission is essential for the economic and technological welfare of the nation and the continuing ability of U.S. industry to effectively compete in global markets. It is an institution with a strong research culture, high ethical standards, and a tradition of outstanding accomplishments. I believe it deserves the very best of my effort, experience, and abilities. Finally, I wish to complete my career in public service.

3. What goals have you established for your first two years in this position, if confirmed? The principal goals would be the following:

• Establish strategic planning tools across NIST that would better align NIST's strategic vision and goals with national needs and priorities.

• Provide good stewardship for NIST facilities to achieve optimal utilization.

• Establish a more proactive NIST involvement with international standards developments.

• Work with the Secretary, Deputy Secretary, the Under Secretary for Technology and the Congress to develop a more stable, sustainable Advanced Technology Program

• Continue to build on NIST's traditions and culture to help NIST provide the greatest return to the nation through excellence in science and technology.

• Find more effective means to communicate with industry and government decision makers about the important contributions that NIST makes to industrial and technological developments and the economic well-being of the nation.

4. What skills do you believe you may be lacking which may be necessary to successfully carry out this position? What steps can be taken to obtain these skills? I believe I have strong skills and experience in the key areas needed to provide leadership for NIST, including management of personnel, finances, technical programs, and planning processes. To lead NIST as effectively as possible, I will focus on supplementing my background with the following actions:

• Refreshing my knowledge of federal policies and regulations governing management of personnel, facilities, and finances.

• Becoming familiar with the specific budgeting processes at NIST, the DOC, and the OMB.

• Establishing effective relationships with the Office of the Inspector General and Legal Counsel.

• Improving my understanding of the U.S. voluntary standard setting processes and organizations and of how the U.S. system and international systems interact.

5. Who are the stakeholders in the work of this agency? Direct stakeholders include:

• Industry and academic users of NIST measurements and standards, including purchasers of more than 38,000 NIST standard reference materials annually.

• Industry, academic, and federal R&D organizations which benefit from NIST measurement research through more than 2,000 peerreviewed technical publications annually, and through many other means of disseminating NIST research.

• Industry and academic research projects receiving more ATP cofunding: More than 350 companies participating in more than 170 joint ventures, and including about 140 universities, with a total ATP investment of more than $1.6 billion since the program began about 10 years ago.

• U.S. smaller manufacturers served through more than 400 Manufacturing Extension Partnership centers and offices in all 50 states and Puerto Rico, providing direct business and technical assistance.

• All types of companies and organizations that use the.Baldrige criteria for performance excellence. Different sets of criteria are optimized for business, health care organizations, and educational organizations. More than 2 million copies of the Baldrige criteria have been distributed, and quality programs based on the Baldrige principles are used throughout the U.S. and in many foreign nations.

• Federal agencies with regulatory responsibilities that rely on NIST measurements and standards to fulfill their missions.

• Federal agencies that rely on NIST information processing and information security standards, practices, and guidelines.

• State weights and measures organizations that rely on NIST certification and training to fulfill their regulatory responsibilities for all types of legal measurement needs. Laws governing weights and measures affect more than half the U.S. GDP, or about $5 trillion per year.

• National standards developing organizations that rely on NIST technical expertise and advice to develop voluntary consensus standards driven by the private sector to promote trade and ensure product quality and performance.

• International standards developing organizations that work with NIST and U.S. standards developing organizations.

• U.S. private sector and local government measurement and standards laboratories that are accredited through organizations cooperating with NIST.

A key indirect stakeholder is the general public, which benefits from NIST measurements and standards that enable efficient manufacturing of products and delivery of services, that ensure fair commerce through accurate weights and measures, that underpin provision of quality health care, that increase public safety through structural and fire standards for buildings, and through many other NIST activities too numerous to list here.

6. What is the proper relationship between your position, if confirmed, and the stakeholders identified in question number 5: Among these would be the following:

• Communicate to all stakeholders the impacts and values of NIST programs, services and capabilities to their needs.

• Solicit from stakeholders assessments of the impacts and values of NIST's products and services.

• Involve stakeholders in charting the future vision and objectives of NIST and in identifying strengths, weaknesses, opportunities, and threats.

• Maintain an open stance as a principal point of contact to respond to needs, issues or complaints.

7. The Chief Financial Officers Act requires all government departments and agencies to develop sound financial management practices similar to those practiced in the private sector. (a) What do you believe are your responsibilities, if confirmed, to ensure that your agency has proper management and accounting controls?

• Provide the CFO with the talent and IT resources needed to perform his/her function at the highest possible level of performance.

• Assure that Laboratory managers and unit heads are adequately trained in standard government accounting and financial management and reporting procedures.

• Involve the CFO in all executive committees at NIST and in all strategic planning activities.

• Consider establishing an audit and finance subcommittee of the Visiting Committee for Advanced Technology.

• Assure a seamless relationship between department and NIST finance operations and policy development functions.

• Assure that the Office of the IG has timely access to all requested financial information.

(b) What experience do you have in managing a large organization? I have had responsible management positions with top organizations in indusrry, government and academia, to include General Electric Company, Battelle Memorial Institute, TRW, Inc., Defense Advanced Projects Agency, Office of the Secretary of Defense, MIT, and Purdue University. I have also had long-term corporate directorships with

Keithley Instruments, Inc. and Lord Corporation. In these positions I have had extensive experience in personnel management; financial budgeting and control; strategic planning; R&D management; and technology transfer. Budget authorities have ranged from $3 million to approximately $3 billion (DOD). A brief description of these management assignments is given in section A.9. in this questionnaire.

8. The Government Performance and Results Act requires all government departments and agencies to identify measurable performance goals and to report to Congress on their success in achieving these goals. (a) Please discuss what you believe to be the benefits of identifying performance goals and reporting on your progress in achieving those goals. These requirements establish a basis for managing by objectives and for being accountable for performing against these objectives. They also provide an opportunity to learn the practice of realistic goal setting and forward thinking. (b) What steps should Congress consider taking when an agency fails to achieve its performance goals? Should these steps include the elimination, privatization, downsizing or consolidation of departments and/or programs? The Congress should exercise its oversight authority to determine the root causes for failing to meet performance goals. Possible factors involved may be due to improper organizational structure, management system, or monitoring and control mechanisms, or incompetence. However, failures may also result if the agency is not provided sufficient human and financial resources to meet its performance goals, or if other external factors prevent the goals from being met. The corrective actions described in the question may be appropriate for some cases, but in other cases Congress may provide greater benefit to the nation by addressing external factors that prevent success of the agency. (c) What performance goals do you believe should be applicable to your personal performance, if confirmed? I should be held to the performance goals set by the Secretary, Deputy Secretary and Under Secretary for Technology and as specified by law and by the Congress. I should also be held accountable for accomplishing goals identified in GPRA reports and NIST planning documents. I should be held to the highest ethical standards applicable to anyone serving in the public's trust.

9. Please describe your philosophy of supervisor/employee relationships. Generally, what supervisory model do you follow? Have any employee complaints been brought against you? I have followed the following principles in supervisor/employee relationships:

- Lead by example . . . don't expect what you would not be willing to do.
- Set high standards but empower the individual to achieve his/her highest potential.
- Delegate authority but hold the individual accountable for results.
- Listening can pay premiums in understanding an individual's strengths and weaknesses. Build on the strengths and provide mentoring and training to overcome the weaknesses.
- Celebrate achievements . . . psychic rewards can be as important as tangible rewards.
- Be alert for opportunities that will motivate individuals to exceed their own expectations.
- When setting tough goals be patient . . . individuals often arrive at innovative solutions on their own.

No employee complaints have been brought against me throughout my career.

10. Describe your working relationship, if any, with the Congress.Does your professional experience include working with committees of Congress? If yes, please describe. My working relationships with the Congress have been primarily to give testimony upon request. I have also recently discussed with staff members the 2000 annual report of the Advanced Technology Program Advisory Committee. During the period 1980–1986 I served as a member of the Advisory Panel to the Congressional Task Force on Technology Policy, co-chaired by Congressmen McKay and Packard.

11. Please explain what you believe to be the proper relationship between yourself, if confirmed, and the Inspector General of your department/agency? As a representative of the Congress, the IG is entitled to my full support. My responsibilities would include providing any information requested by the IG in a timely way; providing access to any personnel for fact finding; support any investigations required; and to take actions stipulated by the IG based on such investigations. It would also be my responsibility to assure that all personnel at NIST are informed of the functions and authorities of the IG.

12. Please explain how you would work with this Committee and other stakeholders to ensure that regulations issued by your department/agency comply with the spirit of the laws passed by Congress. I would work closely with the General

Law Division of the Office of the Assistant General Counsel for Administration, Department of Commerce, to assure that such compliance is fulfilled.

13. In the areas under department/agency's jurisdiction, what legislative action(s) should Congress consider as priorities? Please state your personal views.

At this stage of my knowledge of critical needs, I can cite three legislative actions of high priority:

- Spending authority to complete the equipping of the Advanced Measurements Laboratory,
- Changes in the Authorizing Act for the Advanced Technology Program as requested by the Secretary of Commerce,
- Budget authority to enable essential research facilities improvements at the Gaithersburg and Boulder sites.

14. Within your area of control, will you pledge to develop and implement a system that allocates discretionary spending based on national priorities determined in an open fashion on a set of established criteria? If yes, please state what steps you intend to take and a time frame for their implementation. Yes, I pledge to do so. I am aware that criteria are already in place at NIST for the use of director's discretionary funds. I will assess the adequacy of these criteria at my first opportunity and modify them as required with the participation of NIST managers and key personnel. The NIST-wide strategic plan, identified as one of my priority initiatives, will address incentives to encourage cross unit interdisciplinary research initiatives and other such incentives that improve the responsiveness, productivity and quality of NIST activities. A first version of this plan should be developed, ready for vetting with NIST management and employees in fall 2002.

Senator WYDEN. We will have a number of those in a little bit. Mr. Bond, welcome.

STATEMENT OF PHILLIP J. BOND, NOMINEE TO BE UNDER SECRETARY FOR THE TECHNOLOGY ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Mr. BOND. Thank you, Mr. Chairman, Members of the Committee. I, too, have a longer written statement. I will try to be brief in my remarks.

I, of course, am honored and humbled to be here, honored by the kind words from the chair, and the full and flattering introduction from Senator Allen and also the statement by Senator Murray. I am humbled by the confidence placed in me by Secretary Evans, and President Bush to be nominated for the post of Under Secretary for Technology, and of course I am daily humbled byu the support from my wife and children, of whom I am very proud, and I am honored to share the witness table with an accomplished scientist like Dr. Marburger, and I will be sure to pass on your congratulations to the Nobel prize-winners at NIST.

I would like to focus my remarks on my views about this particular post, and a little bit about my qualifications, such as they are, and of course look forward to any questions. First and foremost, I want to underscore my commitment to the notion of public service, and especially national service. I did leave a more financially rewarding post because I came to Washington, like Members of the Committee, to do good, not merely to do well. In the household in which I was raised, public service was a high calling. My father served as vice mayor of our town in California, part-time job, but a full-time commitment.

Second, I am also committed to serving in this particular capacity within technology administration, because I know that Government plays an influential role in the development of new technology and its application to the opportunities and challenges that our Nation faces at this particular time.

I believe and understand that a strong economy and a strong national defense are the twin pillars that support America's freedom, and more than ever, technology is vital to both of these strengths.

Secretary Evans clearly wants Technology Administration to play a key role in advancing U.S. economy through continued technological leadership, as Senator Allen described, and I am proud to be asked to enlist in that cause. Clearly, as referenced by Dr. Marburger, the scientists at NIST and professionals within Technology Administration are doing outstanding and particularly relevant work, so I hope to benefit from working with all of them.

As to experience, Senator Allen was kind and complete enough to mention the three things I bring to this job, background in information technology with both Hewlett-Packard and the Information Technology Industry Council, national security, working in two administrations in the Pentagon, and particularly honored to be the number 2 legislative advisor to then Secretary of Defense Dick Cheney at the end of the earlier Bush administration.

Congressionally, I did serve as chief of staff to two Members, one of whom was in leadership, and so I understand and fully appreciate the crucial role of the legislative branch both in policy and budgetary matters.

Finally, let me say that in light of the incredible challenges facing our Nation and its economy after September 11, I pray that my background is a good fit for these difficult and present times.

Again, thank you, Mr. Chairman, and thanks to the Committee, and I look forward to your questions.

[The prepared statement of Mr. Bond follows:]

PREPARED STATEMENT OF PHILLIP J. BOND, NOMINEE FOR UNDER SECRETARY FOR THE TECHNOLOGY ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Mr. Chairman and Members of the Committee, I am honored to appear before you today as the President's nominee for the position of Under Secretary for Technology. My wife, Diane, and daughters Jacqueline and Jessica are here with me today.

I am deeply grateful to President Bush and Secretary Evans for the confidence they have shown in me, and their willingness to entrust me with a leadership position on issues that are of great and lasting importance to our Nation. I recognize the key role technology will play in our short-term and long-term responses to the despicable acts of September 11, and I am ready and resolute in my commitment to serve the country in this regard as Under Secretary for Technology. I am deeply committed to leading the Technology Administration because I know from experience that government plays an influential role in the development of new technology and its application to the opportunities and challenges our Nation faces.

A strong economy and a strong national defense are the twin pillars supporting America's freedom, our world leadership, standard of living, and quality of life. More than ever before, technology is vital to these U.S. strengths.

Rapid advances in technology, especially in information technology, have driven our country's remarkable economic performance for the past decade. Technological innovation has underpinned our strong economic growth, higher rates of investment, low inflation, high-wage job growth, low unemployment, and solid increases in productivity—the true path for producing higher standards of living. There can be little doubt that our technology producers and technology-intensive industries will lead the way in returning our Nation to a path of robust economic growth.

There is every reason to believe that technology will continue to be a significant force in our economy and in the defense of our Nation in the years ahead. All around us we see the information technology revolution in progress—in national security and homeland defense, in communications, business and commerce, in how we educate and train our people, and in how we manage our personal lives. Biotechnology is poised to revolutionize agriculture and medicine. Cracking the human genetic code will one day bring promising new medicines and therapies to those who hope and pray for them. All this information is increasing exponentially, and com-

bining with advances in computing and the advent of the Internet to give rise to a new era: the Information Age. It is an era of promise. Rapid advances in technology are transforming all of our human endeavors, creating the potential for a host of new global market opportunities, new and powerful ways to secure our nation, improvements in our standard of living, and a better quality of life.

It is no accident that the United States leads the world in high technology, both civilian and defense. Our achievements are the dividends that flow from sustained public and private sector investments in research and development, coupled with America's entrepreneurial spirit and willingness to take risks. Today, the private sector plays the dominant role in the process of developing new technologies and bringing them to market. But the Federal Government plays a pivotal role in creating a climate that supports the private sector's efforts, and in investing in those basic areas of exploratory research and development upon which the private sector builds its own technology base.

I believe the Technology Administration can continue to make vital contributions to our nation's technology base, and our national policies that support private sector technology development, commercialization, and competitiveness.

Compared to our world of commerce for most of the 20th century, today we are operating in a radically different, and rapidly changing, business and technology environment. This era of change has vast implications for our national policies—ranging from R&D investment policies and regulations, to how we educate and train our people. The Technology Administration's Office of Technology Policy (OTP) has strong analytical capabilities, coupled with good working relationships with the private sector, that allows it to delve into the complex competitiveness and technology issues with which all policymakers grapple, and generate fresh insights and new policy paths for the country to explore.

Our National Institute of Standards and Technology is a national jewel. It ensures that we have an up-to-date and world-class system of measurements and standards based upon some of the world's greatest scientific research. These measurements and standards have enabled advances in science, innovation, trade, and the public good. Its work continues to be as relevant as ever as we move to new technological frontiers such as nanotechnology.

As Members of this Committee know, NIST has played a key role in U.S. counterterrorism and critical infrastructure protection. NIST has provided standards for the dose in x-ray security machines and for biometric identification, a promising security technology. NIST research has focused on standards for the detection of chemical and radiological weapons, and new methods of detecting concealed weapons at a distance. It has tested search and rescue robots, and helped in the retrieval of information from damaged and erased flight recorders. If confirmed, I plan to strengthen NIST's role by promoting its cutting edge work within the policy councils of the Administration, and throughout industry.

I believe my skills and experience are well suited to leading the Technology Administration in carrying out its missions. I have a great appreciation for the capabilities of our high-tech industries, a deep understanding of the opportunities and challenges before them, and how public policies affect their ability to grow and compete. As the Director for Federal Public Policy at the Hewlett-Packard Company, and as the Senior Vice President for Government Affairs and Treasurer for the Information Technology Industry Council, I led efforts addressing the growing role of information technology in our economy, market opening initiatives, the protection of the Internet, e-commerce, and intellectual property protection. It was a pleasure working with the Administration and Congressional policymakers to further the understanding of the positive implications of a networked, digital world. This work also afforded me the opportunity to develop strong relationships with some of this nation's best and brightest high-tech companies that are leading the global technology revolution. If confirmed, I will work to strengthen the government's relationship with high-tech industries for the benefit of our economy and security.

If confirmed, I would also bring national security knowledge and experience to the job. For example, among my work at the Defense Department, I was privileged to serve as Principal Deputy Assistant Secretary of Defense for Legislative Affairs for Vice President Cheney when he was Secretary of Defense. In that capacity, I provided policy advice and guidance on a wide range of national security issues. I believe my experience in the national security arena will bring a new and important dimension to the Technology Administration's work at this critical juncture in our nation's history.

Importantly, if confirmed, I will also bring a Capitol Hill perspective to the job. I was privileged to serve as Chief of Staff to both Congresswoman Jennifer Dunn and Congressman Bob McEwen. It is my hope that I will have the opportunity to use the experience I gained in these jobs to build stronger relationships between the

Commerce Department and the Congress in the pursuit of our common goals for the economy, our technology base, and our national security.

Mr. Chairman, it is my firm conviction that the Technology Administration can contribute much to our economic and national security. I have found that its career policy analysts, scientists and engineers, and technical and support professionals are talented, creative, and committed deeply to their mission. If confirmed, it would be an honor to lead this group of dedicated public servants.

Thank you for considering my nomination, and giving me the opportunity to appear before you today. I will be happy to answer questions you may have.

A. BIOGRAPHICAL INFORMATION

1. Name (include any former names or nick names used.): Phillip J. Bond.

2. Position to which nominated: Under Secretary of Commerce for Technology.

3. Date of nomination: September 4, 2001.

4. Address: (List current place of residence and office addresses.) Residence: Not released to public. Office: Department of Commerce, 14th Street NW & Constitution, Washington, DC 20230.

5. Date and place of birth: October 15, 1956; Compton, California.

6. Marital status: (Include maiden name of wife or husband's name.) Married to the former Diane Auth since July 1989.

7. Names and ages of children: (Include stepchildren and children from previous marriages.) Jacqueline Bond, age 9; Jessica, Bond, age 7.

8. Education: (List secondary and higher education institutions, dates attended, degree received and date degree granted.) Petaluma High School, Petaluma, CA; attended 1971–74; high school degree (1974) Linfield College, McMinnville, OR; attended 1974–78; B.A. in Communications (1978).

9. Employment record: (List *all* jobs held since college, including the title or description of job, name of employer, location of work, and dates of employment.) August 1978–January 1979: Account Assistant (Public Relations), The Rockey Company, Portland, OR; January 1979–September 1981: Account Executive (Public Relations), The Rockey Company, Seattle, WA; September 1981–March 1983: Public Relations Manager, Rainier Bancorporation, Seattle, WA; March 1983–September 1985: Assistant to the Chairman, Rainier Bancorporation, Seattle, WA; September 1985–September 1986: Federal Government Relations Manager, Rainier Bancorporation, Seattle, WA; September 1986–April 1987: Assistant to the President (non-profit advocacy), American Security Council, Boston, VA; July 1987–July 1990: Special Assistant to the Assistant Secretary of Defense (Legislative Affairs), Department of Defense, The Pentagon, Washington, DC; July 1990–July 1992: Chief of Staff, U.S. Rep. Bob McEwen, Washington, DC; July 1992–January 1993: Principal Deputy Assistant Secretary of Defense (Legislative Affairs), Department of Defense, The Pentagon, Washington, DC; January 1993–March 1998: Chief of Staff, U.S. Rep. Jennifer Dunn, Washington, DC; March 1998–February 2001: Senior Vice President and Treasurer (trade association executive), Information Technology Industry Council, Washington, DC; February 2001–August 2001: Director of Federal Public Policy, Hewlett-Packard Company, Washington, DC; August 2001–present: Senior Advisor to the Secretary. (consultant), Department of Commerce, Washington, DC.

10. Government experience: (List any advisory, consultative, honorary or other parttime service or positions with Federal, State, or local governments, other than those listed above.)None beyond those listed in .answer to question number nine.

11. Business relationships: (List all positions held as an officer, director, trustee, partner, proprietor, agent, representative, or consultant of any corporation, company, firm, partnership, or other business enterprise, educational or other institution.) I served as director of Federal public policy for the Hewlett-Packard Company of Palo Alto, CA for six months in 2001. I served for three years (1998–2001) as an officer of the Information Technology Industry Council, a Washington, DC-based trade association. I was initially a Vice President, later serving as Senior Vice President and Treasurer of the organization. From May through July of 2000 I served on the board of a filtered ISP based in Minneapolis by the name of Lightdog.com, receiving no compensation of any kind.

12. Memberships: (List all memberships and offices held in professional, fraternal, scholarly, civic, business, charitable and other organizations.) Member, Army-Navy Club of Washington, DC, May–August 2001. Member of the non-fiduciary Board of Associates of the Emmanuel School of Religion of Johnson City, TN. Member of McLean Bible Church, McLean, VA.

13. Political affiliations and activities: (a) List all offices with a political party which you have held or any public office for which you have been a candidate. I was a Republican nominee for the office of State Representative in Washington state's 46th district in 1984. (b). List all memberships and offices held in and services rendered to all political parties or election committees during the last 10 years. I have held no offices in any political campaigns over the past 10 years. (c) Itemize all political contributions to any individual, campaign organization, political party, political action committee, or similar entity of $500 or more for the past 10 years.

Itemized political contributions in excess of $500 over the past 10 years are as follows: 2001: None. 2000: Bush-Cheney 2000 Compliance Committee ($500); National Republican Congressional Committee ($500); Dooley for Congress ($1,250); The Washington Fund (Rep. Dunn) ($500); Lazio 2000 ($500). 1999: Friends of Jennifer Dunn ($500); Abraham Senate 2000 ($500); American Success PAC (Rep. Dreier) ($1,000). 1998: Citizens for Kasich ($500). 1991–1998: None.

14. Honors and awards: (List *all* scholarships, fellowships, honorary degrees, honorary society memberships, military medals and any other special recognitions for outstanding service or achievements.) I was presented an Outstanding Public Service medal by the Secretary of Defense in January of 1993.

15. Published writings: (List the titles, publishers, and dates of books, articles, reports, or other published materials which you have written.) None.

16. Speeches: Provide the Committee with two copies of any formal speeches you have delivered during the last 5 years which you have copies of on topics relevant to the position for which you have been nominated. None which were done from anything beyond notes or for which I have copies.

17. Selection: (a) Do you know why you were chosen for this nomination by the President? I was recommended by the Secretary of Commerce to the White House personnel office based upon my experience working with the leading IT companies. (b) What do you believe in your background or employment experience affirmatively qualifies you for this particular appointment? I have a mix of experience in government and the private sector that the Secretary of Commerce felt were appropriate to the job: legislative and executive experience at senior levels, policy development and Congressional relations on behalf of the IT industry through a major trade association, and more recent selection to head the federal policy efforts of one of the world's premier technology companies.

B. Future Employment Relationships

1. Will you sever all connections with your present employers, business firms, business associations or business organizations if you are confirmed by the Senate? Yes.

2. Do you have any plans, commitments or agreements to pursue outside employment, with or without compensation, during your service with the government? If so, explain. No.

3. Do you have any plans, commitments or agreements after completing government service to resume employment, affiliation or practice with your previous employer, business firm, association or organization? No.

4. Has anybody made a commitment to employ your services in any capacity after you leave government service? No.

5. If confirmed, do you expect to serve out your full term or until the next Presidential election, whichever is applicable? Yes.

C. Potential Conflicts of Interest

1. Describe *all* financial arrangements, deferred compensation agreements, and other continuing dealings with business associates, clients or customers. The only continuing dealings I have are represented by continued participation in two 401 (k) programs from past employment. I participate in, but make no further contributions toward, a 401 (k) program sponsored by the Hewlett-Packard Company of Palo Alto, CA. Similarly, I participate in, but make no further contributions toward, a 401 (k) program sponsored by the Information Technology Industry Council, a Washington, DC-based trade association.

2. Indicate any investments, obligations, liabilities, or other relationships which could involve potential conflicts of interest in the position to which you have been nominated. None.

3. Describe any business relationship, dealing, or financial transaction which you have had during the last 10 years, whether for yourself, on behalf of a client, or acting as an agent, that could in any way constitute or result in a possible conflict of interest in the position to which you have been nominated? None.

4. Describe any activity during the past 10 years in which you have engaged for the purpose of directly or indirectly influencing the passage, defeat or modification of any legislation or affecting the administration and execution of law or public policy. At the Information Technology Industry Council and as the director of federal public policy for Hewlett-Packard, I worked to influence a wide variety of legislative and executive actions on technology, trade and education matters. I also worked on the staff of two House members, and for the Assistant Secretary of Defense (Legislative Affairs).

5. Explain how you will resolve any potential conflict of interest, including any that may be disclosed by your responses to the above items. (Please provide a copy of any trust or other agreements.) I will endeavor to immediately eliminate any potential conflict of interest working in close coordination with the Ethics Division of the Commerce Department's Office of the General Counsel. Attached to this questionnaire is the Ethics Agreement I signed after consulting with that office. I will seek counsel from that office in the event any questions arise to seek their advice on how to avoid any potential conflicts of interest. I intend to follow the guidance of the Department's counsels.

6. Do you agree to have written opinions provided to the Committee by the designated agency ethics officer of the agency to which you are nominated and by the Office of Government Ethics concerning potential conflicts of interest or any legal impediments to your serving in this position? Yes.

D. Legal Matters

1. Have you ever been disciplined or cited for a breach of ethics for unprofessional conduct by, or been the subject of a compliant to any court, administrative agency, professional association, disciplinary committee, or other professional group? If so, provide details. I have not.

2. Have you ever been investigated, arrested, charged or held by any Federal, State, or other law enforcement authority for violation of any Federal, State, county, or municipal law, regulation or ordinance, other than a minor traffic offense? If so, provide details. I have not.

3. Have you or any business of which you are or were an officer ever been involved as a party in interest in an administrative agency proceeding or civil litigation? If so, provide details? I have not. The Hewlett-Packard Company was involved in many proceedings in conjunction with its global business during my stint with the company. None of these proceedings involved me specifically or related to any of my actions at the company.

4. Have you ever been convicted (including pleas of guilty or *nolo contendere*) of any criminal violation other than a minor traffic offense? I have not.

5. Please advise the Committee of any additional information, favorable or unfavorable, which you feel should be considered in connection with your nomination. None.

E. Relationship with Committee

1. Will you ensure that your department/agency complies with deadlines set by congressional committees for information? Yes.

2. Will you ensure that your department/agency does whatever it can to protect congressional witnesses and whistle blowers from reprisal for their testimony and disclosures? Yes.

3. Will you cooperate in providing the committee with requested witnesses, to include technical experts and career employees with firsthand knowledge of matters of interest to the committee? Yes.

4. Please explain how you will review regulations issued by your department/agency, and work closely with Congress, to ensure that such regulations comply with the spirit of the laws passed by Congress. It is my understanding that the Technology Administration does not presently anticipate any major revision to its existing regulations and does not plan to initiate any new major rule-making. Should new laws passed by the Congress require the development of a new regulation on any matter, I would direct that the draft regulation be reviewed by appropriate officials within the Technology Administration to ensure that it takes into account the clear wording of the law, as well as any legislative history included in Committee Reports. As required by the Administrative Procedures Act the Technology Administration would use a public comment process in the *Federal Register*, and public workshops as appropriate, to obtain the views of other stakeholders. My objective would be to ensure that such regulations fully comply with the spirit of the laws passed by Congress.

The Technology Administration (TA) is not a regulatory agency, and enters to rulemaking activities infrequently. With the exception of one regulation which establishes safety marking requirements for toy guns, the Technology Administration has promulgated no regulations of general effect on the public. Rather, regulations promulgated by TA fall into the two following categories:

• Regulations which establish operating procedures for TA programs, including the Advanced Technology Program (ATP) (see 15 CFR Part 295); the Manufacturing Extension Program (MEP) (see 15 CFR Part 290); the National Voluntary Laboratory Accreditation Program (NVLAP) (see 15 CFR Part 285) and others, all of which exist at the National Institute of Standards and Technology within TA; and

• Regulations which address the internal operation of the Federal government on matters such as "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants" (see 37 CFR Part 401); "Licensing of Government Owned Inventions" (see 37 CFR Part 404); and a "Uniform Patent Policy for Rights in Inventions Made by Government Employees" (see 37 CFR Part 501).

Absent a change in law, I do not now anticipate any major change to these regulations.

5. Describe your department/agency's current mission, major programs, and major operational objectives. The collective mission of Technology Administration is to work with US commercial interests to maximize technological contributions to US economic growth and productivity through: the development and promotion of federal technology policies that promote innovation; improving the national technological infrastructure; fostering the development and adoption of new technologies; and disseminating technical information needed by innovators.

The major programs within the bureau include the National Institute of Standards and Technology (NIST), the Office of Technology Policy (OTP), the Office of Space Commercialization (OCS), the National Technical Information Service (NTIS), and the Partnership for a New Generation of Vehicles (PNGV).

Major operational objectives include: effective advocacy on behalf of US technology, air and space commercial interests in national and international fora; development of Federal policies that will maintain America's global competitiveness in technology; fostering and promoting effective federal investment in research and development and technology transfer; development of relevant technical standards for US commercial advancement; representing US commercial interests in the crafting of bilateral and multilateral science and technology agreements; analysis to identify opportunities for the advancement of US manufacturing, productivity and innovation; and serve as the Departmental focal point for initiatives to position and strengthen the US workforce for an information and technology-based economy.

6. Are you willing to appear and testify before any duly constituted committee of the Congress on such occasions as you may be reasonably requested to do so? Yes.

F. General Qualifications and Views

1. How have your previous professional experience and education qualified you for the position for which you have been nominated? My past experiences have provided me with an understanding of how Federal policy is formulated and executed. My experience in working with major IT companies, in particular, has given me an appreciation for the fundamental shift taking place in the US economy as we move into what is often referred to as the Information Age. The reach and impact of new technologies is advancing exponentially and causing industries to converge. My experience has taught me to appreciate that the policy opportunities of technology are often accompanied by public policy opportunities.

2. Why do you wish to serve in the position for which you have been nominated? First and foremost, I was raised to believe that public service is a very high calling. Further, I believe that American quality of life for the next generation hangs in the balance. If we achieve smart policy that keeps America competitive in technology, there will be a very positive impact on the lives of Americans in terms of employment and other opportunities. If policies stymie American innovation and technological competitiveness, then people will lose jobs and other opportunities. I would like to make a contribution toward a positive outcome.

3. What goals have you established for your first two years in this position, if confirmed? First, to more firmly establish the Commerce Department's Technology Administration as an effective advocate for US technology interests in both international and domestic policy considerations. Second, to become a more effective partner with the Congress in the development of good technology policy. Third, to advance the development of the US workforce to fit the needs of an increasingly technology-reliant economy.

4. What skills do you believe you may be lacking which may be necessary to successfully carry out this position? What steps can be taken to obtain those skills? I desire to sharpen my understanding of other scientific and technological developments beyond information technologies, and also to better understand the intricacies of technology transfer. I will endeavor to achieve that by turning to the vast expertise that resides within NIST, one of the world's pre-eminent centers of research and development. Other steps that can be taken include better outreach by the Commerce Department to the vast array of private sector R&D facilities.

5. Who are the stakeholders in the work of this agency? Beyond the American taxpayer for whom we ultimately strive, there are other critically important communities included among TA stakeholders: the Congress, especially the Commerce Committees; the US science community; the US IT and biotech sectors; the American space industry; and the US automotive industry are among those communities relying on work done by TA.

6. What is the proper relationship between your position, if confirmed, and the stakeholders identified in question number ten. If honored with confirmation, my job would be to communicate effectively with the stakeholders to ensure mutual understanding of information and policy needs.

7. The Chief Financial Officers Act requires all government departments and agencies to develop sound financial management practices similar to those practiced in the private sector. (a) What do you believe are your responsibilities, if confirmed, to ensure that your agency has proper management and accounting controls? My responsibility would be to review all the controls and policies presently in use to assess their effectiveness. Further, my responsibility will include making sure that appropriate policies are in place and periodically checked to ensure adherence. (b) What experience do you have in managing a large organization? As the principal deputy assistant secretary of defense for legislative affairs, I directly managed a significant staff of career military officers and civilian staff. In that same capacity, I was responsible for a degree of management for each of the service legislative affairs functions. This experience extended to procurement, personnel management, and budget oversight.

8. The Government Performance and Results Act requires all government departments and agencies to identify measurable performance goals and to report to Congress on their success in achieving these goals. (a) Please discuss what you believe to be the benefits of identifying performance goals and reporting on your progress in achieving those goals. What is measured gets done. The only way to achieve a measurable output is to first clearly establish goals and a deadline for reporting progress toward those goals. The review of progress, or lack thereof, helps to identify success and/or uncovers shortcomings. (b) What steps should Congress consider taking when an agency fails to achieve its performance goals? Should these steps include the elimination, privatization, downsizing or consolidation of departments and/or programs? In my view, when an agency fails to achieve its performance goals, Congress should at least consider virtually all of the options listed above. First, it should review the performance goals to ensure that they are appropriate and realistic. Next, it should review the criticality of the agency mission and goals. Assuming that the mission is critical, Congress should work with the executive to improve performance on behalf of the taxpayer. (c) What performance goals do you believe should be applicable to your personal performance, if confirmed? If confirmed, I would expect to work out specific performance goals and measurement milestones with the Secretary of Commerce or his designee to move TA forward in a manner consistent with the Secretary's overall objectives. I would expect my performance to be assessed on progress made toward those goals.

9. Please describe your philosophy of supervisor/employee relationships. Generally, what supervisory model do you follow? Have any employee complaints been brought against you? I believe in a model based upon trust and delegation. This requires a clearly stated and shared vision, performance goals and milestones for measurement. At that point, I believe people are most productive when empowered with responsibility. I have never had an employee complaint brought against me.

10. Describe your working relationship, if any, with the Congress. Does your professional experience include working with committees of Congress? If yes, please describe. As a lobbyist for Hewlett-Packard, as an association lobbyist, and as a Defense Department official, I have worked extensively with Committees of Congress and their staffs. These experiences have included preparations for hearings and testimony, fact-finding missions for staff and Members, technology demonstrations, report preparation, policy briefings and industry outreach.

11. Please explain what you believe to be the proper relationship between yourself, if confirmed, and the Inspector General of your department/agency? The IG's critical role in an executive agency requires respect and cooperation from senior ex-

ecutives within the agencies. I will certainly be respectful of the IG's authority and mission, and look forward to instilling that same view in all the employees of Technology Administration should I be confirmed.

12. Please explain how you will work with this Committee and other stakeholders to ensure that regulations issued by your department/agency comply with the spirit of the laws passed by Congress. The Technology Administration (TA) is not a regulatory agency, and enters to rulemaking activities infrequently. Absent a change in law, I do not now anticipate any major change to that status. However, should that occur, I would instruct appropriate staff to ensure, through study of the legislative record and direct communications with the professional staff of appropriate committees, that the draft regulations were consistent with the intent of Congress. Other stakeholders would have an opportunity to comment as described above in question #4 of section E.

13. In the areas under the department/agency's jurisdiction, what legislative action(s) should Congress consider as priorities? Please state your personal views. My views closely track those of the Secretary and the President. I believe that since the technology sector is critical to America's economic success in the future, that we need to craft policies that help facilitate the infrastructure for innovation. That would include:

- pro-trade policies such as Trade Promotion Authority and updating of the Export Administration Act since most US technology is export-dependent;
- extending the R&D tax credit to encourage private sector innovation;
- robust funding for federal R&D, as the President has recommended, to do basic research that can give rise to technology transfers;
- emphasizing and encouraging math and science excellence at all levels;
- authorizing substantial investment in e-government to make government more accessible and efficient;
- working with the Administration and industry stakeholders to stimulate broadband rollout so that people can receive greater services via the Internet;
- working with the Administration and industry stakeholders to make spectrum available for 3G so that we do not fall irretrievably behind global competition.

14. Within your area of control, will you pledge to develop and implement a system that allocates discretionary spending based on national priorities determined in an open fashion on a set of established criteria? If not, please state why. If yes, please state what steps you intend to take and a time frame for their implementation. Yes. I will review the procedures currently in place to determine their adequacy. If those procedures are not open and or the criteria are not well established, I will move immediately to rectify that situation.

Senator WYDEN. Very good. Thank you, Mr. Bond, and we will just go with each Senator taking 10 minutes or so on the first round, and then I expect we will have several rounds this afternoon because of the importance of these issues.

Let me turn first to this question of combatting terrorism. Dr. Marburger, I think you heard me say in my opening statement that I found very troubling that section of the General Accounting Office report recently that dealt with the lack of coordination among science agencies in conducting counterterrorism research.

Specifically what they said was that the Coast Guard was conducting research on detection of chemical attacks on cruise ships, and the Coast Guard did not know of virtually identical research being conducted by the Defense Department. I think it is very clear that one of the keys for you and for Tom Ridge in the days ahead is to make sure that the left hand and the right hand are having a conversation, because it is integral that this research be done.

I cannot conceive that a Member of the U.S. Senate would not support this research, but it is going to undermine our ability to get this work done if the General Accounting Office comes back 2 years hence and says, "Well, as a result of the September 11 tragedy, there was an effort to beef up the Government's work with respect to chemical attacks on these defense installations, but again

two agencies were heading off without making any efforts to coordinate".

What do you see your role specifically being to prevent this kind of duplication that the General Accounting Office talked about in the new report?

Dr. MARBURGER. Senator, the Office of Science and Technology Policy was created specifically to provide this kind of coordination, and I would accept it as my responsibility to convene cross-cutting committees. Many such committees already exist, as you probably know, chaired by Office of Science and Technology Policy staff and others appointed by the President.

The issue of coordination in this changed environment is extremely important, I agree with you completely. There are many programs of research and development in science and technology that bear on homeland security, and in this changed circumstance I believe that it is necessary to look again at these programs from this new point of view and attempt to discover parallels and aspects of research that can be done in a coordinated way. This was clearly the responsibility of OSTP, and I look forward to implementing it with your assistance.

There are sometimes rather invisible ways in which research and development activities can support each other, and it is not always a simple thing to disentangle those, but I believe in this critical time that increased communication among agencies is absolutely necessary.

Senator WYDEN. In a situation like this, would it not make sense, before everybody goes off and does their own research, to essentially have a policy where the administration in concert with the Congress says, "This is an area we want to fund, and these are the people we want to have do it", and we not just sort of get involved after the fact?

What has troubled me is that it seems like we are always playing catch-up ball in trying to eliminate duplication and the lack of coordination, and so the General Accounting Office comes out and offers this report, and it is troubling Senator Allen and myself and Members of Congress, and here you are, you are just coming in. This did not happen on your watch, and we ask you a question, and you say, "By God, Senators Wyden and Allen, we are going to go out and do better coordination".

I think what I would like to see on your watch is essentially an approach that would be preventive in nature, and that you, in concert with Mr. Ridge and the relevant officials, work with Senator Allen and myself and other Members of the Senate and say, "This is what we think needs to be done, and you Members of the U.S. Senate, you have got to just walk the walk in addition to talking the talk and give us the money", but once we do, then we can hold accountable the people who are charged with the responsibility, and we do not just keep repeating these instances where the research it is done, it is duplicative, the General Accounting Office issues a critical report, and then you have got to come in here and have a bunch of Members of the Senate carp at you.

Dr. MARBURGER. I agree completely, Senator, and I will do my best.

Senator WYDEN. The previous administration—President Clinton wrote a paper that I found very interesting. It was called, National Security, Science and Technology Strategy. Are you familiar with that document?

Dr. MARBURGER. Somewhat.

Senator WYDEN. In it, they basically tried to lay out, I think, an approach that says there are some issues with respect to science policy that are essentially national security questions with respect to science. Some of them come to mind, obviously, like dual use of technologies and the like, and that is separate from what is considered science that would be totally divorced from terrorism and national security issues.

Do you share this view of the previous administration that there is really a discipline that ought to be appropriately called national security science, and if not, what would be your differences from the Clinton administration, that this document seems to have invested a considerable amount of effort and research to articulating this policy?

Dr. MARBURGER. I can only answer very generally at this point, Senator. I do believe that science and technology are not now pervasive in many, many activities of society. It is very difficult for us to know in advance what aspects of technology a terrorist will exploit in waging and perpetrating these atrocities, and so it is difficult to distinguish between science and technology development that could be applied by a terrorist and an imaginative person willing to die and disrupt society and other very, very pure basic science that would have no applications, so these are difficult questions, and they really require analysis from the points of view of the several agencies that are responsible for carrying out the R&D and for carrying out the missions, whether they be security or enhancing commerce or environment.

So this is the type of activity that OSTP does engage in, where we bring together representatives from the diverse agencies and work over problems of this nature, and try to produce reports that give criteria for dealing with the dual use issue, for example, which is a very serious issue, but not a simple one.

Senator WYDEN. In this area, because you were not put on notice when we got together that this is something I was going to ask about, why do you not take the time to look at this particular paper and give me in writing your analysis of it, and particularly areas where you might disagree.

I think it is a provocative paper, and the notion that there really is a discipline known as national security science strikes me as an intriguing one. I mean, clearly an investment in science and technology is absolutely key to military preparedness. That would be another example that would come to mind, and I would like you to look at that paper. Could you do that over the next few weeks?

Dr. MARBURGER. Absolutely. I would be delighted to.

Senator WYDEN. Very good.

Let me turn now to this question of the response to September 11 from the standpoint of technology. On September 11, as you know, wireless access was suspended. Wireless Internet access was suspended. Telephone service was cut. People would call and say, "We are walking the streets as if we were in an undeveloped Na-

tion, looking for our relatives", and people were posting pictures and signs all over New York City.

I mean, it struck me, for example, that if medical authorities and medical personnel had put a GPS bracelet on people right at the outset, that would have been a chance, for example, to use technology in a very modest sort of way to prevent some of the frustration that families and loved ones were facing, and I think there is an opportunity here to do a significantly better job in terms of mobilizing the brains and the talent and the energy in the private sector to both prevent these kinds of tragedies, and second, to move quickly by way of the first response to deal with them, and this Subcommittee is going to look at this.

Senator Allen has been very interested in this, and by the way, we do not see this as setting up some big Government kind of program. I mean, if you have something which resembled a technology version of the National Guard, where you had at the ready the brains and the equipment and the talent and a clearinghouse where people could go to get this assistance, I think we could make vastly better use of all of this energy and creativity in the private sector, and I would like to know at the outset what you think about coordinating a better approach between the Government and the private sector to both preventing these problems and moving to respond when you have them.

Dr. MARBURGER. Well, Senator, first of all, I believe the organization that Governor Ridge will be putting together will have some of those responsibilities. There is nothing like a real incident to drive, to learn lessons from, and there is no question that we are going to learn a lot about emergency response as we look at the events following this atrocity on September 11.

Of course, when infrastructure is destroyed, communication is disrupted in some respects. We do attempt to foresee the nature of infrastructure destruction in our planning processes, but it is inevitable that there will be some chaos. This is, of course, the intent of terrorism, but I certainly agree that there are lessons to be learned here, and I plan to cooperate with the Office of Homeland Security to try to learn those lessons and pore over the record of events, and try to identify opportunities to do a better job in the future.

Of course, concerns about terrorism and terrorist incidents, and the possible disruption of society, have been with us for sometime, long before September 11, and there has been a good deal of planning. There are organizations and cross-cutting committees that have been set up to study these things. Vice President Cheney himself requested prior to the incidents of September 11 that such an exercise be done, but now I think we are looking reality in the eye, and we need to get very serious about being really prepared for the next one.

Senator WYDEN. Let me give you a handful of ideas that the high technology companies gave to me yesterday at home in Portland, because I had a session with Intel and IBM and many of the technology leaders, the wireless firms and others, and here are some suggestions they gave me, and I would be curious about your reaction to them.

They talked about the need for improvements in wireless policy to deal with emergencies.

They talked about the need for better coordination of existing data networks so there would be a way to communicate in the time of an emergency.

They talked about the idea of a clearinghouse, a one-stop process to access people and equipment, where people could go to get the brains and the equipment to deal with an emergency, and the frustration that they found when that was not available.

They talked about the need for simulating drills to test the various IT systems.

They talked about the heed for ways in which high-tech companies could share information, share information about their various services without running afoul of the antitrust laws, and there are some real legal questions with respect to how they do that.

Do you disagree with those kinds of issues? Would these be the kinds of issues that you would zero in on as our science policy leader, and my reason for asking is not that you subscribe to every detail, but we have, as Senator Allen—I think it is fair to say Virginia and Oregon are in the lead nationally in terms of technology policy.

We had really some of the premier technology executives spend a couple of hours with me yesterday to talk about some of these ideas, and these were some of their suggestions, and I think it would send a real message if you as the Science Advisor said, "These are the kinds of things I want to work on", or maybe, "I want to work on this", and something else is more important. Maybe there are things that you think make sense in addition, but I would be curious as to your response to that.

Dr. MARBURGER. Absolutely. These are the kinds of ideas that I am hearing as well. These are the kinds of ideas that I think many people are bringing forward. They need to be evaluated. Of course, the devil is in the details. They sound like good ideas to me, and we need to take a look at exactly what the obstacles might be to implementing them in detail, and that is something that we are charged to do at OSTP.

Also, some of the industry leaders that you mentioned are associated, or will be associated with PCAST, the President's Council of Advisors in Science and Technology, and I do expect that body, when it gets going, will have an important role in precisely these issues. There has been an executive order reestablishing PCAST for 2 years, and I look forward to seeing it get going. It is this kind of thing that we can cooperate closely with Commerce on, and the subject area and the type of suggestions that those gentlemen made to you are right on target. They are certainly in the ballpark of things we need to be looking at.

Senator WYDEN. Very good. I have just one other area I want to talk about with you on this first round, and then I am going to recognize my friend Senator Allen, but on this point, and I had a chance to talk about it with Mr. Bond a little bit, the Subcommittee is going to hold hearings, hopefully as soon as next week, on this issue of how the technology sector responded on September 11, and I want to make it clear that my goal at this opening kind of round of hearings is to look at all of the ideas that are out on the table.

In other words, I have talked about the idea of a technology version of the National Guard. I am not wedded to that kind of concept at all. Since we have begun these discussions, and I spoke about it on the floor, scores of people have contacted us with ideas that sound very creative and very good, and I think it is our goal at the first round of hearings to really get a cross-section of the ideas out on the table, and see if we can find common points of agreement between these various efforts that are going on in the private sector, and then look to see how we can work together to deal with it, and as I indicated to Mr. Bond, this is going to have to be something that ultimately the executive branch and the President of the United States would have to lead, and that is why we are looking forward to working closely with you too, and Tom Ridge, in doing that, and our past history augers will for that kind of cooperative effort.

One last area. I want to talk about on this first round, if I could, with you, Dr. Marburger, is the question of coming up with some principles to try to guide scientific decisions, and I am not talking here, again, about passing some kind of law, or creating a Government program, but given the importance of scientific policymaking, ensuring that is done on the basis of merit, and not from corporate boardrooms, and people with agendas that are more junk than science.

I wanted to ask you about a handful of principles that have really struck me as central to coming up with sound science, and get your reaction to those, and you may have other ones, and you may think this is completely off-base altogether.

The first that I mentioned is that sensible science should be consistent with the majority of findings as published in peer-reviewed literature. Is that something that by and large you would agree with?

Dr. MARBURGER. Is that a 51-percent majority?

Senator WYDEN. No quibble here. I think we are looking for somewhere probably a lot higher than 51 percent.

Dr. MARBURGER. I think the peer review process is flexible enough to be a pretty good guide on these things. We do have to remember that sometimes ideas come out from left field, and they are found a little crazy. There have been some very important breakthroughs in medicine, for example, that were met with derision in the professional community when they first appeared, and then were subsequently found to have some merit.

We need to be very careful about limiting arbitrarily so our policies do have flexibility enough for the occasional wild card, an offbeat idea. We cannot just toss something out because most people do not agree with it, so taking that into account and having a reasonable safeguards in this regard I think the peer review process is the right approach to evaluating the quality of proposals.

Senator WYDEN. That is a thoughtful answer, and I am asking these questions because I want to see how you are going to approach them, and suffice it to say, "I think it would be just dead wrong to say that a brilliant idea cannot advance in America because it does not satisfy peer review analysis".

A second principle that—as I talked with leaders in the field—has been important has been scientific inclusions and policy should

satisfy the standards of good practice published by scientific societies, or organizations. Would that strike you as a kind of second kind of principle that would make sense?

Dr. MARBURGER. I suppose so, but there are some awfully sloppy scientists out there who are very brilliant, and again I worry a little bit. Good practice, as determined by whom, and by a Federal bureaucracy, or by a person's supervisor, or a council of peers in a similar field?

It sounds good, but I think we should be careful again to recognize that science progresses in a very opportunistic way. Somebody will have a great idea that came out of the blue that was based on a spurious reasoning, perhaps, but if it stimulates thought and suggests a new avenue, a new place to look, then we should take it seriously.

Some of the most brilliant scientists in the past have had some really kookie origins and motivations for what they have done—I mean, dreams and astrology and all sorts of things—but the bottom line has been that they have suggested new avenues of approach, and by applying the methods of science, which I believe you must be referring to in this case the scientific method, which is just testing against nature and against reality the hypothesis you have, it does not make any difference where the hypothesis comes from, but nature has to agree before you can say you know it is right.

And this is a sloppy process, the basic science particularly is a rather sloppy process. Frankly, I think that the regulatory mechanisms for science that this Nation has developed over the years, and particularly during the post war years, when Federal support for science increased so much, are quite strong. It is no accident that America has the strongest scientific establishment in the world, and I believe that the reason for that is the freedom and the diversity and plurality of methods that we have accommodated in the science we support, so certainly we have to weed out the junk science and make sure that the science that we fund with taxpayer dollars is methodologically sound, but I do want to be careful about how to implement those standards.

Senator WYDEN. Again, that is a thoughtful answer, and one that I think fleshes out a little bit of what I am trying to do. This is not a law. This is not a bill. This is not a program. I want to see if we can work together with you to try to bring some light to the science questions that in many respects have become a kind of political football, and not something that really in the majority of cases addresses these questions of peer review and sound methodology and the like.

A third area that we have heard continually cited is that the principles used to support scientific policy should be acceptable to a variety of scientific and engineering disciplines. Would that be a third area that you would say good in principle, with qualifications?

Dr. MARBURGER. No. That one sounds so good it is hard to find something to criticize about that one. Certainly, there is a diversity of fields, and they all have different approaches, but in general they all have to deal with nature, and nature has to be the final arbiter when it comes to determining which hypotheses are right

and which ones are wrong, and I think that policy input that all fields can agree on is bound to be good.

Senator WYDEN. The fourth principle advanced was that policy should be derived from a broad range of studies and not based on a single set of findings. Your reaction to that?

Dr. MARBURGER. Well, that sounds good, but remember that camels are made by committees, and sometimes when you try to get a broad range of opinion you just get that, a broad range of opinion, you do not have a clear, incisive approach, so I think some balance is required here. We need to take advantage of the integrative capacity of the human mind, and there are some people that seem to write better policy than others, so we can have a committee with lots of input, but I would like to see one person write the report, and that is just a prejudice, and perhaps this is a question of style.

Senator WYDEN. The last question deals with essentially backing up a theory, can something actually be supported, and I think a lot of scientists see this as a question of whether empirical data supports the findings of predictive models. How would you see that?

Dr. MARBURGER. Now, there are different areas of science that differ in their amenability to modeling and simulation. Some of the most important scientific work done today is statistical in nature. In health research, for example, tracing environmental effects on health, public health, it relies on epidemiology and the sorting out of very large numbers of variables, some of which may be irrelevant.

This is a tough area, and there are lots of philosophical debates as well as technical debates about how to apply statistics, and how do you design an experiment to protect, for example, the rights of human subjects? In other areas, in particle physics, particularly in solid state physics, materials increasingly in molecular biology, we have tools for simulation that work extremely well, and that one can rely on modeling. We can even predict the weather for about a day ahead or more, but the fact is that we have to be careful about making a commitment to base our scientific input on modeling as opposed to real world studies of phenomena, and I think as long as we keep these differences in mind, the various fields of science and engineering are quite clear on this, and we have good guidance from the scientific community itself on what methodologies are appropriate in different areas, and I feel quite confident that if you were, for example, to ask a question about a specific field or a specific study, I would be able to get very clear advice on whether this was appropriate. I feel very confident about that.

Senator WYDEN. I am going to recognize Senator Allen, and then I will have some questions for you, and we have not even gotten started with you yet, Mr. Bond, but on this point, Dr. Marburger, I hope that, given the importance of science as it relates to policymaking at a time when there are not very many scientists in the U.S. Congress, and there are not very many researchers, and we are dependent on outside sources for scientific information to make these policy decisions, I hope that on your watch, when you hang them up, that one of the things that you will have helped to do would be to have helped the Congress and the administration,

working together, to decipher the lines between sound science and junk science when making policy decisions.

That is what I see to be a real priority on your watch, because it affects an array of issues which now, whether it is stem cell research, global climate change, or dominating most of what we talk about when we are not dealing with terrorism and the events of September 11. I think someone of your stature and someone like yourself, who has commanded so much respect in the scientific community, and obviously with Members of Congress already, can make a real difference here in terms of helping us set out some principles and some processes, not laws and programs, but principles for making sure that we are driving science policy on the basis of scientific merit and not something that comes from a corporate set of interests, or junk science.

Senator Allen.

Senator ALLEN. Thank you, Mr. Chairman. I would make a few remarks, and then I will let Dr. Marburger take a break and I will work over Mr. Bond.

[Laughter.]

Senator ALLEN. I very much enjoyed listening to your—Senator Wyden, Mr. Chairman—your questions here. Both these gentlemen and their agencies that deal with science are going to be very important in technology for our future.

I have said on many occasions as well that our laws, our permitting, our regulations ought to be based on sound science, not political science, and too often we do not listen to the actual sound science, and you and the folks that you work with and the agencies for which you all have responsibility will be very important to us in the area of biotechnology and in technology generally. I think it is one of the great things in our country.

I always remember what de Toqueville once said about the United States, and I kind of paraphrase it. He said, "In America the only things that have not been done are those that have yet to be imagined", and I am one who very much dislikes limits, and we should only be limited by our imagination, our ingenuity, our hard work, and indeed, in the area of biotechnology, much, virtually anything can be done, but there does need to be ethical standards, and those are tough decisions, but I think it is very important that we do listen to the scientists, to the physicians, to the technologists, to determine what are the facts, and then they should make the decisions, we should make the decisions, but nevertheless it should be based on sound science, and I very much agree with your comments in that regard.

The other matters I will get into as far as coordination of data networks and so forth, which I do think will be important, but that is another matter.

I would like to quote back to you, Mr. Bond, your statement that—you did not go through your whole statement, but this really is very much a part of what is great, and the great potential of our country, in that in your written statement that you submitted, that you state that it is no accident that the United States leads the world in high technology, both civilian and defense. Our achievements are the dividends that flow from sustained public and pri-

vate sector investments in research and development, coupled with America's entrepreneurial spirit and the willingness to take risks.

Today, the private sector plays a dominant role in the process of developing new technologies and bringing them to market. The Federal Government plays a pivotal role in creating the climate that supports the private sector's efforts. In other words, the Government's role is to create the conditions precedent for people with good ideas and ingenuity to test those ideas, take the risks, make the investments, create the jobs that let the marketplace decide whether or not that is a good idea, or maybe somebody has a better idea, maybe it is less expensive, more efficient, less expensive, better quality, whatever it may be.

And I like very much how you conclude this thought by saying you believe the Technology Administration can continue to make vital contributions to the Nation's technology base and our national policies that support private sector technology development, commercialization and competitiveness, and we always need to be looking at what is going to help the competitiveness of our country and our people and our society.

Now, we have an issue coming up very shortly that is expiring, which has to do with taxes and tax policy and regulatory policy have an impact on our economy, and particularly in technology. One of the best advances in my view has been the Internet, which is a tremendous way of disseminating new ideas. It is good for commerce, it is good for education, and sharing of information.

Now, there is going to be, if the House and Senate do not act, this tax that—the moratorium on Internet access taxes. A tax for getting access to the Internet will expire. Now, what impact do you think will that have—if that moratorium expired and was allowed to lapse, what impact do you think that would have on our economy?

Mr. BOND. I think the important points I would make in regards to the tax moratorium are first that our economy is in a very shaky situation right now. We do not want to do any harm, first and foremost, and we want to address that matter before the moratorium finishes.

As you know, the administration has supported a 5-year extension of the moratorium, and a ban on access taxes, because we want more people to have access to the Internet rather than fewer, and indeed we do not even fully comprehend, yet, the power, I think, of the Internet and its ability to change society and create opportunity, and so I think the central issue there is going to be to get that done before the deadline comes to avoid any harm to the economy, and I know Secretary Evans has been clear with even those like myself who has been in a consultant role, to be sure to say that he wants all these issues tackled on the Hill in a bipartisan and positive fashion.

Senator ALLEN. What role would you see yourselves playing in the next few days and weeks?

Mr. BOND. Well, I think that both internally, within the administration, and then up here on the Hill, trying to advocate on behalf of economic growth and the commercial interests, which is the role of Commerce, of course, in this particular case, and to really try to beat that deadline again in a positive and bipartisan way.

Senator ALLEN. Well, Senator Boxer, who is a Member of this Committee, Senator Boxer and I do not always agree on every issue. Nevertheless, we met last week and are trying to work in a bipartisan way.

While I prefer a permanent ban on access taxes, or discriminatory taxes, one has to be realistic here, and so we have joined up together to try to get that 5-year moratorium on it, and we will need all of your help to get that through on the Senate side, because clearly, adding tax burdens hardly is going to be helpful to the technology sector, which is undoubtedly—it was in bad shape before September 11, and there is nothing that has happened since September 11 to indicate any up-tick in that regard. Obviously, other sectors have been hit as well.

Let me ask you this. As far as—and this is to you, Dr. Marburger, and you can answer this as well, as well as Mr. Bond. Now, these terrorist attacks on September 11 took over 6,000 lives. They also took a significant amount of wealth. They damaged the short-term productivity of certain key sectors of our economy, and there is clearly a need to restore the economy and some of that is better security, improved security.

There have been changes in some of the dynamics, or the paradigms, even for airline pilots as to what do you do if someone is trying to commandeer your aircraft, but there is a need to improve our economy. Some call it a stimulus, and as far as security, a new view as to what we need to do.

Now, what technologies, in either of you all's view—what technologies, whether they are existing or emerging technologies—do you see as potentially playing a key role in this recovery process, whether it is in security or the commercial economy generally? Again, this could be governmental services, it could be the private sector, and also State, local, and Federal Governments, not just the Federal Government. What technologies do you see as emerging in helping us restore our economy as well as enhance our security?

Mr. BOND. Let me address a few of those I have come to learn about which I believe exist at NIST, in particular, some world-leading research on biometrics which, of course, would enhance security, whether it be of the cockpit or passenger access to airlines.

There is also radiological detection that they are world leaders in, the next generation of x-rays to see concealed weapons at a distance, so there are a number of security-related research and scientific matters going on at NIST which, of course, build consumer confidence to bring people back into the economy in a full way, and I think what we are facing right now, in terms of the economy, is a crisis of confidence in many of these sectors, so anything that increases security and thereby confidence brings people back into the economy.

Senator ALLEN. Dr. Marburger.

Dr. MARBURGER. I agree with that. There have been enormous advances in detection capabilities of one sort or another, both remote detection of chemical compounds, and I think we are going to need much more sophisticated technologies for rapid assessment of unknown substances for first responders, for example. You simply cannot underestimate the power of computing and the Internet in recovery. I mean, it is old technologies, or existing technologies are

going to be just more important than new technologies almost. We have to assess how to use them appropriately.

There is just a wealth of ideas coming from every sector of science. I am aware of efforts that the National Academies have made in recent weeks to mobilize the scientific talent of the Nation to come up with ideas in practically every field, so it would take many hours to go through a list of representative technologies, but biotechnology and sensors, detection, much work done in our artificial intelligence, pattern recognition, this sort of thing. Much of it is related to security.

Senator ALLEN. I would add to what our Chairman, Senator Wyden mentioned when he was meeting with certain folks back home, in his home in Oregon, the coordination of the data networks, the bioinformatics, talking with Secretary Thompson last week, one of the keys is actually all of those data networks, and we are still analyzing the anthrax attacks, or the anthrax incidents in Florida.

Now, the key to all of that is really not the Federal Government. Originally it is going to come from the local health departments, the local emergency rooms, and it is absolutely critical in making sure—and I hate to use the word critical unless it really is critical, but in that the sooner one can determine if somebody has that malady, whether it is anthrax, smallpox, whatever it might be, that there is a better chance they have to live.

And the conglomeration, or the coordination of that information, say there are a few people who have certain symptoms in one locality, say the hospital in one locality finds two people with those symptoms, then over the mountain in another valley, they have six or eight and so forth, none of these hospitals necessarily are talking with one another. They are just handling whatever can come in.

But if that information gets to the State, gets to the CDC, at least you see a pattern, that there may be some likelihood of something going on, as opposed to an isolated incident, and that is where I think technology—and I do want to work with Senator Wyden on this to make sure that the bioinformatics are there so that we do have the prompt responses.

We are also going to have a hearing on Thursday here again on emergency coordination, and the Chairman mentioned GPS for firefighters. We are going to have a hearing for fire services and firefighters, and much of it, while just listening to an officer who was trapped in the rubble up in New York City with the World Trade Centers, and I think his name was Fuentas, and they are trying to talk to him on whatever, whether it is a walkie-talkie, or whether it was a cell phone, regardless, they were having a hard time, in all of the dust and the darkness, and he could not say where he was.

If he had that GPS on him, then they could know where he is, and he could be in the midst of dust and smoke and fire and so forth, that someone has just passed out, and they are not going to be able to talk to one another, or that walkie-talkie or two-way radio or cell phone could be broken, but with that GPS they could find out, and fortunately they were able to find him, but nevertheless we need to learn from this disaster, or this terrorist attack, so

that we can respond, and I think people responded remarkably well under the circumstances, but nevertheless, people want to respond even better in the future.

So you all will be very important, and your agencies, to give us guidance, good ideas, whether it is for our first responders, the medics, the emergency squads, the firefighters, law enforcement or others, and again, these are going to be pressing issues as well, and I am glad to hear the Chairman say we are going to look at where technology can improve aviation safety. I have seen some of the research that was done at Langley Research Center, and what can be done as far as flight patterns, and virtual domes that can be put over certain buildings where a plane simply cannot fly into them.

Now, I am just going to finish with a broad question for you, because I do have a meeting in 2 minutes, or Mr. Bond, and I just think it is important for all of us to know where do you see your key role going to be? What is going to be your top one or two priorities as Under Secretary of Commerce for Technology, to ensure that our Nation's technology sector is healthy?

My view that there is no more important economic sector in our economy than the technology sector. Yes, it is important for good jobs, good-paying jobs, it is important in manufacturing, so we have the most up-to-date, cleanest, most efficient, best quality methods of production, it is important for our health care, the life sciences, the medical sciences, it is important for communications, finance, education, it is vitally linked to technology and, indeed, our national defense is key to having us have a technological advantage, and we must as a Nation have that competitive attitude that we always have to be at the cutting edge, in the lead, because it is vital for our security, it is vital for our prosperity and for our quality of life.

So with those comments, where will be, in your view, your top two areas of concern to make sure our technology sector is leading, and continues to lead in the future?

Mr. BOND. Well, let me, if I can, expand on that and give you four that I am going to try to focus on in the first year, if the Senate deems me worthy of confirmation.

First and foremost would really be a portal for the U.S. technology industry to the Federal Government. That is the role of Commerce, the charter of Commerce, to advocate on behalf of commercial interest employers in the country, so I want to try and create in the minds of technology leaders the notion that this is their portal to the Federal Government, where they can find people to guide them through the sometimes labyrinth of different agencies and so forth, to try to advocate on their behalf.

Second would be through the Office of Technology Policy to make sure that we are at the table and advocating on behalf of growth for this sector, which as you note, and as Dr. Marburger said eloquently in his statement, really touches every single facet of our life, from national security to personal security, so that would be No. 2.

Third would be to reinforce the relationship with NIST, again the crown jewel of the Federal research capabilities, to make sure that within the policy councils of this administration they appreciate

and understand the good work going on at NIST, and then finally would be to try to make that one little part of Commerce, the NTA, a bureau that does not just talk the talk, but walks the walk, and begins to deploy some of these technologies.

I have worked for Hewlett-Packard, as you noted earlier, and so I have seen what a major company can do via the Internet, and the efficiencies and capabilities that can be realized, and I want to try to bring some of that to the Technology Administration.

Senator ALLEN. Let me follow up on that, on your last point. One thing that you find sometime, we talk about the digital divide in the private sector. I have found, not having been in Government for a few years until getting elected last year, that there is a digital divide between the private sector and the Federal Government, in the utilization and adaptation of new technologies. Would you foresee yourself also having a role of making sure that the Federal Government and its agencies will adopt the latest technologies, whether for their own internal communications—you see it in the State Department.

I am on Foreign Relations, on that Committee, and it is amazing to me to read these reports that they could not even e-mail within the same embassy, much less some outpost into Washington to the State Department, and I am glad Secretary Powell is there. He was on the AOL board, and recognizes there are better ways to communicate, and that is not just for communications of our policy, but for the security, to know instantly what is going on and what is our policy, and what is to be said.

So I would hope that you also use it as a way for just internally—it would almost be like a CIO, so to speak, chief information officer, to make sure that you use these policies wherever possible and practical to save the taxpayer's money and provide better service to the public, contract out some of these services, because you could spend money, you can waste money more quickly on technology than about anything else, and it is important to get the most up to date, and if you can outsource some of that, sometimes that would be the best way for the taxpayers and the services, so would you make a commitment to also, in the midst of that deploying technologies, try to educate all Federal Government agencies.

Mr. BOND. In fact, there is some good work going on in that regard already. Secretary Evans has asked the Technology Administration to come up with some ideas that he can take to Cabinet meetings to talk about other ways to use technology better. There is a closer relationship with Labor in their 21st Century workforce office, for example, Assistant Secretary Millman is the Secretary's designate to the internal e-Government work that Mark Foreman is doing over at OMB, and Assistant Secretary Millman also recently signed a fellow Intel vice president on with a fellow with the Technology Administration.

In that case, he was putting together a web site for New York Area's small- and medium-sized businesses to go to one place on the web and find local businesses who could help them get reestablished in their business with hardware and software needs, but we are also talking to some folks about bringing in some other private sector expertise under the CRADA at NIST that allows this fellow-

ship so we can get the benefit of some of the best thinking in the private sector on exactly this kind of matter.

Senator ALLEN. I look forward to working with you. I love your term, portal of the tech community. We all agree this is not a partisan issue. I have been made chairman of the High Tech Task Force for the Republicans in the Senate, and that is exactly the term we said. We want our task force to be a portal to the Senate, so you have the right attitude.

This is not a partisan issue. This is very important for all America. Whenever you get your e-mail address after the confirmation, we will certainly want to get it there so you can get all those good ideas. I do not know who will sort through all of those e-mails, but you will get them.

So thank you both, Dr. Marburger and Mr. Bond. I thank you for your insight and your testimony, and I know I speak for everyone on this Committee, we look forward to working with you to improve the lives of all Americans and also the world, so thank you so much.

Mr. Chairman, thank you.

Senator WYDEN. Before my colleague leaves, let me just say how much I appreciate the comments you have made. These clearly are areas where if you do not have a bipartisan front in terms of science and technology policy, it is not going to get done, so I am really pleased you are taking such an active role. We are going to have a field hearing at Langley to look at those aviation technology issues you are talking about, and I very much look forward to working with you, and I have got some more questions for our two nominees, but I know you have got to run, and I just appreciate you spending all this time.

Senator ALLEN. Thank you, Mr. Chairman. Thank you, gentlemen.

Senator WYDEN. Dr. Marburger, I want to talk now about your role in the White House, and what your role is going to be specifically as a Science Advisor. It is our understanding that previous Science Advisors were designated as Assistant to the President with the privileges and duties that applies, including sitting in on Cabinet meetings, and having direct access to the President of the United States.

On the other hand, there have been a number of press reports indicating that you are going to be designated something called a Special Assistant. Now, I do not know if any of this is accurate, and I think it would be helpful for you to set out, on the basis of the conversations you have had with the President of the United States, how you see your role as Science Advisor for our country.

Dr. MARBURGER. Well, I plan to be a Science Advisor to the President. Certainly, the role of the Science Advisor has been shaped over decades by a number of distinguished predecessors, and there has been nothing in my encounters with the President or with other Members of the White House staff that would suggest that my role would be any different. The question of titles is not of great interest to me, as long as I have what I regard as appropriate access, and I have been assured that I would have appropriate access.

I must say that I have been delighted with the encounters I have had with White House staff. They have been eager to talk with me. They have sought me out and asked me questions. They have welcomed me, and I feel good vibes with this organization, so I have agreed to accept this position without reservations, and I expect that when I have something important to say the President will hear it either directly from me or through the people that I am talking with.

Senator WYDEN. Well, that is encouraging, and you are absolutely right, titles, we can all have titles, but direct access to the President is important, and I gather you have now been given the assurance that you will have direct access to the President on issues that are important as it relates to science.

Dr. MARBURGER. I have been given the assurance that my advice will reach the President, and in an appropriate fashion, and I think that can be accomplished in a variety of ways, including direct access.

Senator WYDEN. Thus far, what areas has your counsel been sought in? I mean, obviously there were a lot of big science issues that generated a great deal of public discussion long before September 11.

I will tell you I think it is almost unprecedented for a scientific issue in the dead of summer to generate the attention that the stem cell research debate generated. I think it is literally unprecedented in sort of the dog days of August, when most Americans are at the beach, that we are having debates at virtually every kitchen table in the country with respect to stem cell research and the implications for health and science and entrepreneurship and the like.

Were you consulted on the stem cell issue, and if so, without violating any confidences, what was your general counsel?

Dr. MARBURGER. You can probably understand my reluctance to talk about my conversations with the President on an issue like that, and I would prefer not to, but it might reassure you to know that I did have an opportunity to speak with him on that topic.

Senator WYDEN. Well, that is fine. What other topics has the President talked about with you thus far?

Dr. MARBURGER. You should be aware that up until literally a few days ago, the week before last, I had a full plate of responsibilities as Director of Brookhaven National Laboratory, a very dynamic and fully engaged facility, and the months since the President announced his intention to nominate me for this position have been occupied primarily with my role at Brookhaven National Laboratory, so I did not become a consultant.

I have received some criticism from leadership in the scientific community for that, but I think it was an appropriate way for me to wind up my affairs at Brookhaven, so I was not engaged with the White House community until quite recently. All I can say is that on every occasion when I did visit Washington, I had good access to the people that I wanted to see. They treated me with respect. They asked me questions about a wide range of issues, and I was able to express myself freely about them. Beyond that, I do not think it is useful for me to go into detail.

Senator WYDEN. Well, that is something that I was trying to be sensitive to as well, and I want to ask you your views on a handful

of other important scientific issues, again not to try to get you to commit to sort of one bill or one program or another, but to try to assess a little bit how you are approaching some of these issues, and that is why I asked the previous question in a general sort of way, and understand the sensitivity of the matters, and the fact that you are going to be in the room, and be in a position to make sure that you can get your views on science issues, which we respect very much, heard, is one that I am interested in.

Frankly, if we did not have respect for your background and your expertise, we would not make such a push and such a point of stressing it.

On the stem cell issue, let me ask you a question that has troubled me. I have been concerned at the number of private companies and the number of private donors that were in effect already committed to funding stem cell research who are walking away, and are walking away as a result of the administration's policy in this area.

There were several, for example, op ed pieces in the Wall Street Journal after the President's decision, with large donors saying we do not think we are going to be in a position in this climate to ensure that the important research that needs to go forward is going to be possible.

Set aside the question of whether there is X number of stem cell lines available or not, and tell me whether you are troubled by the fact that a number of private companies have abandoned their plans in this country and are moving overseas to pursue stem cell research as a result of the administration's decision.

Dr. MARBURGER. Well, I think the administration's decision opened the door to research in this area. There is still quite a lot of work to be done, preliminary work, and I believe the President's decision makes it possible to begin to understand the promise of embryonic stem cells for the future, and we are going to have to wait and see what the results of some of the early programs are for which proposals are being written now, and the National Institutes of Health is gearing up to begin to evaluate those proposals and fund them.

If the promise turns out to be what many have thought it might, then I expect you will see some of these companies walking back in the door, so I believe that one needs to wait and see on the results. The President has got it started. I have heard good responses, favorable, approving responses from some industry people, so by no means are all of them out of the business, or walking away, but we are pretty early in this game.

There has been a lot of publicity associated with the opportunities that stem cells pose for a cure of previously intractable diseases or conditions, but these results are speculative and quite far in the future. We need to just get going and do this research and see if the promise is there.

Senator WYDEN. Well, I hope that you will, as your answer suggests, monitor carefully what goes on in the private sector, because I know I was troubled by the fact that those private companies that do not have an ideological orientation to these kinds of things were saying that we are going to pack up, we are going to go overseas, and if you are saying, and your answer is a good one, that you are

going to monitor this, and that you want to have a strategy to get some of these people back, and to do it in line with ethical standards for research, then I appreciate that answer, and it is a good one.

Let me talk to you about global climate change for a minute, and try to see if I can understand what the administration's position is from a scientific standpoint. As I understand it, we are essentially now standing out there by ourselves with 180 countries or thereabouts not being in accord with our view, and as I understand the administration's position, the theory is that the administration will fund various kinds of experimental efforts and research kind of efforts, and the theory is, is that when these efforts go forward they are going to produce data and information which somehow is going to get these other 180 countries to stop what they think makes sense and go at it our way.

How would you characterize where we are on the global climate change issue from a scientific standpoint, and where we stand on this issue, and how, if at all, you intend to be involved in it?

Dr. MARBURGER. Well, first of all, you made a distinction which makes me feel better about answering this question, because I am not representing the State Department or international diplomacy, or national policy in this area. The fact is there is strong economic issues here as well as scientific issues.

We do know that the climate is changing globally, and the National Academy has issued a report that confirms that the science community agrees that human activity has played a role in global warming, but we do not know the mechanisms very well.

There are huge error bars on things that are very, very important, where we go with the carbon cycle, and it has some very large numbers associated with the scientific mechanisms, aerosols and the role of reflectivity affecting the temperature of the earth, so there are scientific details that are not understood well enough to craft a cause and effect policy that says if you do this, or this industry does that, then the following will happen to the climate over the next 50 years.

I believe the President is basically correct in calling for a diverse set of science and technology activities designed to steer us toward a knowledge-based policy for the future, and I think it is entirely appropriate to do so. I have also found it reassuring that the President did ask for science advice, and in the absence of a Science Advisor he asked the National Academy for advice on this issue.

The National Academy rendered that advice within a few weeks, and the President, it seems to me, changed his tune to make it clear that he aimed to have the United States take responsibility for its emissions. He said that, I believe it was July 11, and he is now working and OSTP is working with him to craft programs that will address future long-range climate policy for this country.

Senator WYDEN. When are we likely to see those programs, the ones that seem to be being offered as an alternative?

Dr. MARBURGER. I am aware that work is being done on them. I cannot tell you from my own personal knowledge when they will come out, but I know that there is a sense of urgency to get them out, and I am aware that various agencies, EPA, the Department of Energy, relevant agencies are working on them.

Senator WYDEN. And when you are confirmed, you will be actively involved in those projects?

Dr. MARBURGER. I certainly will. The issue of climate change is one that I place a high priority on.

Senator WYDEN. Because I will tell you, I am troubled by the fact that we are out there by ourselves, with 180 countries joining hands, and the United States essentially outside that, but I am even more troubled that I do not understand essentially how we are going to fund some of these important scientific projects and use it to build a consensus to be part of an effort that has us joining the rest of the world. I am interested in working with the administration on it.

Senator Brownback, for example, he and I joined forces on carbon sequestration with respect to agriculture and timber. We think what we are doing in terms of carbon sequestration might, in a way that would be supported by agriculture and environmental people, and your scientists and the like, help us to deal with perhaps 25 percent of the global warming problem.

That is not 100 percent, but to deal with 25 percent of the problem in a bipartisan kind of way ain't bad by Washington, DC standards, and I would very much like to have you, as these additional scientific initiatives go forward where you look at various approaches, and presumably find science that you consider acceptable and try to persuade other countries to do it, to take an active role on it, and to work with us to speed it up, because this message that we are going to stand out there by ourselves, while 180 other people can make an agreement, I think is very unfortunate.

Dr. MARBURGER. Before we leave this issue, I would like to try to be clear. We are not out there by ourselves on the scientific issues. There is pretty good agreement worldwide in the scientific community about where we stand scientifically. Other countries may be more willing than we are to take risks with their economy. Again, this is not my area of expertise.

I think we have to be very clear that our decision to participate in protocols and international agreements has to be informed from many different dimensions, science, economics, political, national security considerations, but science-wise, the science of global climate change is being pursued internationally, and the United States science does not differ substantially, or in any respect, from science in Germany, or Japan, or Russia, or China.

There is a science community mechanism for straightening these things out.

Senator WYDEN. If we go any further with this, I am only likely to get you in trouble, because if there is consensus on science, then what seems plausible to me is what is holding it up is politics, and that, of course is outside your bailiwick.

Dr. MARBURGER. That is your job, Senator.

[Laughter.]

Senator WYDEN. I get the drift on that. I am going to let you take a breather here and turn to Mr. Bond if I could.

Let me ask you a question to follow up on Senator Allen's good point about Internet taxes. We have got the moratorium that has expired. As you know, I sponsored the Internet tax freedom bill in

the Senate. Congressman Cox did in the House, and we would like to break the gridlock.

We have had discussions among the Members of this Committee, very constructive discussions among Members of this Committee, Senator Dorgan, Senator Hollings, Senator McCain and others, and what can the administration do to help us break the gridlock and get this resolved?

My sense is, if the President says, "Ron Wyden and John McCain put in a 2-year bill, and given this difficult economic situation I want to see that bill passed", I think that is the one that goes through the U.S. Senate. If the President wants something else, I think it would be very helpful to hear from the Administration now. What can you tell me in terms of how the Administration can help break the gridlock up here on this?

Mr. BOND. Well, I guess I can tell you first that I will take that message back, which may be the most important contribution I could make. Second is to reiterate the Secretary's insistence that we engage up here in a positive and bipartisan way, as we discussed in your office, making sure that we keep relations as warm as possible as we continue to work in the future toward simplifying State tax codes and so forth, another thing the administration does support.

The administration's position is well-known to you, and I am certainly not about to change it today, but I will take the message back and look forward to working with all Senators on that issue.

Senator WYDEN. That would be helpful. As you know, it is my view that there is not a single jurisdiction in this country, not a single local governmental body that can show that they have been hurt by their inability to discriminate against the Internet, and that is all the current law says.

The current law always says you cannot tax the Internet as if you were creating some kind of Cayman Islands with the Internet. That is not it at all. You can have as many taxes as you want on the Internet. You just have to treat the offline world like you treat the online world, and I would hope that the administration would weigh in aggressively here for one of the bills that is going to extend the moratorium and let us get on with it, because the last thing the economy needs now is to set up a crazy quilt of local and State taxes, which is what could come about if, for example, the Congress adjourns and the moratorium is not extended, and I think you know that, Phil, and just convey the urgency of it.

Let us talk a bit about the portal idea that you see for small business, and like Senator Allen, I am very supportive of this, and I think it can make a real difference, particularly for small businesses, which I know you have been very interested in. How do you see this creating opportunities for small businesses in particular through the portal?

Mr. BOND. Well, as you point out in your question, not every business has the resources to fly to Washington and try to engage, and so I think one of our primary venues of communication there will be the MEP program that exists through the NIST and is already deployed in 50 States, working with small- and medium-sized manufacturers to bring more technology to bear there, and

can serve as a communication medium coming back to Washington as well.

It already does, but I think that, coupled with this reinforced NIST relationship I talked about, is to make sure that that occurs for the small- and medium-sized manufacturers, and then I think engagement here in town with the various associations that represent that constituency to make sure that we are listening closely to their concerns and needs, trying to make sure that they are taking into consideration the policy councils.

Senator WYDEN. How do you envisage your position and your watch interacting with the communications side of the technology debate? For example, I am very interested, and a lot of Members of this Committee are very interested in the question of spectrum policy. I mean, it is clear that we have run out of oceanfront property. I mean, it is just that simple. There are too many competing uses for available spectrum.

I would like to see marketplace forces introduced into the allocation of spectrum in our country. A number of our colleagues would as well, and I am not completely clear how Commerce is going to divide up how spectrum policy is made. I assume Ms. Victor is going to be involved in this, and you and Mr. Mellman and others, but perhaps you could tell us a little bit about how your office is going to work on the communications side of technology policy.

Mr. BOND. Sure. On that specific issue, certainly NTIA and Nancy Victory will be the lead. We enjoy, myself personally and Assistant Secretary Bruce Mellman, a close professional relationship with Assistant Secretary Victory and her office, and so we will be working closely with them in policy development, again with her in the lead position on that particular question.

The other ways in which I think we will be helpful in the Technology Administration include making sure that the private sector voices who need some of that spectrum for IT and so forth are heard throughout the Government, that their arguments are heard, that we are as helpful as possible there, that the Secretary is informed on those issues, and again, of course, Nancy Victory will be very much the leader in that particular vein, but I think it is going to boil down to communication and advocacy within the Government councils to make sure that people understand the need.

And of course in the case of spectrum classic confrontation between some of the national security needs of the country and the economic growth needs of the country, which I think you and I agree are also integral to future national security, that is, we must run faster in technology and keep the technology growing so indeed our national security infrastructure is the very best.

Senator WYDEN. Well, this, and I think the Secretary knows that I have a great interest in this, as do a number of Members of the Committee. This is a perfect area to try to build some new incentives to create efficiencies, and they do not exist now. Basically, if you got something 2 decades ago just hang onto it, you can basically hold everybody hostage, and we are going to be anxious to work with you on it.

The last point for you, and then we are going to wrap up. In my office, you assured me that you would transmit to the administration and to Mr. Ridge our interest in working to try to coordinate

the private sector responses to what happened on September 11 with technology. I just want to give you a chance to say publicly what you said in my office on that point.

Mr. BOND. You bet. In fact, we have contacted the White House as the follow-up to our meeting, and although Governor Ridge understandably is not going to be ready on such short notice for that, having other very pressing matters, we do want to work with you, and I personally am not surprised, and this is what I alluded to in your meeting, is that I have heard in my role as a consultant at Commerce from a partial list would be Intel, IBM, Accenture, HP, Sun, Dell, Verizon, Ricoh, Motorola, all willing to help in some way, and many who did lend incredible help in the wake of September 11, and so there is good work there to be done.

There is an overwhelming, positive desire to be more helpful from the private sector. Perhaps the fellowships I alluded to earlier can be helpful in that regard, but we need to explore ways we can take advantage of the desire to help and, in fact, should I be so lucky as to be confirmed by the 17th, I would love to explore the possibility of being the witness on the 17th if Governor Ridge cannot make it.

Senator WYDEN. Well, we do not have many people volunteering.

[Laughter.]

Senator WYDEN. So to have the administration saying sign me up is great, and we are just finalizing plans on that, and Mr. Bond, you have been great, and very accessible, and I appreciate it.

Let me close, and we have a couple of formalities. In fact, we do have to enter a statement into the record for Senator McCain.

Senator Schumer wanted to convey to Dr. Marburger his strong support for you, and a letter from Senator Chuck Schumer needs to go into the record at this point as well.

Senator WYDEN. Dr. Marburger, I'm sure we will have further conversations in the future. I want to ask you a couple of things about the nanotechnology initiative, which strikes me as very promising, and they are going to deal with both the coordination question and the substance.

I was struck again, nanotechnology, tremendously exciting, cross-cutting new field. We have got six agencies already that seem to be part of the nanotechnology initiative, and we are going to need you and your colleagues to some extent to bring people together, or the GAO will be writing reports on nanotechnology 2 years from now and they will say, so-and-so did it, and so-and-so did exactly the same thing, and why weren't those characters on the Science and Technology Subcommittee watching it. So I want to work together to improve coordination and the policy.

Let me leave you with one thought. We are going to be working very, very closely with you. I have felt for a long time that there is nothing partisan about the matters that we are talking about and, in fact, if you cannot get bipartisan agreement in key areas like we are talking about today, like combatting terrorism, that research is not going to get done in our country, and we are going to suffer as a result.

Fortunately, there has been a bit more bipartisanship since September 11, and with two good people like yourselves taking on these key positions, I think you can help us advance that biparti-

sanship in an important area, and I will tell you, because I have had a chance to both listen to you and to meet with you, that I have very high expectations for you two.

I have expectations of you two that I would not normally have for people that come before this Committee, or any Committee in the U.S. Senate, and I think you are going to meet them, and so I thank you very much. If there is anything the two of you would like to add further, we will welcome it, or otherwise we will adjourn.

Dr. Marburger, Mr. Bond, anything further?

Dr. MARBURGER. No, thank you.

Mr. BOND. No, thank you.

Senator WYDEN. The Subcommittee is adjourned.

[Whereupon, at 4:40 p.m., the Committee adjourned.]

APPENDIX

PREPARED STATEMENT OF HON. JOHN MCCAIN, U.S. SENATOR FROM ARIZONA

Mr. Chairman, thank you for calling this hearing today for these two Presidential nominees. You know, as well I, there are many challenges that are before the Committee at this time.

Nevertheless, as we look to resolve the many problems resulting from the terrorists attack of September 11, we must look to the Federal agencies for additional insight and advice. We also depend upon them to implement the statutes created by the Congress. As we have learned over the past weeks, it is difficult, if not impossible, for the agencies to operate without the proper personnel in place. I hope and trust that these two nominees will bring the necessary leadership and management skills and abilities to their respective positions that would ensure the efficient and effective operation of the government.

Given the emphasis on science and technology to address national security, as well as economic security, the positions that these two gentlemen will occupy will play pivotal roles as the country continues the recovery process.

Today, we have Dr. John Marburger who will advise the President on an extensive and complex list of science and technology issues. We still marvel at the wonders of technology and the role it has played over the years in the improvement in the quality of life for all people. Without a doubt, we are living longer and our lives are much fuller, because of the scientific research performed by the many men and women that make up our research community.

As a director of a national laboratory, I am sure that you are aware of the role of technology in winning of previous wars. As we prepare for the next war on terrorism, I am hopeful that you will apply the many lessons learned from previous wars in your new position as the Director of the Office of Science and Technology Policy and Science Advisor to the President, if confirmed by the Senate.

Many have said that much of this upcoming war will be fought on the economic front. If so, then the position occupied by Mr. Bond will also be crucial. As the Under Secetary of Commerce for Technology, if confirmed by the Senate, Mr. Bond will serve as an advocate for innovation and industrial competitiveness within and outside of government. The nation's economy has become reliant upon a steady flow of technology for continuous economic growth. The U.S. is investing over $40 billion per year in civilian scientific research. It is imperative that this investment provides a real return-on-investment.

Mr. Chairman, I would also like to congratulate Dr. Eric A. Cornell of the National Institute of Standards and Technology (NIST) laboratory in Boulder, Colorado on his recent selection for the Nobel Prize in Physics for his work on the Bose-Einstein condensation in dilute gases of alkali atoms, and for early fundamental studies of the properties of the condensates. This represents the second NIST scientist to receive the Nobel Prize in recent years and is quite an accomplishment for all the men and women of the laboratory. I am impressed.

Dr. Marburger, as the Director of Office of Science and Technology Policy nominee and Mr. Bond, as the Under Secretary of Commerce nominee and responsible for NIST, I hope and trust that both of you will ensure that this type of world class research becomes the standard not only for NIST, but for all government labs.

Again, Mr. Chairman, I thank you for calling this hearing and for providing your leadership in this area.

PREPARED STATEMENT OF HON. PATTY MURRAY, U.S. SENATOR FROM WASHINGTON STATE

Mr. Chairman, I am pleased to share my strong support for Phil Bond who has been nominated by the President to serve as the Undersecretary of Commerce for Technology. Mr. Bond is known for being straightforward in his dealings, and attentive to details important to building consensus around sometimes tricky issues. Mr.

Bond also has a wealth of experience both in government and the private sector that should serve him well in the position to which he has been nominated. For these, and other reasons, I think Mr. Bond would make an excellent choice for Undersecretary of Commerce for Technology.

I first became familiar with Mr. Bond when he served as Representative Jennifer Dunn's Chief of Staff. Representative Dunn represents the 8th congressional district in Washington. The district is home to many of the people and high-tech enterprises that have helped to establish Washington State as a leader in this important economic sector. Throughout his tenure, Mr. Bond was able to work in a bipartisan fashion to help build consensus on important policy issues facing Washington's technology industries.

After leaving Congress, Mr. Bond went on to serve as Senior Vice President for Government and Treasurer of the Information Technology Industry Council. There he worked with some of the biggest names in the technology sector including Hewlett-Packard, Dell, Cisco Systems, AOL-Time Warner, Intel, IBM, Apple, and many companies from Washington State including Amazon.com and Microsoft. Earlier this year, Phil joined Hewlett Packard as Director of Federal Public Policy.

His experience in both the executive and legislative branches of the Federal Government; his work in the private sector; and his ability to work across the aisle in a constructive fashion make Phil Bond a first-rate pick for this job. He understands the technology industry and the importance it holds for our economic fiuture, and I think the Commerce Committee will find Mr. Bond to be a good partner in crafting good public policy.

Mr. Chairman, I thank you in advance for the consideration and courtesy I know you will extend to Mr. Bond.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO PHILLIP BOND

Question 1. Based on research done by the Office of Space Commercialization and by other sources in the space commerce industry, there is no question that the United States has lost market share in the space sectors, particularly in the launch sector.

Answer. As I understand it, the Office of Space Commercialization's role is to coordinate space policy and activities within the Department of Commerce. In this role, the Office works with other bureaus of the Department such as the International Trade Administration and the National Oceanic and Atmospheric Administration. Some of the responsibilities undertaken by the Office in fulfilling these obligations have included advocating for the interests of industry in the interagency space policy process, such as the National Security Council's Space Policy Coordinating Committee. In addition, I understand that the Office is also sponsoring, along with the U.S. Chamber of Commerce and the Space Transportation Association, a workshop designed to highlight the opportunities for companies in emerging space commerce sectors and to bring together the investment and space communities.

If confirmed, I plan to work to continue to advocate for the interests of industry in areas such as improving commercial access to Federal launch range assets and in promoting U.S. products and services in international markets. Clearly, U.S. companies offer state-of-the-art capabilities in launch, remote sensing, satellite manufacturing and positioning technologies. I share the concern of many Senators and Members of Congress about U.S. market share in the space sector, and look forward to working with them to improve our competitive position in this industry.

Question 2. Regarding NIST's potential future role as a regulatory agency: The Office of Technology Administration (OTA) also oversees the National Institutes of Standards and Technology. In the increasingly fast paced high-tech communities, some commercial sectors are finding it difficult to come to consensus about commercial technology standards within their now 2- or 3-year laboratory-to-market cycles. For this reason, some have proposed changing NIST's role from one of assisting industry with developing its own consensus on standards, to more of a regulatory role wherein NIST would actually decide which standard would be utilized, including enforcing those standards. How do you feel about such a shift? In your opinion, are there other policies that could assist our industries with this effort without making such a huge change in NIST's role? What impact do you think such a change could make on innovation and research efforts?

Answer. NIST is now involved in a number of efforts to assist in the timely completion of needed standards within each standards body that is addressing needed technologies. These efforts avoid the drawbacks and burdens of government rule-

making, preserve the consensus nature of the developed standards as well as NIST's impartial role in the marketplace, and are timely in meeting industry's needs. For these reasons, as is explained in more detail below, making NIST a regulatory agency is neither necessary nor desirable.

A lengthy and burdensome effort its required for a Federal agency to propose and finalize a new rule. Compliance efforts impose additional burdens on both the regulator and the regulated. The resources and expertise do not now exist at NIST to carry out compliance functions. They would have to be created, at potentially great cost. The cost to industry of meeting new government mandated standards would be profound. The effect on innovation and research might be unfortunate.

In recent years, NIST has begun to participate in industry consortia where the objective is to rapidly develop standards for products with either a short product life cycle, or a short laboratory-to-market cycle. In some instances, NIST has served as a convener, making use of its authority under the Federal Technology Transfer Act of 1986 to develop Cooperative Research and Development Agreements (CRADA's) to rapidly develop standards needed by U.S. industry. NIST also participates in standards setting activities in which it is not the convener, including the World Wide Web Consortium and the Computer Graphics Metafile Open Consortium.

Through these consortia and others like them, industry is finding the means to develop standards rapidly, without profound government intrusion. Within the formal standards system, NIST has supported changes that have been accepted and that also will serve to remove old procedural requirements in order to allow those bodies to act more expeditiously.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN MCCAIN TO JOHN MARBURGER III

Question 1. Quantum computing uses entanglement and other quantum mechanical properties to do calculations. Quantum mechanics permits a small number of atoms to potentially store and process enormous amounts of information—far more information than could be handled by even the most powerful electronic supercomputers. In fact, a quantum computer consisting of just 300 interacting atoms could store as much information as could be stored by a classical electronic computer that uses all the particles in the universe (about 10^{80} particles). An example of the enormous increase in power represented by a quantum computer: A complex code for encrypting information that would take today's best supercomputer 20 billion years to decipher could be cracked by a modest quantum computer in 30 minutes. The implications for information security are obvious, and cryptography would be one of the most significant applications of quantum computers—quantum computers would probably not be used to just add numbers or do other simple operations.

Given the possible merits of quantum computing, does this warrant a "Manhattan project" style approach for future research in this area?

Answer. No. It is true that the U.S. has vital interests that require high-performance computers with capabilities well beyond those that are currently available. From cryptology and precision target engagement systems to weather prediction and genomics, computing challenges exist that require computing systems beyond our current capabilities.

Quantum computing offers tantalizing new capabilities to address these needs, but research on quantum approaches is still in its infancy and our understanding of the technology is grossly inadequate. Major long-term research questions exist as to how to practically construct hardware devices. Moreover, not all computational challenges lend themselves to quantum computing.

Interest in quantum computing began more than 15 years ago, but intensified following Peter Shor's 1994 discovery of a quantum algorithm for factoring numbers, a computationally intensive application. Significant increases in funding have been reported in the past year at defense R&D agencies. Despite the increasing interest in quantum computing, however, the most prudent approach to maintaining our technological superiority in advanced computing at this time is to support a broad research and development portfolio in advanced computer architectures. The research portfolio should contain nearer term projects such as the IBM Blue-gene "cellular" architecture as well as higher risk approaches including quantum systems.

Question 2a. What are your views on the current process used by the government to determine the research priorities for climate change research?

Answer. The current process is a coordinated interagency and interdisciplinary approach that sets appropriate scientific priorities and addresses the complex issues of climate change research. Under the U.S. Global Change Research Program (USGCRP) each agency carries out the components of the research that it can do

best. At the request of the President, the Secretary of Commerce, after taking input from USGCRP and other sources, is reviewing existing programs and developing recommendations for the President's Climate Change Research Initiative. The priorities for that initiative are currently under development. The Department of Energy and other agencies are working in parallel to develop the President's new Climate Change Technology Initiative. As with the other global change-related research carried out by the U.S. Government, implementing the resulting priorities of these initiatives will involve coordination among multiple agencies of the government.

Question 2b. Do you feel that changes are necessary to strengthen the role of the U.S. Global Climate Change Research Program?

Answer. We will continue to look at ways to improve and strengthen the USGCRP as we will with all scientific programs. As noted above, the U.S. Global Climate Change Research Program has a coordinated scientific process that sets appropriate scientific priorities and addresses the complex issues of climate change research. The President made it clear in his June 11 speech that climate change research will be a priority for this Administration, and I support this priority. He stressed three areas in his speech: development of a Climate Change Research Initiative, development of a new Climate Change Technology Initiative, and the need for greater international collaboration in climate modeling and other areas. These initiatives will provide a strong framework for climate change research.

Question 2c. Will you ensure the timely release of the annual "Our Changing Planet" report to allow the Congress to take comprehensive look at the overall budget for the U.S. Global Climate Change Research Program?

Answer. The fiscal year 2002 Our Changing Planet Report is finalized and we expect it to be printed and transmitted to Congress by the end of October. We will work with Congress to develop an appropriate way to communicate the FY2003 budget in a timely fashion.

Question 3. What are your thoughts on the National Academy of Science's recommendation for a National Climate Service which would coordinate a global weather observing system?

Answer. I generally agree that the Nation needs a better-defined and more integrated set of climate services than we have currently, but the optimum structure of a new service remains to be determined, as the NAS report points out. Indeed many elements of the needed observation, analytical and modeling systems already exist in the National Weather Service, and at universities and Federal research centers across the country.

Most of our current observing systems were designed to help forecast daily and shortterm weather patterns (storms, temperature, rainfall, hurricane tracks). These systems are designed to monitor daily large environmental changes and current differences in pressure, upper air circulation patterns, and other characteristics that allow forecasts to be developed. Climate applications require data sets that can document small changes in the environment and patterns that occur over seasons to decades, and at regional to global scales. Applications of climate data include monitoring and modeling how the planet (or specific regions) is changing and for predicting seasonal to multi-decadal patterns. This places a premium on accuracy and consistency over time. Climate observation needs special data sets and modeling tools not needed for weather forecasts. Understanding and monitoring the heating and cooling impacts of changes in greenhouse gases, aerosols, and solar radiation require establishment and long-term maintenance of well-calibrated observing systems.

On seasonal to decadal timescales, climate information is used for economic, agricultural, resource management, and disaster planning. On decadal to centennial timescales climate information and projections are key input for policy and planning decisions by governments and the private sector. How large should emission reductions be? What new energy technologies should be invested in? What are the societal threats? What carbon sequestration strategies might be pursued?

The different timeframes and customer bases for weather and climate data, and the need for new types of global observations, for coordination with observing programs internationally, and for long-term consistency in data calibration, interpretation, and management need to be considered in future investments.

Question 4. I, along with Senator Lieberman, recently announced our intentions to consider a "cap and trade" program for the reduction of carbon dioxide in the atmosphere. One of the initial steps is to determine the appropriate atmospheric level of carbon dioxide along with the corresponding impacts. What are your thoughts on how we may proceed to determine the appropriate level?

Answer. This is a question to which there is no simple answer. The appropriate level of atmospheric CO_2 is a function of our tolerance and capability to adapt to environmental change, as well as our constantly improving understanding of the

interactions between atmospheric CO_2 and global and regional climate. Many scenarios have been developed through the IPCC and other processes; some of these scenarios have obviously unrealistic goals and assumptions, but for a broad middle range of scenarios, social and economic decisions are critical drivers of eirtission trajectories. The short answer is that this is more a social and political question than a scientific one, but one that must be informed by the best science and the best predictive capabilities we have to offer. An ongoing open and informed dialog between the science community and policymakers will be necessary to resolve this issue.

Question 5. NASA is currently conducting a review of the International Space Station program. As the program currently stands, only a total of 20 hours per week would be available for research purposes. Do you feel that 20 hours per week of research time justifies the financial investment that the government has in the program? If not, what would you recommend to the President as a means of restoring the program?

Answer. In some sense, even 1 hour of research per week is priceless if the facility is unique. While the significant cost growth is troubling, the International Space Station continues to represent an exciting opportunity for science. There is a community of thousands of scientists and students from government, academic, and the private sector interested in using the Station to answer fundamental questions in protein crystal growth, cell cultures, fluid physics, gravitational biology, and materials science. But perhaps the greatest value of the Station will be in its flexibility—it is not a static laboratory, but instead offers adaptable, long-terns, continuous access to the space environment with skilled human operators onsite.

The Station is still in the process of being deployed and currently provides for three crewmembers to be continuously on-orbit. The figure of 20 hours per week average crew time available for research was met by the second increment crew during an extremely busy period of assembly. I know NASA is exploring innovative ways to provide more crew time for research with three permanent crewmembers. Good science is already being done on the Station but more can quid should be done. I believe it is important to focus on outputs, good research, and not just on key inputs like crew time. Perhaps more can be done with remote control from researchers on the ground and experiments that need less continual attention.

Question 6. What type of changes are being experienced because of the increasingly multidisciplinary nature of research and technology development? Do these changes warrant a revision of our data reporting system?

Answer. One of the most important characteristics of science today is the ability to relate phenomena in nearly every field to the structure of matter at the atomic level. This capability, enabled by advances in instrumentation (mostly from the physical sciences) and access to vast computing power, has transformed the traditional scientific disciplines, and blurred the distinctions among them. Thus physicists now work with biologists on problems of protein structure, and chemists work with computer scientists to understand catalytic reactions. This trend does have consequences for the tracking and funding of research and technology, and care is required to ensure balanced support of the mutually interdependent programs.

The Office of Science and Technology Policy is uniquely positioned to identify interdisciplinary opportunities and, to facilitate the convergence of multiple disciplinary efforts across department or agency boundaries toward a common research goal. Gaps do occur that hinder cooperation between the interested groups. For example, sometimes funding mechanisms do not exist that allow different departments/agencies/investigators to work together. To counter this, funding organizations are increasingly devising grants for trans-institutional awards. OSTP has encouraged and facilitated these types of endeavors and will continue to do so. Some of our most notable technologies have arisen out of unforeseen or even unlikely interactions between dissimilar disciplines and I am sure this will continue and grow.

The research data generated by interdisciplinary R&D are currently being made available effectively through traditional professional publications, which are flexible enough to adapt to changing fields. To ensure appropriately balanced funding through multiple agencies, OSTP works with the Office of Management and Budget to ensure that reporting categories accurately reflect investments made in multidisciplinary programs.

Question 7. In your written statement, you spoke about the need for achieving diversity throughout the ranks of the science and engineering workforce. Do you have any plans on how you would pursue this challenge?

Answer. The National Science and Technology Council (NSTC) report, "Ensuring a Strong U.S. Scientific, Technical, and Engineering Workforce in the 21st Century," released in April 2000, concluded that ST&E workers are essential to both the private and public sectors. Given a tight global ST&,E workforce, changing demo-

graphics, and projected growth in ST&E-based jobs, it is in the national interest to vigorously pursue the development of domestic ST&E workers from all ethnic and gender groups. I plan to pay special attention to groups that are currently underrepresented in the ST&E workforce, because it is with these groups that much of our nation's growing talent pool resides.

If confirmed, I will work with Federal agency heads through the National Science and Technology Council (NSTC) to enhance coordination of existing ST&E workforce programs and planned workforce initiatives. In addition, I plan to challenge university, foundation and private sector leaders to create innovative scholarship, job training, internship and other programs to encourage all students, especially women and minorities, to pursue science, engineering and technical careers.

Question 8. To further ensure a higher quality of education for U.S. students, will you reach out to the secondary education system to ensure that science and engineering curriculums are consistent with the changing needs of industry? Will you provide a special focus on minority serving institutions that already provide a majority of minority scientists and engineers?

Answer. My years as a higher education administrator have prepared me to work with the leadership of the science and engineering secondary education system to achieve these desirable goals. With the assistance of the President's Council of Advisors on Science and Technology Policy (PCAST), I plan to work with schools of higher education and relevant Federal agencies through the National Science and Technology Council (NSTC) to review what we know about today's higher education S&E curriculums and what changes are needed to meet the quickly evolving needs of private industry. I will make a special effort to reach out to minority serving higher education institutions to find out how we can better support their ability to help produce the next generation of minority scientists and engineers.

Question 9. What are your thoughts on the Advanced Technology Program? Is it the type of research program that satisfies the needs of the nation's research agenda?

Answer. The fiscal year 2002 budget proposes suspending the granting of new awards in fiscal year 2002 pending a full comprehensive review of the ATP by the Department of Commerce. This review will determine if ATP grants to U.S. industry are still merited. The performance of the ATP has been previously evaluated through a combination of external review, economic impact studies, and evaluation of numerous quantitative outcomes and outputs. These measures will be used as input in determining the continued effectiveness of the ATP and whether Federal ATP grants are still required. I have full confidence that Secretary Evans and the Department of Commerce will lead a thorough ATP review and make a well-reasoned and appropriate recommendation on the Advanced Technology Program.

Question 10. Many observers have said that this new war against terrorism will utilize groundbreaking American research in fields, such as biotechnology and cybersecurity. As National Science Adviser, how do you plan to mobilize industry and the R&D community to prepare for this effort?

Answer. I have been impressed with the number of experts in the scientific and technical communities who have already contacted me to express their desire to support the government's war against terrorism. I intend to act immediately on this issue, should I be confirmed. I will convene workshops to bring the scientific, academic, government, and hi-tech communities together to examine existing antiterrorism and counter-terrorism programs and explore research and technology development that have the potential to produce critical capabilities for the long-term war against terrorism.

The Presidents of the National Academies convened a meeting on combating terrorism on September 26 which produced a preliminary plan for mobilizing the scientific and higher education communities. Their efforts require coordinated action among the science and engineering funding agencies, which is a natural task for OSTP. I welcome their interest and support and plan to work closely with them.

After confirmation, I will discuss the role of OSTP in coordinating the S&T response to terrorism with the President's National Security Advisor, Homeland Security Advisor and others within the Administration and Congress. I envision working closely with those in the scientific and hi-tech communities as OSTP engages in this critically important function.

Question 11. American industry, laboratories, and universities have identified a serious shortage in American college students pursuing science, mathematics, and engineering degrees. There also have been complaints that students are graduating with degrees in these areas, but still lack many basic skills. In your opinion, what should the Federal Government do to help resolve this shortage?

Answer. America's continued world leadership depends critically upon an adequately trained scientific, technical and engineering workforce. This sector continues

to be one of the fastest growing within the U.S. workforce, with an increased demand for technicians and Ph.D. level research scientists alike. Unfortunately, our current educational system is not producing enough qualified workers to keep up with this demand, and women and minorities are significantly underrepresented in these positions. There is no easy fix to this problem, but I am committed to making progress. The President addresses one of the root causes of this problem in his education blueprint, No Child Left Behind, calling for a new Math and Science Partnership Initiative (MASPI). MASPI would strengthen the teaching of primary and secondary math and science education in our schools and enhance their interaction with institutions of higher learning. We need to make sure that K–12 teachers are qualified to teach math and science classes, opening new doors of opportunity rather than boring students with uninspired instruction or scaring them away by conveying their own "math anxiety". Once we have kindled an interest in these topic areas, it will be up to our schools of higher education to make sure that interested students receive the education, training, support and guidance they need to pursue careers in academia government or private industry. I will work with the leaders of Federal, state, academic, foundation, and private sector institutions to ensure that schools of higher education are up to this challenge.

Question 12a. For the past few years, Congress has discussed doubling the amount of Federal money spent on research in physics, chemistry, astronomy, and other non-medical fields in order to attain parity with biotechnology funding.

Have you examined this issue, and what guidance would you give to Congress as it considers this "doubling" issue?

Answer. We need to take a careful look at the entire R&D portfolio to better understand our investments and the interconnectivity that exists among them. For example, certain breakthroughs in physical science are responsible for some of our most important biomedical advances. We need to make certain that our research programs, across the frontiers of science, are robust and appropriately leveraged in both the public and private sector. We need to make sure our national S&T infrastructure is second to none. To do this, some programs will require more attention than others. If confirmed, I will work with OMB and the Federal agencies included in the Federal Science and Technology Budget to help ensure that this issue is considered as the President develops his budgets for submission to Congress.

This said, I am wary of sweeping initiatives that would double budgets by agency without considerable analysis and a clear idea of what is to be gained. We should be engaged in a thoughtful and analytical review of all the research budgets and their expected outcomes.

Question 12b. What would you do to ensure better accountability of these funds?

Answer. Proper accountability depends on the nature of the research and on the type of research performer. Any set of realistic and workable R&D performance measures needs to reflect these differences. For example, the research outcomes of applied research are usually more predictable than those of basic research. Intramural and extramural program managers have a different set of accountability tools. Underpinning all accountability is the need to ensure that the research (at the individual project level to the program level) is of high quality as determined by impartial peers. For many applied programs, it may also be important to get quality assessments from end users of the research. OMB circulars, like A–21 and A–110, provide accounting rules and procedures to dictate stewardship of Federal funds used in extramural research. These circulars need to be examined periodically to make sure they are functioning as desired.

Question 13a. Over the years the U.S. economy has become reliant upon a steady flow of technologies for continuous economic growth. The U.S. is investing over $40 billion per year in civilian scientific research.

Do you have any ideas about how to improve the technology transfer process to increase the flow of technologies fom the federally sponsored research laboratories to the marketplace?

Answer. Federal sponsorship of civilian scientific research takes many forms, from individual investigator awards to the construction of huge facilities shared by thousands of investigators. It funds work in universities, private laboratories, and Federal laboratories. The Federal laboratories themselves come in a wide spectrum of sizes and missions. The projects supported range from very basic to very applied, and the manner in which the knowledge gained affects the marketplace differs for each of these different kinds of project.

Much of the impact of this work comes through the personnel who perform it as they move through their careers as students and professionals. "Most technology is transferred on two legs!" Much also comes through the regular professional reporting process in journals, conferences, and special publications. Only a small fraction of the impact comes from actual transfer of intellectual property through licenses

or other agreements. This portion attracts attention disproportionate to its significance because it is usually associated with the quickest (shortest term) payoff on the research investment.

In my opinion, all the mechanism necessary to an effective technology transfer process are in place, but the short term, intellectual property-oriented mechanisms are exploited with great variation among the different sponsoring agencies. I am aware that studies of this issue have been performed in the past, and I need to review them before I can come to a conclusion regarding direction on this issue.

Question 13b. What areas of the innovation process would you consider to be in need of changes to meet this growing demand?

Answer. A difficulty exists in the early stages of technology transfer from the laboratory to industry. Often in the past we have assumed that the results of basic research will be picked up and developed by the private sector. We are discovering that this does not occur as often or seamlessly as is optimal. There is a mismatch between the new general technical concepts that emerge from the laboratory and the product orientation that an industry needs to justify the expense of further development. Resolving this mismatch requires special attention to the earliest stage of the technology transfer process, a stage that is difficult to characterize and remains poorly understood.

Question 14. In the past, many large scale science projects were presented to the Congress with cost estimates that did not reflect the total project costs. Will you ensure that total life cycle costs are presented when requesting Congressional approval of these projects?

Answer. There are two issues: First, scientific discovery occurs on the frontier of what can be observed with existing technology. Consequently the technology of the projects is relatively untried, so normal approaches to cost estimation may not give meaningful numbers. Second, the process of discovery continues during the construction of large facilities. It is foolish to persist ins the construction of an expensive instrument if a new discovery suggests that it will not observe anything of value. Either the design should be changed or the project should be canceled. The first issue suggests why governments should sponsor such projects in the first place: they drive technology advancement. The second is part of the inherent risk of doing large scale research.

Life cycle costs can and should be estimated for any project, but such estimates will be very rough in the early stages of planning and choosing among alternative approaches. The origins of risk and uncertainty should be fully disclosed to Congress along with a clear statement of benefits expected from the project. This is a complex subject with which I have direct experience, and on which I hope to work closely with OMB and other agencies should I be confirmed.

Question 15. How critical is international collaboration for scientific research to the overall success of the U.S. investments in this area?

Answer. International scientific collaboration is an essential component of the U.S. research enterprise. While the world is marveling at the pace of globalization in economic and cultural affairs, science has been a global endeavor virtually since its inception. The U.S. has a long history of international cooperation on science and technology that has yielded remarkable benefits. We can simply look at the Nobel Prizes recently awarded where our American Laureates in physics shared the prize with a German scientist, our American Laureates in chemistry shared the prize with a Japanese scientist and all three economics Laureates were American.

So-called "umbrella agreements" on science and technology currently exist with thirty-six countries as well as the E.U., NATO and the OECD, with literally hundreds of more specific agreements falling within these protocols. Beyond the thirty-six agreements, we have active collaboration in science and technology with many more countries.

The benefits of this collaboration .are not always easy to quantify. Some scientific challenges are so ambitious and important that it would be difficult, if not impossible, for one Nation to pursue them alone. One example is the Large Hadron Collider (LHC) at CERN in which the United States is a significant contributor. Others are the International Space Station, and the Human Frontier Science Program. Beside these large institutional projects are countless collaborations of American scientists with their international colleagues in which the benefits of free exchange of data and insight may never be measurable. That free exchange is an essential part of the scientific pursuit and necessary to maximize the investments made in science and technology by the United States and other countries.

Question 16. You mentioned in your written statement that the "spillover" effect means that private industry cannot and will not commit the level of resources to R&D that is best for society. Can you elaborate on the "spillover" effect, how it works, and its long term effects on Federal research spending?

Answer. The "spillover effect" refers to the fact that much of the return on an investment in basic research goes to society in general, or to all the companies in an industry sector, not only, or even primarily, to the investing company. This creates a disincentive for investment by private companies in basic research that might have broad benefits to society. Consequently, Federal Governments have traditionally supported this kind of research, and this can be expected to continue. Since this is not a new phenomenon, I do not expect it in itself to have a long term effect on Federal research spending. The total of such Federal spending should ideally be proportional to the expected benefit to society of the supported research.

RESPONSES TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO JOHN H. MARBURGER III

Question 1. Regarding NASA: What is your position on continuing construction of the Space Station? Do you believe that other NASA programs should be jeopardized in order to pay for the completion of this worthwhile project? Would you support a general increase to NASA's annual budget in order to complete the Station and allow for substantive research to be conducted onboard? As you know, the Space Shuttle will likely be utilized through 2020 or possibly a decade beyond. Yet, NASA continues to budget for the Shuttle program as if it were going out-of-business within the next 5 years. As Director of OSTP, what do you plan to do to remedy this situation?

Answer. I support the continued construction of the International Space Station in order to meet the Administration's commitment to achieving a permanent human presence in space, a world-class research facility, and to accommodate the elements from our international partners. I do not believe other important NASA programs need to be jeopardized in order to keep the program within the President's Budget Blueprint, however, it is vital for NASA to improve its financial management and to be held accountable for the project.

I would like to hear from the existing NASA review teams now underway. In particular, I would like to understand how NASA's financial management system should be improved to anticipate and avoid this kind of cost growth in the future. The safe deployment of the Space Station to date is a credit to the engineering skill of NASA and its dedicated contractors, but clearly significant improvements are needed in its management of cost and schedule risk. I also want to get a better understanding of the program's science objectives and focus on ways to improve the productivity of research conducted in space.

Nonetheless, it is important to make the investments necessary to keep the Shuttle flying safely until potential replacement vehicles are available in the next decade. A significant portion of Space Shuttle operations are already undergoing initial steps toward privatization and are being conducted by United Space Alliance—a joint venture of Boeing and Lockheed Martin. Further privatization could help move NASA from operations to its core mission of science, technology, and exploration and privatization may also reduce overhead and infrastructure costs in the long run. However, ensuring safety through the availability and continuity of a high quality workforce must remain a top priority.

Question 2. Regarding an Interagency Working Group on Space: The Rumsfeld report recommended the creation of an inter-agency working group on space issues similar to—but not the same as—the previous Bush Administration's National Space Council. I am concerned that the Rumsfeld report recommended that this working group report directly to the National Security Council, but not also to OSTP. As you know, more than 50 percent of the U.S. space activities are non-governmental. Given this, it would seem that OSTP should be directly involved in any commercial and civil activities and/or recommendations that such a working group would present. Do you plan on increasing OSTP's role in such a group? Would you support revival of the National Space Council?

Answer. OSTP is already involved in the day-to-day work of the Space Policy Coordinating Committee under the National Security Council. OSTP and NSC staff work closely together on a variety of matters affecting space commerce, space transportation, and international space cooperation. If confirmed, I am confident that I will have a close and cooperative relationship with the NSC and do not see the need for a separate mechanism such as the National Space Council.

Question 3. Regarding Global Warming & the Kyoto Protocol: As the President's Science Advisor, you will be involved in assisting the White House with scientific and technical hot-button issues, such as global warming. What is your scientific opinion about the causes and legitimacy of global warming research? How will you

advise the President and the White House about efforts to confirm the Kyoto Protocol?

Answer. The President asked a similar question of the National Academy of Science prior to his statement of July 11 on national climate change policy. I agree with the NAS response that confirmed the validity of research indicating that human activity has contributed to global warming. Unfortunately, the relation between specific human activities and global warming is unclear. In particular, insufficient scientific data exist to permit a knowledge-based strategy to alter global warming trends. The effect of aerosols produced by industrial activity, for example, is known to be large but is not yet sufficiently well understood to permit reliable modeling. In general, quantitative contributions to global climate phenomena are known only within large, and sometimes compensating, errors.

The Kyoto Protocol itself has such profound negative economic consequences for the United States that any decision regarding it is not likely to be made on purely scientific grounds. The President has made it clear that he thinks the Protocol is seriously flawed on economic grounds, and I support that decision.

Question 4. Regarding Double Federal R&D Investments: As you know, there has long been a congressional push to double the Federal Government's investment in research and development. This and the last Administration responded to that effort by increasing its budget recommendations for the National Institutes of Health (NIH). However, commensurate budget increases for other Federal S&T agencies have not been as forthcoming. I continue to hear from health researchers in Florida and elsewhere that they are limited in their efforts to cure diseases because the basic research in chemistry, physics, and mathematics is not keeping pace with their own efforts in biotechnology and biomedicine. Do you support the effort to double the Federal R&D? What do you plan to do to influence the current Administration in that regard?

Answer. We need to take a careful look at the entire R&D portfolio to better understand our investments and the interconnectivity that exists among them. For example, certain breakthroughs in physical science are responsible for some of our most important biomedical advances. We need to make certain that our research programs, across the frontiers of science, are robust and appropriately leveraged in both the public and private sector. We need to make sure our national S&T infrastructure is second to none. To do this, some programs will require more attention than others. If confirmed, I will work with OMB and the Federal agencies included in the Federal Science and Technology Budget to help ensure that this issue is considered as the President develops his budgets for submission to Congress.

This said, I am wary of sweeping initiatives that would double budgets by agency without considerable analysis and a clear idea of what is to be gained. We should be engaged in a thoughtful and analytical review of all the research budgets and their expected outcomes.

RESPONSES TO WRITTEN QUESTIONS SUBMITTED BY HON. FRITZ HOLLINGS TO JOHN H. MARBURGER III

Question 1. I have been contacted by Senator Jeff Bingaman who sponsored the establishment of the Science and Technology Policy Institute (STPI), then the Critical Technologies Institute, in the National Defense Authorization of FY1991. STPI is the federally funded research and development center that supports the Office of Science and Technology Policy (OSTP). Implementing legislation designates the National Science Foundation, not OSTP, as the primary sponsor of STPI. Senator Bingaman is sponsoring legislation to designate OSTP as the STPI's primary sponsor. Does the current arrangement cause any problems for OSTP? Would you support such legislation? Please explain.

Answer. I am not aware of any feature of the current arrangement that would prevent OSTP from effectively utilizing STPI. Since I do not have experience yet with this arrangement, it is premature for me to judge whether legislation is required to improve it.

RESPONSES TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN MCCAIN TO PHILLIP J. BOND

Question 1. Earlier this year, the physical condition of many of the National Institute of Standards and Technology (NIST) labs was brought to my attention. Congressman Udall and I expressed these concerns to the Secretary of Commerce in April of this year. In the Secretary's response to that letter, he indicated that he would have NIST update their facilities' needs and timeline. Can you update us on

the status of that revision and your plans to ensure that the conditions of the labs are properly addressed?

Answer. Great strides have been made recently in upgrading the NIST Gaithersburg facilities. An Advanced Chemical Sciences Laboratory (ACSL) was completed in 1999 and the Advanced Measurements Laboratory (AML) is currently under construction and will be completed in 2003. With the AML underway, NIST's highest priority facilities need is the renovation of its Boulder site.

NIST facilities are a concern for Secretary Evans. The Department and OMB are reviewing these needs along with other Department priorities, and NIST's updated facilities plan will be available with the President's budget request.

Question 2. The President promised a Department of Commerce review of the Advanced Technology Program in his budget request for fiscal year 2002. Can you update the Committee on the review and ensure that we receive a copy of the results?

Answer. The Secretary is in the final stages of his initial review of the Advanced Technology Program. Upon completion, the Secretary will forward a copy of his proposed legislative reforms to the Chairmen and Ranking Members of the Senate Commerce Committee and the House Science Committee.

Question 3. Over the years we have heard about the merits of the Baldrige program and the criteria used to select the winner of the annual awards given by the President. Do you have any plans to implement the Baldrige criteria within the Technology Administration?

Answer. The Baldrige criteria for performance excellence provide a useful way for businesses and organizations to evaluate their strengths and weaknesses and develop improvement plans. If confirmed, I am committed to leading and managing the Technology Administration as effectively as possible, building on TA's strengths and finding ways to deliver better service and value to the American people. I will closely consider the best ways to strengthen TA, including examining how the Baldrige criteria might best be used to improve TA.

Question 4. Several members on the Commerce Committee have expressed an interest the Experimental Program to Stimulate Competitive Technology (EPSCOT). Can you elaborate on your plans for this program and how it fits within your overall plans for the Technology Administration?

Answer. The Department appreciates support for the EPSCOT program in the Technology Administration. An independent program evaluation was launched to review what the program has accomplished for those states receiving awards, and to determine what we have learned in terms of the structure of the program and ease of use for potential applicants. The Department is in the process of reviewing those findings and looks forward to meeting with all interested parties on this subject in the near future.

Question 5. Can you update the Committee on the Department's plan for NTIS?

Answer. NTIS has streamlined itself and, when the annual independent audit for fiscal year 2001 is completed, expects to report earnings of close to $2 million. This will be its third consecutive year of profitability. The Department deserves a degree of credit for NTIS' remarkable turnaround. It installed a new management team at NTIS that instituted a number of cost-saving measures. In addition, the various components of the Department absorbed a number of excellent NTIS employees that were excess to its needs. Accordingly, if confirmed, I will continue to monitor its financial situation. I know of no plans to ask Congress to change its status at this time.

However, based on briefings I have been given, I do believe some changes to its business model may be in order. Specifically, NTIS needs to explore new ways to make federally funded scientific and technical information more readily accessible to a general public that is accustomed to obtaining information on the World Wide Web for free. At the same time, NTIS must operate on the "substantially self-sustaining" basis called for in its organic legislation.

The NTIS' Director agrees with this assessment and is committed to making this happen. In fact, NTIS has solicited public comment on a plan to give the public free online access to the current portion of its meticulously indexed Bibliographic Data base and to provide direct links from it to any documents in it that are available at the web site of the sponsoring agency. Those links would remain operable even if the agency takes the item off its own web site. NTIS will also provide access to its electronic document collection at a very nominal fee. So far, it appears the response has been very encouraging.

Question 6. During the 105th Congress, the Congress established the Teacher Science and Technology Enhancement Program, which would assist teachers in their understanding of science and its relationship to commerce. Can you comment on why this program did not receive any funding as part of the President's budget re-

quest given the emphasis that the President has placed technological-based economic development?

Answer. While the budget predates my nomination, I know the President is committed to ensuring the best educational opportunities for all children. The President recognizes the importance of education to future economic and technological success and is investing unprecedented sums in developing our knowledge base through education. In his education reform bill the President has proposed investing $1 billion over 5 years in NSF-led partnerships to improve the K–12 math and science curricula. Additionally the Administration proposed a bipartisan plan to mandate accountability in our education system for the first time, demanding schools develop metrics for assessing performance so we know who is succeeding and can help those who are failing. And the President has asked Congress to triple college loan forgiveness for those who are willing to teach math and science in underserved areas. Improving education is a complex challenge that will require close cooperation between Congress, the Administration, educators, and the American people.

Question 7. The Office of Space Commercialization was recently added to the Technology Administration. Last month, NASA has circulated a draft report on space commercialization that highlighted ideas, such as greater emphasis on corporate sponsorship, advertising, merchandising, space tourism, and utilization of the International Space Station. What ideas do you have on space commercialization, and how do you intend to work with NASA on this issue?

Answer. I am aware that the Department of Commerce has reviewed NASA's draft report on space commercialization. If confirmed, I will ensure that the Department remains involved in the development of NASA's plans for commercialization as well as with other agencies whose activities concern the space industry. Through the Office of Space Commercialization, the Department of Commerce has played a critical role in the development of policy that encourages the growth of the commercial space sector while protecting national interests. Through these activities, the Department has developed a closer working relationship with NASA and the Federal Aviation Administration. As Under Secretary, I would strongly encourage those relationships to continue and support the Department's role in the formation of policy affecting the space launch industry, commercial remote sensing, satellite navigation, and satellite manufacturing and communications.

The Department of Commerce should be a leader in promoting a positive business climate for space commerce. Two events that the Department will host in the coming weeks demonstrate ways the Department of Commerce can facilitate space commercialization. The first workshop aims to improve the quality of economic data about the space industry. Better space industry data will ultimately benefit the industry as a whole, by driving the public and private sectors to make sound decisions. The second workshop will invite industries not traditionally engaged in commercial space activities to participate in a discussion of potential future markets and the necessary conditions for market growth. The focus of the workshop will be on identifying realistic new space markets and ways to remove barriers to entry.

NASA and other interested government agencies and departments have been invited to participate in both workshops. Their involvement will lead to more interagency coordination as space commercialization efforts are developed and implemented.

Question 8. Another important program in the Technology Administration is the Partnership for a New Generation of Vehicles. What role should this office play in the President's energy strategy, and efforts to reduce carbon emissions in the United States?

Answer. The industry/government partnership for light-duty-vehicle research and technology development, the Partnership for a New Generation of Vehicles (PNGV), is a major element in the transportation component of the President's energy strategy. Its goal is to reduce our dependence on foreign sources of petroleum for transportation uses in the USA. This partnership also seeks to create the technology basis to first reduce, and then remove, carbon emissions from light duty vehicles. Technology Administration, specifically the Office of the Under Secretary for Technology, is the lead office for the Federal Government's participation in the partnership and serves as the government secretariat. Participating Federal agencies include the Departments of Commerce, Energy, Transportation and Defense; the Environmental Protection Agency; the National Science Foundation; and NASA (20 Federal laboratories from these agencies). In addition to the Federal partners and the major U.S. automakers' R&D consortium, USCAR, more than 350 automotive suppliers, universities, and small businesses have participated in PNGV activities.

Question 9a. Over the years, the U.S. economy has become reliant upon a steady flow of technologies for continuous economic growth. The U.S. is investing over $40 billion per year in civilian scientific research. Do you have any ideas of how the

technology transfer process may be improved to increase the flow of technologies from the federally sponsored research laboratories to the marketplace? (b) What areas of the innovation process would you consider to be in need of changes to meet this growing demand?

Answer. Technology Administration has helped draft two recent laws to improve the technology transfer process, i.e. PL 104–113, The National Technology Transfer and Advancement Act of 1995 and PL 106–404, The Technology Transfer Act of 2000. PL 104–113 guaranteed rights to a private party in any invention made by a Federal lab under a cooperative research and development agreement (CRADA) while requiring only minimum rights to the Government in any invention made by the private party. This law also increased the amount of royalty sharing with Government inventors, PL 106–404 simplified the procedures for licensing federally owned inventions and provided for the licensing of background inventions under a CRADA.

The agencies are implementing these changes with the assistance of Technology Administration, which chairs an interagency group on technology transfer. This group is also considering the need to provide education and training to Government laboratories on how to recognize and evaluate innovations and whether to seek a reduction in PTO fees such as are enjoyed by universities and small businesses.

The implementation of these laws, as developed by the interagency group, should improve the transfer of federally funded research to the private sector.

Question 10. There is Congressional interest in increasing funding for research and development at the various Federal agencies. What would you do to ensure better accountability of these funds?

Answer. In the most recent fiscal year, the Federal Government invested an estimated $90 billion in R&D, representing about 14 percent of all discretionary spending. This large public investment recognizes that science and technology are vital to our nation's economy, national defense, standard of living and quality of life. Moreover, with the rate of technical progress accelerating, there are increasing numbers of promising avenues for our R&D investments. As a result, every Federal R&D dollar must be invested as effectively as possible, and the ultimate goals for this research need to be clear.

The focus should be on measuring whether our R&D investments are effective. That means assessing the performance of research programs, examining how R&D is contributing to national goals, and linking information about performance to decisions about funding. In allocating our R&D investments, we should also pay attention to the appropriateness of the Federal role, research quality, management practices, the role of industry, the size of the investment, and how these investments are expected to achieve our goals.

Developing a national R&D portfolio that meets the many and every changing needs of the Nation requires greater coordination of R&D planning within the Executive and legislative branches of government, as well as consideration of the nature of the private sector's investment. In this regard, the Technology Administration, working with the White House Office of Science and Technology, can contribute to developing that crosscutting view, for example, by serving as a portal to industry to better understand its knowledge and technology needs, and the nature of its R&D investments.

Question 11. What do you see as the main issues concerning U.S. industry's global competitiveness?

Answer. Our economic performance over the past decade provides convincing evidence that U.S. industry is highly competitive globally and, despite slow growth recently, is fundamentally strong. We operate in a dynamic and changing business and technological climate, requiring continual examination of the global environment, reassessment of our national policies, and adjustment when appropriate. In my opinion, we must pay close attention to four broad areas of policy:

- Ensuring a business environment—economic, tax, legal, and regulatory—that fosters the commercialization and deployment of new technology, attracts global investment to the United States, and helps our companies grow and compete.
- Developing a workforce that can adapt to rising skill requirements and changing technologies.
- Encouraging sustained investment in a broad and balanced R&D portfolio in both the public and private sector.
- Renewing our infrastructure, including widespread deployment of modern information infrastructure.

Question 12. Given your earlier comments on workforce needs, what specific plans do you have to increase the diversity of the workforce, especially in management, in the science and technology areas, not only within the Technology Administration and the Federal Government, but also in industry?

Answer. Across business, the research enterprise, and in government, workplace diversity is increasingly recognized as an organizational asset. We operate in a global economy, and need a workforce that can serve a diverse customer base. Also, our economy is increasingly based on knowledge and innovation, and a diverse workforce will produce the different perspectives, different approaches to problem solving, and a richer pool of ideas that will help us thrive.

The Technology Administration has been active in examining workforce diversity, especially in the science, engineering, and information technology workforce where women and some minorities are under represented. That research indicates that this under representation has strong origins in the technical education pipeline.

For example, women leave high school about as well prepared in math and science as men. And women earn more than half of all bachelor's degrees. Yet, women are less likely to pursue and earn degrees in science and engineering than men. This suggests that increasing women's participation in the education pipeline that leads to technical jobs requires efforts to get more college-bound women to choose science and engineering as a field of study.

Black and Hispanic minority college freshman declare science and engineering as a major at a rate equal to or higher than white college students, and they earn bachelor's degrees in science and engineering at rates roughly equal to white students. This data suggests that a principal way to improve the participation rates of these minorities in science and engineering is to increase their presence in the overall pool of undergraduate students. Boosting math and science achievement is critical important to meeting this goal, and the President's proposed 5-year $1 billion investment through the Math and Science Partnership program would significantly strengthen K–12 math and science instruction and curriculum.

Another challenge is ensuring that young people get good information about the science and technology professions during their middle school years, when many young people form their notions about careers. In an effort to provide them with information that conveys the importance, excitement, and satisfaction associated with careers in science and technology, the Technology Administration has teamed with the National Association of Manufacturers on a nationwide public service campaign and technical careers web site focused on "GetTech." We will be exploring other ways we can encourage young people to prepare for careers in science and technology.

CHARLES E. SCHUMER
NEW YORK

COMMITTEES:
BANKING
JUDICIARY
RULES

United States Senate
WASHINGTON, DC 20510

October 9, 2001

The Honorable Ron Wyden
Committee on Commerce, Science and Transportation
United States Senate
Washington, D.C. 20510

Dear Senator Wyden:

I am very pleased to write in support of Dr. John Marburger's nomination for the position of Director of the White House Office of Science and Technology Policy. I cannot think of a more suitable candidate for this important position within President Bush's administration.

Dr. Marburger's distinguished career makes him more than qualified for the position to which he is nominated today. A graduate of Princeton University and Stanford University, he was a professor of physics at the University of Southern California and at the State University of New York at Stony Brook, where he served as President from 1980 to 1994. He was appointed Director of Long Island's Brookhaven National Laboratory in 1998.

On a personal note, I have had the pleasure of working with Jack Marburger during his tenure as Director of Brookhaven National Laboratory. I have been very impressed by his leadership and management of this facility through difficult times. I have also sincerely appreciated his philosophy regarding the need for continued scientific research and the need for public transparency regarding that research.

In 1997, Brookhaven National Laboratory announced that its nuclear reactor had released waste into the area's groundwater. Upon his appointment to the facility a year later, Dr. Marburger sought to address resulting public concerns through broad-based, careful education of the people affected by Brookhaven's activities. He supported the creation of a Community Advisory Committee whose meetings I have attended, through which information regarding lab activities were disseminated and myths were dispelled. He and I also worked together in order to remedy problems that existed at Brookhaven at the beginning of our respective tenures, including accelerated cleanup of the nuclear waste and shutdown of the nuclear reactor in 1999.

In the three short years of his work there, Dr. Marburger has facilitated a major shift in community perceptions of Brookhaven, turning it into a laboratory that is accepted and respected for the major breakthroughs in scientific research that it produces every year. In addition, his oversight of construction of new facilities at the laboratory, including the Relativistic Heavy Ion Collider (RHIC), has ensured that such breakthroughs will continue for years to come.

Dr. Marburger is a reputable scientist whose general philosophy regarding transparency in research is essential to the further development of science and technology in the 21st Century. As science advisor to the President, his clear style of advocacy will result in rapid progress in science and technology policy for our nation. Through his appointment, New York State is losing a rare treasure, and the nation is gaining a great leader in science. He is a good friend, and I will miss working with him very much. I strongly support his nomination, and wish him the best of luck in this new and exciting role.

Sincerely,

Charles Schumer

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202/879-9384 • FAX: 202/393-5510 • www.sciencecoalition.org

September 17, 2001

Senator Ernest Fritz Hollings
United States Senate
Washington, DC 20510

Dear Senator Hollings:

On behalf of The Science Coalition, we urge you to support the nomination of Dr. John Marburger for the post of Assistant to the President for Science and Technology Policy. He is a highly qualified and well respected member of the scientific community, and he would be a fine addition to the White House team. We wholeheartedly support his confirmation to this position.

The Science Coalition is an alliance of more than 400 organizations, institutions, and individuals that works to sustain and strengthen the national research and education enterprise. It includes more than 60 of this nation's leading research universities. We would welcome the opportunity to work with you, Dr. Marburger and President Bush to achieve our shared goals.

An investment in research and education is an investment in America's future. Your support of the nomination of Dr. Marburger to be the President's Science Adviser would help to advance research as well as education. We commend you for your leadership.

Sincerely,

Talbot D'Alemberte
President
Florida State University

Marye Anne Fox
Chancellor
North Carolina State University

Bob Gagosian
Director
Woods Hole Geographical Institution

Henry Bienen
President
Northwestern University

Graham B. Spanier
President
Pennsylvania State University

William C. Gordon
President
University of New Mexico

Don M. Randel
President
University of Chicago

Jon Westling
President
Boston University

Judith Rodin
President
University of Pennsylvania

Molly Corbett Broad
President
University of North Carolina

Nannerl O. Keohane
President
Duke University

William Kirwan
President
Ohio State University

Peter McPherson
President
Michigan State University

Gordon Gee
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Vanderbilt University

Hunter R. Rawlings
President
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Carol C. Harter
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University of Nevada, Las Vegas

L. Dennis Smith
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George Rupp
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Mark G. Yudof
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University of Minnesota

John A. White
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University of Arkansas,
Fayetteville

Charles Steger
President
Virginia Tech

Charles M. Vest
President
Massachusetts Institute of
Technology

Richard Levin
President
Yale University

Mark S. Wrighton
Chancellor
Washington University, St. Louis

David B. Frohnmayer
President
University of Oregon

Shirley M. Caldwell-Tilghman
President
Princeton University

Shirley Strum Kenny
President
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Francis L. Lawrence
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James Wright
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William R. Brody
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Richard C. Atkinson
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David J. Schmidly
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University of Virginia
University of Washington
University of Wisconsin - Madison
Vanderbilt University
Washington University in St. Louis
Yale University

Honorable Ernest F. Hollings
Chairman
Senate Committee on Commerce
Washington, D.C. 20510

Dear Mr. Chairman,

This letter is to express the strong support of the Association of American Universities (AAU) for the nomination of John H. Marburger III to serve as Assistant to the President for Science and Technology Policy.

Dr. Marburger has a superb background for this important position. His leadership at Brookhaven National Laboratory has kept that facility in the forefront of scientific discovery, and his successful outreach efforts have helped to restore good relations with the neighboring community. As President of Stony Brook University from 1980 to 1994, his efforts added substantially to the reputation of that institution which this year, for the first time, was invited to join the AAU. As a distinguished scientist and faculty member, he made many contributions to the field of physics and electrical engineering and coupled his ground-breaking research with a commitment to public understanding of science.

Dr. Marburger is a fine choice, combining the perspectives of science, engineering, technology and public policy that will ensure that the President receives the very best advice on these critical subjects. We hope it will be possible to expedite Dr. Marburger's nomination through your committee and confirmation by the full Senate.

Please let us know if there is further information or assistance we can provide.

Cordially,

Nils Hasselmo
President

cc: all members of the Senate Commerce Committee
John H. Marburger III, Director, Brookhaven National Laboratory

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