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NOMINATIONS OF ARDEN L. BEMENT, JR. TO BE DIRECTOR OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY AND ROBERT DAVID PAULISON TO BE ADMINISTRATOR OF THE FIRE ADMINISTRATION AT THE FEDERAL EMERGENCY MANAGEMENT AGENCY

HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

NOVEMBER 1, 2001

Printed for the use of the Committee on Commerce, Science, and Transportation

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

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THURSDAY, NOVEMBER 1, 2001

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

The Committee met, pursuant to notice, at 2:36 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 will hold a hearing on the nominations of Chief R. David Paulison to be U.S. Fire Administrator and Dr. Arden Bement to be Director of the National Institute of Standards and Technology. Each of these individuals, I believe, will be confirmed, because they are very qualified and are going to play a critical role in our war against terrorism.

Obviously, science is getting increasingly important as it relates to America's national security. Since the attacks on September 11th and the anthrax scares of the past several weeks, it is clear that our science and technology can, in fact, be used against us. During the first days of the crisis, some news organizations were reporting that anthrax from American labs was actually sent to Iraq in the 1980's as part of a scientific effort. Although the report did not mention government involvement in such an effort, the inherent risks are unmistakable.

It is our view that intellectual security needs to be part of any national security approach and, given the possibilities of the misuse of science, there is tremendous potential in harnessing science and technology in an affirmative and protective way. That can include everything from developing the technology to safely land airplanes from a control tower instead of a cockpit to using science to quickly create antidotes and vaccines to potential bioterrorism agents.

Clearly, taxpayer funds, smartly invested in scientific advances, ultimately reward and benefit the safety and peace of mind of all citizens.

This Committee is acutely aware that information technology and scientific information such as that developed at NIST is critical to combatting terrorism. We look forward to working with the Bush Administration in a bipartisan way.

I think it is also worth noting that, no matter how good your technology and science are, it always comes down to people. That is why it is so important that we work closely with our nominees and evaluate their qualifications today. The people on the front lines responding to domestic incidents from biological to conventional attacks will be our nation's firefighters, and we look forward to having you represent them, Chief Paulison.

The Subcommittee on Science, Technology, and Space has recently held a hearing on the needs of the Fire Service in responding to terrorism. This country has more than a million firefighters, and the federal government must be a better partner in working to ensure that these dedicated and courageous Americans have the tools to do their jobs.

Towards that end, several weeks ago I called Mitch Daniels, the Director of the Office of Management and Budget, to ask that he make supplemental funding available immediately from the grants that are available under the Firefighter Investment and Response statute so that local fire departments can get the needed training and equipment that is so essential.

Chief Paulison has been tapped to lead FEMA's U.S. Fire Administration and be the firefighters' voice within the federal government. He brings a very strong background to this position. We are going to talk some more about that background in a moment.

Chief, we know you brought several members of your family with you today, and we would very much like you to introduce them and have them stand at this time.

Mr. PAULISON. Thank you, Mr. Chairman. I brought my wife with me, Kathy, who has been my supporter for the last 30 years. Kathy, would you stand up.

Senator WYDEN. Welcome.

All right, Chief. We will have some more to say about your background here in a bit.

Also our good fortune to have Dr. Bement here, who has been nominated to direct NIST, and we will consider his nomination as we consider Chief Paulison's. The Fire Administration and NIST have a long history of working together on building and fire research.

At the urging of New York's Fire Department leaders who testified at our hearing on the needs of the Fire Service, I have written to Secretary of Commerce Don Evans to ask that NIST begin to look at developing standards for firefighting equipment. One of the concerns that the Subcommittee has heard is that as equipment becomes more technologically sophisticated small departments have only the claims of the manufacturer to use in evaluating essential products.

Currently NIST's Office of Law Enforcement Standards has measures for low enforcement equipment such as bulletproof vests.

The Subcommittee is interested in working with the agency to see that effort expanded to include firefighters' equipment as well.

In addition, NIST is one of the nation's premier laboratories. We want to congratulate the scientists both at NIST and NIST-supported scientists who shared in the Nobel Prize for Physics in 2001, and we are going to be discussing with Dr. Bement some of the priorities that he will have at the agency.

With that, I really would like to recognize my colleagues because I know their schedule is very tight. But Dr. Bement, before we do that I understand you have some family here as well, and we would like you to have a chance to introduce them.

Dr. BEMENT. Thank you, Senator. I have with me this afternoon my son David, who is at the Applied Physics Lab at Johns Hopkins University, his wife Deedee, and my grandchildren Charlene, Samantha, and Stephanie. I am pleased that they are here with me today.

Senator WYDEN. We are glad you are out in force, and we will have some more to say about your distinguished background, Dr. Bement. I enjoyed our visit yesterday, as chaotic as it was, given the fact that we were standing up in the Capitol basement looking for space.

We do want to recognize Senator Nelson. He has been a great addition to this Subcommittee and brings to this Committee expertise in areas such as space and insurance and a whole host of areas. Senator Nelson, welcome. Please go ahead with your introduction.

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

Senator NELSON. Mr. Chairman, if Mrs. Morella is particularly pressed for time I would defer to her. So it is at her pleasure and at your pleasure.

Congresswoman MORELLA. It would be my pleasure, Senator Nelson, that you proceed. Thank you.

Senator NELSON. Thank you, Mr. Chairman.

Senator WYDEN. Peace reigns.

[Laughter.]

Senator NELSON. I had the good fortune, Mr. Chairman, of being Chairman of a subcommittee of which Ms. Morella was a part, and she was an outstanding member. A lot of her interest in science and technology goes back to those days when we were first put on that Committee in the House.

Well, I am here for a friend of mine, David Paulison. He is a friend whose services are going to be enjoyed in the federal government, particularly in something that, as we approach the threat of terrorism, we cannot afford to have less than the best. Fortunately, in Chief Paulison, we have the best.

I had the opportunity to observe him from my capacity as the State Fire Marshal for Florida. That is a job that a lot of the officials in the past never have paid much attention to, because the job is a lot more than that. It is the constitutional job of the State Treasurer. It is the job that really absorbs all the time and energy of insurance commissioner.

I loved being State Fire Marshal. I learned a lot. I loved the title "Marshal Nelson."

[Laughter.]

As you can imagine, in that capacity I got to work with David in his current position as the Chief of the Miami-Dade Fire and Rescue Department. In 30 years of his dedicated public service, he rose from the rank of a rescue firefighter to fire chief. He directs all of the emergency management for Dade County. He oversees 1900 personnel, a $200 million operating budget, and a $70 million capital budget.

His distinguished service on behalf of Miami-Dade County and the state of Florida has caused his expertise to be sought out around the country and now by our federal government. He is Past President of the International Association of Fire Chiefs, and he is currently a member of the Board of Directors of the American Red Cross. In each of those positions, he has served with distinction and admirably.

So now, as the head of the U.S. Fire Administration, he is going to serve us in an additional capacity.

I wanted to come and say those personal comments about him. I think it is important for Members of Congress to do that when they know and can testify as to the character and expertise of an individual. I also want to be joined by my colleague Bob Graham, who is in an Intelligence Committee meeting right now and who has submitted a letter endorsing Chief Paulison.

Senator WYDEN. Without objection, we will put that into the record at this time.

[The material referred to follows:]

United States Senate

WASHINGTON, D.C. 20510

November 1, 2001

Senate Committee on Commerce, Science, and Transportation
508 Dirksen Senate Office Building
Washington, DC 20510

Dear Mr. Chairman and Members of the Committee:

Although I am unable to attend today's hearing in person, I thank you for the opportunity to introduce Mr. David Paulison to the Committee. I am pleased that President Bush has chosen someone as well-qualified and well-suited as Mr. Paulison to serve as the head of the U.S. Fire Administration.

Mr. Paulison is currently the chief of the Miami-Dade Fire and Rescue Department. He has also provided valuable leadership as the president of the International Association of Fire Chiefs. The responsibilities of these positions have given Mr. Paulison the experience necessary to provide FEMA and the United States with outstanding service and professionalism.

FEMA and the U.S. Fire Administration provide critical emergency and emergency preparedness services to our nation. At this crucial point in our country's history, I can think of no better nominee than David Paulison.

Thank you, Mr. Chairman.

Sincerely,

United States Senator

Senator NELSON. Thank you, Mr. Chairman.

I am going to leave, with your permission, so that I can tend to some other things having to do with all kinds of nasty guys trying to do bad things and us trying to prevent them.

Senator WYDEN. We appreciate your coming and, in spite of your desire to be called "Marshal," I am glad they call you "Senator."

Senator NELSON. I can assure you it is a great privilege, and one of the great privileges is having the opportunity to work with folks like you.

Senator WYDEN. I thank my friend, and we will excuse you at this time.

Congresswoman MORELLA. Whoever said there is not camaraderie among Members of Congress?

Senator WYDEN. Why do we not hear next from Congresswoman Morella. Suffice it to say, having had a chance to work with you, Connie, during my career in the House, it is just great to have you. You are constantly on the side of trying to practice good government out there and bring people together. We really appreciate your coming, and we will make your prepared remarks part of the record in full, and you may proceed in any way that you feel comfortable.

STATEMENT OF HON. CONSTANCE A. MORELLA, U.S. REPRESENTATIVE FROM MARYLAND

Congresswoman MORELLA. Thank you very much. Thank you, Chairman Wyden. It is a privilege to be here and it is a privilege to have you chairing this Committee because you and I have worked together very well, and I have followed your career over in the Senate and you have continued to be the voice of moderation and good government. So thank you for that opportunity.

It was interesting to also have Senator Nelson here, too, who also was my colleague in the House.

Also, I feel privileged, Chief Paulison, to be able to have heard Senator Nelson's introduction of you, and I must say I am very pleased that you have been chosen for the U.S. Fire Administration Chief.

Well, I am here today to introduce Dr. Arden Bement, who is the designee for Director of the national Institute of Standards and Technology. As you know, NIST is dear to my heart, a major laboratory in Gaithersburg, Maryland. There is one also in Boulder, Colorado. I will be very pleased if its direction were left in Dr. Bement's capable hands.

As an engineer by training, Dr. Bement has a long and a distinguished career in both science and public service, holding numerous positions in government, industry, and academia. Currently he serves Purdue University as a chaired professor and head of the School of Nuclear Engineering at that institution.

I found it very interesting to note that Dr. Bement is a proponent of more women in nuclear engineering and he has been actively trying to increase female enrollment at Purdue. Currently, female enrollment is about 20 percent. That is a pretty distinguished percentage and he would like to see it doubled in the next 2 to 3 years and has certainly contributed to that goal.

In the past he has worked in the Department of Defense, he has sat on the national Science Board, overseeing the national Science Foundation, consulted for the DOE's national laboratories, served on an advisory Committee to NASA. More to the point, he has been advising NIST in a variety of capacities continuously for the last 20 years. He currently chairs the Advisory Committee for the Advanced Technology Program at NIST, has been a vocal proponent for the continuation of this highly successful and important program.

Dr. Bement would be taking over at a very auspicious time for NIST. The Institute has recently celebrated its one hundredth anniversary, the oldest national laboratory in the nation. But NIST is far from being a stodgy old laboratory. Its state of the art facilities boast numerous advanced laboratories and its scientific discoveries have remained on the forefront. As you mentioned, Mr. Chairman, two Nobel Prizes in Physics have been awarded to NIST scientists in the last 5 years, one most recently.

Modern, cutting edge laboratories have recently been commissioned. Others are in mid-construction. It remains the premier institution for standards in this country and its work in the area is unparalleled.

Nevertheless, retaining the standards of excellence that have come to be associated with NIST will require strong, bold, effective leadership, and I am confident that Dr. Bement is just the man to provide it. His experience with government is extensive. He knows NIST inside and out. He has worked in both industry, academia, understands their needs and the importance of collaborations and partnerships.

He has fresh ideas to lead the Institute into its second century and position it to solve tomorrow's problems today. I hope that he will be quickly confirmed.

I also note it is important, I think, when we nominate people for very important positions to look at their well- roundedness, and I would say that Dr. Bement is a Renaissance man. He loves the opera. As a matter of fact, he is an honorary member of the Cleveland Opera Board.

I did want you to note also in his introduction of his son and his daughter-in-law and 3 of his grandchildren that this man has 9—has 8 children, but he has 24 grandchildren. So he really cares about the future.

Senator WYDEN. He is almost up to you.

Congresswoman MORELLA. I know. That is why I started to say nine.

But I have one more than he has, but he has got more grandchildren.

But I am just very honored to speak in support of this wonderful nominee and this great, great nomination for the country. As Shakespeare would have said, or did say: "The force of his own merit makes his way."

Thank you, Mr. Chairman.

Senator WYDEN. Thank you, Congresswoman Morella. He is really lucky to have you in his corner. That was an excellent presentation. As you know, I have watched you work on NIST issues over

the years and you are really one of the people we look to for guidance on these issues. So we are pleased that you could come.

Connie, my sense is we ought to excuse you unless you want to add anything further.

Congresswoman MORELLA. Thank you. Thank you very much.

Senator WYDEN. Thanks for coming.

Congresswoman MORELLA. Thank you.

[The prepared statement of Representative Morella follows:]

PREPARED STATEMENT OF HON. CONNIE MORELLA, U.S. CONGRESSWOMAN FROM MARYLAND

Chairman Wyden, Senator Nelson, and Members of the Committee, it is with great pleasure that I am here to introduce Dr. Arden Bement Jr., the designee for Director of the National Institute of Standards and Technology. As you may know, NIST is very near to my heart, and I would be pleased if its direction were left in Dr. Bement's capable hands.

An engineer by training, Dr. Bement has had a long and distinguished career in both science and public service, holding numerous positions in government, industry, and academia. Currently, he serves Purdue University as a chaired professor and Head of the School of Nuclear Engineering at that institution. In the past he has worked in the Department of Defense, sat on the National Science Board overseeing NSF, consulted for the DOE's national laboratories, and served on advisory committees to NASA. More to the point, he has been advising NIST in a variety of capacities continuously for the past 20 years. He currently chairs the Advisory Committee for the Advanced Technology Program at NIST and has been a vocal proponent for the continuation of this highly successful and important program.

Dr. Bement would be taking over at an auspicious time for NIST. The institute has recently celebrated its 100th anniversary, but NIST is far from a stodgy, old laboratory. Its state-of-the-art facilities boast numerous advanced laboratories and its scientific discoveries have remained on the forefront. Two Nobel Prizes in Physics have been awarded to NIST scientists in the last 5 years. Modern, cutting edge laboratories have recently been commissioned and others are in mid-construction. It remains the premier institution for standards in this country and its work in this area is unparalleled.

Nevertheless, retaining the standards of excellence that have come to be associated with NIST will require strong, bold, effective leadership. I am confident Dr. Bement is just the man to provide it. His experience with government is extensive and he knows NIST inside and out. He has worked in both industry and academia, and understands their needs and the importance of collaborations and partnerships. He has been a leader encouraging the next generation of scientists and engineering, particularly among women and other underrepresented groups. He has fresh ideas and a proven track record. I believe he is supremely qualified to lead the institute into its second century and position it to solve tomorrow's problems today. I hope you will confirm him quickly. Thank you.

Senator WYDEN. All right, we are ready now for our witnesses. Dr. Bement, why do you not begin. In fact, first we'll have your presentation, then we will hear from Mr. Paulison, and finally I will have questions for each of you. Welcome to both of you. We will make your prepared remarks a part of the record in full, and if you would like to just highlight some of your major concerns that would be helpful.

STATEMENT OF ARDEN L. BEMENT, JR., NOMINATED TO BE DIRECTOR OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

Dr. BEMENT. Thank you very much, Mr. Chairman.

I would first like to start by thanking Congresswoman Morella for her wonderful introduction. I am very much mindful of her wonderful record on the House Science Committee, her work in women's rights, and also in civil service reform. She has been a stead-

fast supporter of NIST and she has many grateful constituents at NIST. I am honored to join her list of grateful constituents if confirmed.

She also made it possible for me to skip down in my opening remarks, since she covered my background more than generously. I am very much honored to add this capstone to my life's work, being Director of NIST. I will devote all my energies and experiences to leading NIST to the next level of achievement. In that respect, I am very honored to be nominated by the President and also wish to thank Secretary Evans and Deputy Secretary Bodman for recommending me to this position.

I believe that NIST continues to be a young organization which has the ability not only to think out of the box fundamentally, but also out of the Beltway in its outreach. It has sustained this ability through its extended networks and active collaborations with industry, academia, and other government agencies, and its longstanding practice of recruiting top graduates from universities to its intern programs.

NIST also has a tradition of adapting to changing environments through its focus on constituent needs. This ability to remain at the cutting edge through continuing interaction is not only demonstrated by the many prestigious prizes won by NIST scientists and engineers, but also the prizes won by others that NIST has enabled. I consider it a great privilege to be associated with an Institute that now has two Nobel laureates.

Finally, the credibility of NIST as an independent standards and technology institute in the service of the nation I regard as paramount. NIST has served the nation well as an unbiased arbiter and standard-setter in matters related to public safety and commerce and as an honest broker in promoting national technology leadership and in strengthening small manufacturers through advanced technologies. In my advisory roles with NIST I have found that independent assessment studies regularly show that the returns to the public from investments in NIST's programs are very high.

If confirmed, I will focus on the following objectives: First, adding strategic vision and direction to important NIST programs that have high importance to the nation, such as those NIST technologies that support homeland security.

Second, strengthening the momentum achieved by former directors Prabhakar and Kammer in supporting national standard-setting organizations to improve their influence on international standard-setting processes.

Third, being a good steward in maintaining the world-class capabilities of NIST's aging infrastructure. In this regard, I wish to thank the Committee for providing the funding for the Advanced Chemical Sciences Laboratory, the Advanced Measurements Laboratory, and for providing initial funding to begin needed upgrades to the Boulder laboratories. These additions are coming on none too soon to address advances in quantum computing, nanoscale devices and sensors, and DNA diagnostic and analysis chips, among many other exciting technological advances.

I hope that Members of the Committee will visit the Advanced Measurements Laboratory when it is completed and will continue to support our need for upgrades to the Boulder laboratories.

My fourth goal is to provide stability to the advanced technology program, improve the impact of the manufacturing extensions program, and facilitating the extension of the Baldrige national Award program to health care an educational institutions.

In closing, I regret that I have not had the opportunity to meet more Members of the Committee prior to this hearing and I pledge if confirmed I will seek your views and also seek to meet the other Members and discuss with them important issues facing NIST and its mission.

Finally, I wish to thank my wife, family and colleagues at Purdue University for their support during these past 3 months leading to this hearing. There is much to be proud of these days in being an American and I am especially proud to be able to serve our great country in this role.

I would be more than pleased to receive your questions.

[The prepared statement and biographical information of Dr. Bement follow:]

PREPARED STATEMENT OF ARDEN L. BEMENT, JR., NOMINEE TO BE DIRECTOR, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, U.S. DEPARTMENT OF COMMERCE

Mr. Chairman, Senator McCain and members of the Committee:

I wish to thank you for the opportunity to appear before you today regarding my nomination to be Director of the National Institute of Standards and Technology. I am honored to be nominated to this position by President Bush and wish to thank Secretary Evans for recommending me for this position.

My professional career has included responsible positions directing research and technology in government, industry and academia. These positions have included Deputy Under Secretary of Defense for Research and Engineering, Director of the Office of Materials Science of DARPA, Member of the National Science Board, Vice President of Science and Technology for TRW and professorships at both MIT and Purdue University. As I look back over my career it seems that all of my past work has prepared me for this opportunity of leading NIST into the twenty-first century. If confirmed, I will be greatly honored to add this capstone to my life's work and will devote all of my energies and experiences to leading NIST to the next level of achievement.

I have had the privilege of serving NIST continuously in a variety of advisory appointments over the past 20 years. These have included membership on the NRC Board of Assessment, as Chairman of the NBS Statutory Advisory Committee and the successor Visiting Committee for Advanced Technology, as a member of the Board of Overseers for the Baldrige National Quality Award Program, and as Chairman of the Advanced Technology Program Advisory Committee. In these capacities I have witnessed NIST grow in excellence and scope during the tenure of four of its eleven former directors.

I believe that NIST continues to be a young organization, which has the ability not only to think "out of the box" fundamentally but also "out of the beltway" in its outreach. It has sustained this ability through its extended networks and active collaborations with industry, academia and other government agencies and its longstanding practice of recruiting top graduates from universities through its postdoctoral programs. NIST also has the tradition of adapting to changing environments through its focus on constituent needs. This ability to remain at the cutting edge through continuing interaction is not only demonstrated by the many prestigious prizes won by NIST scientists and engineers but also the prizes won by others based on NIST advances in science and technology. I consider it a great privilege to be associated with an institution that now has two Nobel Laureates.

Finally, the credibility of NIST as an independent standards and technology institute in the service of the nation I regard as paramount. NIST has served the nation well as an unbiased arbiter and partner in developing standards in matters related to public safety and commerce and as an "honest broker" in promoting national technology leadership and in strengthening small manufacturers through advanced technologies. In my advisory roles I have found that independent assessment studies regularly show that the returns to the public from investments in NIST programs are very high.

If confirmed I will focus on the following objectives:

1. Adding strategic vision and direction to important NIST programs that have high importance to the nation, such as those NIST technologies that support homeland security.

2. Strengthening the momentum achieved by former directors Prabhakar and Kammer in supporting national standards developing organizations to improve their influence on international standards to promote American interests.

3. Being a good steward in maintaining the world-class capability of NIST's aging infrastructure. In this regard I wish to thank the committee for providing the funding for the Advanced Chemical Sciences Laboratory and the Advanced Measurement Laboratory, and for providing initial funding to begin needed upgrades to the Boulder Laboratories. These additions are coming on line none too soon to address advances in quantum computing, nanoscale devices and sensors, and DNA diagnostic technologies, among many other exciting technological advances. I hope that members of the committee will visit the Advanced Measurement Laboratory when it is completed, and will support our continuing need for upgrades to the Boulder Laboratories.

4. Providing stability to the Advanced Technology Program, improving the impact of the Manufacturing Extension Program, and facilitating the extension of the Baldrige National Award Program to health care and educational institutions.

In closing, I regret that I have not had the opportunity to meet with more members of the committee and their staff directors prior to this hearing. I pledge that if confirmed I will seek your views on the important issues facing NIST and its mission.

Finally, I wish to thank my wife, family, and colleagues at Purdue University for their support during the past 3 months leading to this hearing. There is much to be proud of these days in being an American, and I am especially proud to be able to serve our great country in this role.

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: (Information 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; 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 insitu radiation creep, proton scattering in solids, materials development for magnetohydrodynamic (MID) 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 control 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 16 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, 16 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, Cochairmen; 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, USDOC; 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, AI Ware, Cleveland, Ohio (1984–1987); Chair, Exploratory Research Advisory Committee, Electric Power Research Institute (1990–1995); Member, Nuclear Operating Committees 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 (1980–1985); 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 Tech-

nologies, 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 (1992–1998); 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 (1997–1998); 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 (1997–1998); Chair, Transportation Research Board Committee for the Review of the National Automated Highway System Consortium (1997–1998); 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) Councilman, city of Richland, WA (1968–1970): filled an unexpired term by vote of the council and was reelected unopposed. (b) None. (c). 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), 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, 1994, 1995, 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 ARVIE (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); D.G. Franklin, G.E. Lucas and A.L. Bement, Jr., *Creep of Zirconium Alloy's in Nuclear Reactors*, ASTM Spec. Tech. Publ. 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, 7r. 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," *Engieering Fundamentals and Environmental Effects,* Vol. III, *Fracture, An Advanced Treatise,* edited by H. Liebowitz, Academic Press, New York (1969); A.L. Bement; Jr., "Biomaterials", *Encyclgpedia 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 Technolozies—II,* Claitor's Publishing Division, Baton Rouge, LA (1980)

Formal Reports of the Atomic Energy Commission: (1) A. L. Bement, Jr., "The Influence of Uneven Quenching Rates on the Warping of Uranium Slugs," USAEC Formal Report HW–33651, Hanford Atomic Product Operations, General Electric, Co., Richland, WA (1954); (2) A. L. Bement, Jr., "An Investigation of the Properties of Rolled Uranium Related to the Quench after Beta Heat Treatment," USAEC Formal Report HW–33726, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1954); (3) A. L. Bement, Jr., "A Comparison of Sonic and X-ray Orientation Data for Uranium Quenched at Different Rates from the Beta Phase," USAEC Formal Report HW–33937, Hanford Atomic Product Operations, General Electric Co., Richland; WA (1954); (4) A. L. Bement, Jr., "The Presence and Removal of Hydrogen in Punched and Machined Uranium Washers," USAEC Formal Report HW–48293, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1957); (5) A. L. Bement; Jr., and W. P. Wallace, "A Martensitic Reaction of Uranium," USAEC Formal Report HW–51084, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1957); (6) A. L. Bement, Jr., and V. E. Kahle,

"Reaction Layers Formed by Leadbath and Salt-bath Heat Treatments of Uranium," USAEC Formal Report HW–52049, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1957); (7) A. L. Bement, Jr., "The Effects of Carbon Content on the Rate of Dissolution of Dinget Uranium in Nitric Acid," USAEC Formal Report HW–52430, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1957); (8) A. L. Bement, Jr., and D. W. Rathbun, "Status Report on the Properties of Centrifugally Cast Uranium," USAEC Formal Report HW–53569, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1958); (9) A. L. Bement, Jr., and V. E. Kahle, "The Diffusion Layer Formed by Molten Lead Reaction with Uranium," USAEC Formal Report HW54628, Hanford Atomic Product Operations, General Electric Co., Richland; WA (1958); (10) A. L. Bement, Jr., "Burnup and Specific Power Calculations for the Thermal Neutron Irradiation of Thorium-uranium Alloys," USAEC Formal Report HW–56631, Hanford Atomic Product Operations; General Electric Co., Richland, WA (1958); (11) A. L. Bement, Jr., and R. L. Hales, "Neutron Damage to Metals—A Program Document," USAEC Formal Report HW–59300A, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1959); (12) A. L. Bement, Jr., "The Effects of Low Neutron Exposures at Low Temperature on the Hardness and Tensile Properties of Natural Uranium," USAEC Formal Report HW–60326; Hanford Atomic Product Operations, General Electric Co., Richland, WA (1959); (13) K. R. Wheeler, H. J. Pessl; and A. L. Bement, Jr., "Effects of, Reactor Environment on Candidate PRTR Gas-loop Materials," USAEC Formal Report HW, 62543, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1959); (14) D. L. Gray and A. L. Bement, Jr., "Effect of Irradiation upon Mechanical Properties of Zircaloy–2," USAEC Formal Report HW–62422, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1959). (15) A. L. Bement, Jr., "Tensile Properties of Irradiated Thorium," USAEC Formal Report HW–66643, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1960). (16) A. L. Bement, Jr., "Examination of an Irradiated, Zircaloy–2, Hot Water Loop Tube," USAEC Formal Report HW–65499, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1960); (17) A. L. Bement, Jr., and L. D. Coffin, "Automatic Processing of Tensile Test Data," USAEC Formal Report HW–71570, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1963); (18) A. L Bement, Jr., "Effects of Cold Work and Neutron Irradiation on the Tensile Properties of Zircaloy–2," USAEC Formal Report HW–74953, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1963); (19) A. L. Bement, Jr., and J. E. Irvin, "Materials Irradiations in the ETR-G–7 Hot Water Loop," USAEC Formal Report HW–80615, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1964); (20) A. L. Bement, Jr., and J. E. Irvin, "The Effects of Hot-water Thermal Treatments in the Cold Work Recovery of the Tensile Properties of Zircaloy–2," USAEC Formal Report HW–80309, Hanford Atomic Product Operations; General Electric Co., Richland, WA (1964); (21) A. L. Bement, Jr., and R. G. Hoagland, "Fracture Studies of Zircaloy–2," USAEC Formal Report HW–82681, Hanford Atomic Product Operations, General Electric Co., Richland, WA (1964); (22) J. E. Irvin, A. L. Bement, Jr., and R. G. Hoagland, "The Combined Effects—of Temperature and Irradiation on the Mechanical Properties of Austenitic Stainless Steels," USAEC Formal Report BNWL–1, Pacific Northwest Laboratory, Battelle Memorial Institute, Richland, WA (1965); (23) A. L. Bement, Jr., R. E. Dahl and J. E. Irvin, "Fast Neutron Flux Characteristics of the ETR-G–7 Hot Water Loop," USAEC Formal Report BNWL–89, Pacific Northwest Laboratory, Battelle Memorial Institute, Richland, WA (1965); (24) A. L. Bement, Jr., and L. E. Steele, "USAEC-Industry Meeting on Irradiation Effects to Reactor Structural Materials," USAEC Formal Report BNWL–609, Pacific Northwest Laboratory, Battelle Memorial Institute, Richland, WA (1967).

Journal Publications: (1) A. L. Bement, Jr., "Tensile Properties of Irradiated Thorium," *Journal of Nuclear Materials*, 6 (1962); (2) A. A. Dykes and A. L. Bement, Jr., "Void Formation in Nickel by Flash Heating," *J. Nucl. Mater.*, 42, 223–226 (1972); (3) J. B. Vander Sande and A. L. Bement, Jr., "Investigation of Second-phase Particles in Zircaloy–4 Alloys," J. Nucl. Mater., 52, 115–118 (1974); (4) G. E. Lucas and A. L. Bement, Jr., "The Effect of a Zirconium StrengthDifferential on Cladding Collapse Predictions;" *J. Nucl. Mater.*, 58, 246252(1974); (5) E. Lucas and A. L. Bement, Jr., "Temperature Dependence of the Zircaloy–4 Strength-differential," *J. Nucl. Mater.*, 58, 163–170 (1975); (6) P. Hendrick, A. L. Bement,. Jr., and O. K. Harling, "Proton-simulated Irradiation-induced Creep," *Nucl. Instrum. Meth.*, 124, 389–395 (1975); (7) P. Hendrick, D. J. Michel, A. G. Pieper, R. E. Surratt,-and A. L. Bement, Jr., "Simulation of Irradiation-induced Creep in Nickel," *J. Nucl Mater.*, 59, 229–23; (8) P. Hendrick, D. J. Michel, A. G. Pieper, R. E. Surratt, and A. L. Bement, Jr., "Simulation of Irradiation-induced Creep in Nickel," *J Nucl. Mater.*, 59, 229–23; (9) P. Hendrick, D. J. Michel, A. G. Pieper, R. E. Surratt, and A. L. Bement,

Jr., "Ion Simulation Irradiation-induced Creep," *Nucl. Instrum. Meth.*, 133, 509–52; (10) C. Peterson, S. Mansour and A. L. Bement, Jr., "Effects of 'Optical Illumination on Fatigued Lead, Zirconate Titanate Capacitors," *Integ. Ferroelec.*, 7, 139–147 (1995); (11) C. Peterson, S. A. Mansour, A. L. Bement, Jr., and G. Liedl," Optical Studies of PZT/Metal and Metal-Oxide Interfaces," *Integ. Ferroelec.*, ,7, 139–147 (1995); (12) A. V. Rao, S. Mansour, and A. L. Bement, Jr., "Fabrication of Ferroelectric PZT Thin Film Capacitors with Indium Tin Oxide (ITO) Electrodes," *Mater. Ltrs.*, 29, 255–258 (1996); (13) E. N. Paton, M. Brazier, S. Mansour, and A. L. Bement, Jr., "A Critical Study of Defect Migration and Ferroelectric Fatigue in Lead Zirconate Titanate Thin Film Capacitors Under Extreme Temperatures", *Integ. Ferroelec.*, 18, 529–537 (1997).

Transactions and Conference Proceedings: (1) R. D. Pehlke and A. L. Bement, Jr., "Mass Transfer of Hydrogen between Liquid Aluminum and Bubbles of Argon Gas," *Trans.* AIMS, 224 (1962); (2) A. L. Bement, Jr., Discussion on Paper by R. J. Wasilewski entitled "On Discontinuous Yield and Plastic Flow in a-titanium," *Trans.* ASM, 56 (1963); (3) A. L. Bement, Jr. and J. E. Irvin, "Automatic Processing of Mechanical Properties Data," *Metals Engineering Quarterly*, 4 (1964); (4) A. L. Bement, Jr., J. C. Tobin, and R. G. Hoagland, "Effects of Neutron Irradiation on the Flow and fracture Behavior of Zircaloy–2," *Flow and Fracture of Metals and Alloys in Nuclear Environments; Special Technical Publication No. 380*, ASTM 364–384 (1965); (5) A. L. Bement, Jr., J. E. Irvin, and R. G. Hoagland, "Combined Effects of Temperatures and Irradiation on the Mechanical Properties of Austenitic 15 Stainless Steels," *Flow and fracture of Metals and Alloys in Nuclear Environments, Special Technical Publication No. 380*, ASTM, 236–250 (1965); (6) A. L. Bement, Jr., "Zirconium Cladding Alloys," *Proceedings of M.I.T. Symposium on Materials of Nuclear Power Reactors,* Cambridge, MA (1966); (7) A. L. Bement, Jr., "Radiation Damage in Hexagonal Close-packed Metals and Alloys," *Proceedings of AIME Symposium on Radiation Effects*, Asheville, NC, Gordon and Breach, NY, 671–725 (1967); A. L. Bement, Jr., "Effects of Minor Constituents on the Irradiation Damage to Austenitic Stainless Steels," *Proceedings of ASTM Symposium on the Effects of Residual Elements on Properties of Austenitic Stainless Steels, Special Technical Publication No. 418*, ASTM (1967); (9) R. G. Hoagland, A. L. Bement, Jr., and R. G. Rowe, "Applications of Fracture Mechanics in Evaluating the Initiation and Propagation of Brittle Fracture in Reactor Structural Components," *Proceedings of ASTM Symposium on the Effects of Radiation on Structural Metals, Special Technical Publication No. 426*, ASTM, (1967); (10) J. E. Irvin and A. L. Bement; Jr., "The Nature and Engineering Significance of Radiation Damage to Various Stainless Steel Alloys," *Proceedings of ASTM Symposium on the Effects of Radiation on Structural Metals; Special Technical Publication No. 426*, ASTM (1967); (11) E. R. Gilbert, A. L. Bement, Jr., and S. A. Duran, "Creep of Zirconium from 50 to 850½C," *Applications-related Phenomena for Zirconium and its' Alloys*, Special Technical Publication 458, 210–225, ASTM (1970); (12) A. L. Bement, Jr., "Fundamental Materials Problems in Nuclear Reactors," *Proceedings of 2nd International Conference on Strength of Metals and Alloys*, ASM, 2, 693–728 (1970); (13) A. L. Bement, Jr., "Introduction of Wrap-up Session," *Proceedings of the Conference on Fast Reactor Fuel Element Technology*, New Orleans, LA, ANS (1971); (14) A. L. Bement, Jr., "Radiation Effects on Zirconium and Zirconium Alloys," *Proceedings of the United States-Japan Seminar on Radiation Effects in Metals and Structural Materials*, Kyoto, Japan (1971); (15) A. L. Bement, Jr., "Irradiation Effects of Structural Materials. II. Radiation Hardening," *Rev. Roum Phys.*, 17, 361–380 Bucharest (1972); (16) A. L. Bement, Jr., "Irradiation Effects of Structural Materials. II. Brittle Fracture," *Rev. Roum. Phys.*, 17, 505–517, Bucharest (1972); (17) A. L. Bement, Jr., "Irradiation Effects of Structural Materials. III. High Temperature Embrittlement;" *Rev. Roum. Phys.*, 17; 519–525, Bucharest (1972).; (18) A. L. Bement, Jr., "Irradiation Effects of Structural Materials. IV. Creep and Growth," *Rev. Roum. Phys.*, 17, 607–618, Bucharest (1972).; (19) A. L. Bement, Jr., "Irradiation Effects of Structural Materials. V. Void Swelling," *Rev. Roum. Phys.*, 17, 619–630 (1972); (20) H. K. Bowen, D. R. Uhlmann, J. F. Louis, J. W. Halloran, W. T. Petuskey, R. Goodof, and A. L. Bement; Jr., "High Temperature Electrodes," *Proceedings of the First USA-USSR Symposium on MHD*, Moscow; (1974); (21) A. L. Bement; Jr., "Needs in Alloy Design for Nuclear Applications," in *Proceedings of Battelle Colloquium on the Fundamental Aspects of Structural Alloy Design*, Seattle, WA and Harrison Hot Springs, BC (1975); (22) A. L: Bement, Jr., "Interrelationship Between Nuclear Fuel Design, Performance and Fabrication," *Proceedings of the International Symposium on Nuclear' Power Technology and Economics*, Taipei, Taiwan (1975); (23) Y. H. Choi A. L. Bement, Jr., and K. C. Russell, "The Effect of Fusion Burn Cycles on First Wall Swelling," *Proceedings of the International Conference on Radiation Effects and Tritium Technology for Fusion Reactors*, Ed., J. S. Watson and F. W. Wiffin; 11.1–11.17 (1976);

(24) P. L. Hendrick, D. J.' Michel, A. G. Pieper, R. E. Surratt, and A. L. Bement, Jr., "Ion-simulated Irradiation Creep of Nickel," *Proceedings of the International Conference on Radiation Effects and Tritium Technology for Fusion Reactors*, Ed., J. S. Watson and F. W. Wiffin (1976); (25) Y. Y. Liu and A. L. Bement, Jr., "Regression Approach for Zircaloy–2 Inreactor Creep Constitutive Equations," M.I.T., Transcript of the 4th International Conference on Structural Mechanics in Reactor Technology, *Structural Analysis of Reactor Fuel and Cladding*, San Francisco, CA, Commission of European Communities, Luxemburg (1977); (26) A. L. Bement, Jr., "Greening of Materials Science and Engineering," *Mater. Soc. V.* 11, N4,415–432 (1987); (27) A. L. Bement, Jr., "Greening of Materials Science and Engineering," *Metall. Trans. A.*, 18A, 363–375 (1987); (28) A. L. Bement, Jr., "Review and Forecast for NDE in Advanced Materials Technology," *Proceedings for the Conference for the Review of Progress in Quantitative NDE*, University of California-San Diego, LaJolla, CA (1990); (29) A. L. Bement, Jr., "Progress in Materials Science," *Proceedings of the International Conference, Electricity Beyond 2000 Forum*, Washington, DC: Electric Power Research Institute, Palo Alto, CA (1991); (30) A. L. Bement, Jr., "Utilization of Science and technology to Reduce Materials Vulnerability," *Materials and Society*, 7 (1991); (31) C. R. Peterson, S. A. Mansour, and A. L. Bement, Jr., "An Optical Study of PZT Thin Film Capacitors," *Proceedings of the 7th International Symposium on Integrated Ferroelectrics*, ACS (1995); (32) S. A. Mansour; J. L. Norton, G. L. Liedl, A. L. Bement, Jr., and C. Venkatraman, "Laser Beam Lithography of Metal Oxide Electrodes for PZT Memory Applications, *"Proceedings of the MRS Spring Meeting*, San Francisco, CA (1995); (33) J. L. Norton, S. A. Mansour, G. L. Liedl, A. L. Bement, Jr. And C. Venkatraman, "Laser Beam Lithography of Metal Oxide Electrodes for PZT Memory Applications," *Materials: Fabrication and Patterning at the Nanoscale*, MRS, 380, 99–104 (1995); (34) S. A. Mansour, A. Rao, and A. L. Bement, Jr., "Photo-induced Effect Recovery in PZT Thin Film Capacitors with Oxide Contacts," *Materials for Smart Systems II*, MRS, 459, 201–206 (1997); (35) A. L. Bement, Jr., "Benchmarking National Leadership in Materials Science and Engineering." *Proceedings of the 5th International Conference on Modern Materials and Technologies,* Florence, Italy, June 14–19, 1998; (36) A. L. Bement, Jr., "Status of Electrical and Magnetic Instruments as of the Turn of the Century", *Proceedings of the Symposium on 20th Century Developments in Instrumentation and Measurements,* American Physical Society Centennial Meeting, Atlanta, Georgia, March 21, 1999.

Other Publications: (1) A. L. Bement, Jr., "Materials Problems in Advanced Energy Conversion," University Forum on National Materials Policy, National Commission on Materials Policy, M.I.T., (1972); (2) A. L. Bement, Jr., and R. Kaplow, "Materials Limitations in Advanced Energy Conversion Systems," Report of the ARPA Materials Research Council Summer Conference, Centerville, MA (1972); (3) R. Kaplow, A. L. Bement, Jr, and M. Cohen, "Solar Energy," Volume II of Preliminary Reports, Memoranda and Technical Notes of the Materials Research Council Summer Conference, LaJolla, CA., U. Of Michigan Report No.005020 (1973); (4) A. L. Bement, Jr., "Outlook for Technology in the 80's," Testimony before the Ohio House of Representatives Select Committee on Technology (1983); (5) A. L Bement, Jr., "National Perspectives on the Role of Universities and Industry Promoting Science and Technology," Testimony before the Ohio Science and Technology Commission, Cleveland, OH (1989); (6) A. L. Bement, Jr., S. K. El-Rahaiby and C.' X. Campbell, "Bringing Advanced Materials to Market," DoD Ceramics Information Analysis Center (CHIC), CINDAS, Purdue University (1995); (7) A. L. Bement, Jr., "The Opportunities and Shortfalls of National Science and Technology Policy," *Materials Technology*, 10, #3–4 (1995); (8) A. L. Bement, Jr., "Inventivity: The Art and Science of Research Management by John J. Gilman", Book Review, *Materials Technology*, 8, September/October 1993, Elsevier.

Congressional Testimony: (1) J. E. Louis and A. L. Bement, Jr., "MHD Power Generation, an Assessment and a Plan for Action," Testimony before the Task Force on Energy of the Subcommittee on Science, Research and Development of the Committee on Sciences and Astronautics, U.S. House of Representatives, 92nd Congress, Volume II, U.S. Government Printing Office, Washington, DC (1972); (2) A. L. Bement, Jr., and R. Kaplow, "Statement on the Importance of Materials in Power Technology," Testimony before the Subcommittee on Space Science and Applications and Subcommittee on Energy of the Committee on Science and Astronautics, U.S. House of Representatives, 93rd Congress, U.S. Government Printing Office (May 24, 1973); (3) A. L. Bement, Jr., "Utilization of Science and Technology to Reduce Materials Vulnerability," Testimony before the Subcommittee on Science, Technology and Space, U.S. Senate Committee on Commerce, Science and Transportation (June, 1982); (4) A. L Bement; Jr., "Views on the President's National Materials and Minerals Plan and Report to Congress," Testimony before the Schmitt Subcommittee on

Science, Technology and Space of the Senate Committee on Commerce, Science and Transportation (June 22, 1982); (5) A. L. Bement, Jr., "The Economic Competitiveness, International Trade and Technology Development Act for 1987," Testimony before the Senate Committee on Government Affairs on Senate Bill 1233 (June 9, 1987); (6) A. L. Bement, Jr., "Issues Related to the Development of Magnetically-levitated Transportation Systems Along the Federal Highway Rights of Way," Testimony before the Subcommittee on Water Resources, Transportation and Infrastructure, Washington, DC (October 24, 1988); (7) A. L. Bement, Jr., "Authorization for the Appropriation for the Activities of the National Institute of Standards and Technology", Testimony before the Subcommittee on Space, Science and Technology, U.S. House of Representatives; Washington, DC (March 8, 1989); (8) A. L. Bement, Jr., "Department of Commerce Technology Programs," Testimony before the Subcommittee on Science, Research and Technology of the Committee of Science, Space and Technology, U.S. House of Representatives, Washington, DC (Feb. 6, 1990); (9) A. L. Bement, Jr., "The Trade and Technology Promotion Act of July, 1989," Testimony before the Committee on Government Affairs, U.S. Senate on Senate Bill S. 1978, Washington, DC (June 12, 1990); (10) A. L. Bement, Jr., "Findings and Recommendations of the Visiting Committee on Advanced Technology of the National Institute of Standards and Technology," Testimony before the Subcommittee on Science, Research and Technology, Committee on Science, Space and Technology, U.S. House of Representatives (Feb. 26, 1991); (11) A. L. Bement, Jr., "On the Midwest Superconductivity Consortium," Testimony before the Energy and Water Development Subcommittee on Appropriations, Committee on Appropriations, U.S. House of Representatives (April 1, 1993); (12) A. L. Bement, Jr., "On the Midwest Superconductivity Consortium," Testimony before the Energy and Water Development Subcommittee on Appropriations, Committee on Appropriations, U.S. House of Representatives (April 1, 1993); (13) A. L. Bement, Jr., "On the Midwest Superconductivity Consortium," Testimony before the Energy and Water Development Subcommittee on Appropriations, U.S. House of Representatives (April 11; 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) 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) 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 departmentlagency'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 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? 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 2 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 he important contributions that KIST 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 KIST, including management of personnel, finances, technical programs,

and planning processes: To lead KIST 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 KIST 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 KIST 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. 1No 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 timeframe 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 some momentarily, and we very much appreciate your presentation, doctor.

Mr. Paulison, welcome.

STATEMENT OF R. DAVID PAULISON, NOMINATED TO BE ADMINISTRATOR, FIRE ADMINISTRATION, FEDERAL EMERGENCY MANAGEMENT AGENCY

Mr. PAULISON. Thank you, Mr. Chair. First of all, let me say that I am honored today to be in front of this Committee and discuss the opportunity to serve President Bush, the fire and emergency service, and this nation. I am very, very proud and honored to be here. As a 30-year fire service veteran, I can think of no greater honor than being here today and being considered for the U.S. Fire Administrator's position.

I want to thank Senator Bill Nelson and Senator Graham for their long-time support and also the rest of the Florida Congressional delegation, who has always been behind me in the things we wanted to do in Florida, and South Florida particularly.

I want to thank Director Albaugh for having the confidence in me to put my name forward for the President to make the nomination. They have both shown outstanding leadership during this period of time, not only after September 11th but before also. They have shown to be true friends of the American firefighters.

I would also be remiss if I did not acknowledge the outstanding work of Ken Burrus, our Chief Operating Officer, who has served in the capacity of the U.S. Fire Administrator in an acting position for the last several months. Ken is in the audience back here. Ken, would you mind standing up. He has just done an outstanding job for us and I appreciate it very much, and he is babysitting me through this process also.

I also recognize that several Committee Members served in World War II. I went through your biographies. My father did also, and I wish he was here to see this today, but I know he is watching. He and my mother gave me the work ethic and the love of public service that I have and it is one of the reasons that I am here today.

Our nation's fire service is in the front line of defense every day against fires, accidents, floods, natural and manmade disasters, and now we must add terrorist events. I am proud, absolutely proud, of the efforts of the New York City firefighters and for all

the rescuers from around the nation that responded as part of FEMA's urban search and rescue program.

The events of September 11th have shown the nation the importance of fire service, a service that was once taken for granted, but is now being viewed as an essential component of public safety and homeland defense. The very challenges that we face in response to the events of September 11th are the same challenges the fire service and emergency management community face in response to all hazards.

I want to thank this Committee for their concern, your support, and your understanding to recognize the needs of the fire service and their contribution to public safety.

I have had the privilege, as Senator Nelson said, of serving since 1992 as the Fire Chief of Miami-Dade County. Additionally, I have been responsible for Miami-Dade County's Office of Emergency Management. In that role I have been responsible for the mitigation and preparedness of major incidents. After serving in both of these capacities, I am absolutely convinced that Director Albaugh is correct in his effort to build cooperation and understanding between the fire and emergency management community. That is a bridge we need to gap.

Whether it has been a response to a major fire or incident commander for Hurricane Andrew or the response to the crash of ValuJet 592, I have seen firsthand the need for a strong relationship in the planning, response, recovery, and rebuilding from disasters. As fire services across the nation respond to emergency incidents, they need to have strong support from local, state, and federal emergency managers to provide coordination and logistics quickly. Lives depend on that cooperation.

For the past 6 weeks we have encountered a truly emergent issue—terrorism. But the United States Fire Administration's work on terrorism began several years ago with the development of training programs, response guides, and outreach. I can assure you and the American people that if I am confirmed I will work with Director Albaugh, Governor Ridge, and the emergency services community to accelerate that effort and to build on our past successes. We will work to provide the training and the tools that get the job done and get it done right.

At the United States Fire Administration, we must continue to work to develop and deliver training and education programs to the fire services on terrorist awareness and response. The fire departments across this nation need to be an integral part of the planning, training, and policy development for terrorism preparedness. While there is a general acknowledgment that the law enforcement community has a significant deterrence and investigatory role, it is also true that in the fire services they are the first on scene and therefore the first at risk. Any future considerations of training and funding for equipment must take this into account.

Quality, robust, consistent communications capabilities should be developed and implemented for the fire services. As a nation, we need to strive to provide the communications infrastructure necessary for multiple agency communications.

Every week we lose hundreds of Americans to fire. Young and old are most at risk. Our firefighters who respond are at risk every

day. They should not have to give their lives. We honor their sacrifice, but even one is too many.

The Assistance to Firefighters grant program is the key element providing assistance to our nation's fire service. It is important that this program—if it were taken to its full authorization amount and continued, USFA will need the authorization for personnel and for salaries and expenses to administer and staff the program effectively. It is also important that the agency be given the authority to develop the program with greater flexibility to address the emergent needs.

Incentives to local governments for increased assistance need to be developed and enacted. Working together, the fire services, emergency management, and public officials at all levels of government, federal agencies, and the Congress can make tremendous strides in solving some of these problems.

To my friends and partners in the fire and emergency services community, I ask for your help and your unity. The fire service community has had many voices, many successes, and some failures. If nothing else, September 11th should have shown all of the fire service organizations that we need to work together to solve these problems, to respond with one voice, and to acknowledge that some of our differences, while important, pale in comparison to the importance of our mission, and that is to protect the American public.

It is not a question of volunteer versus career or management versus labor. It is not a question of fire versus law enforcement. The question is can we work together to make a difference in the lives of every single American, find areas we can agree on quickly, and on those issues we differ put aside our rancor and posturing and work together to address and solve them.

I know the answer is yes and I pledge my commitment to work with all of you to build bridges and resolve the pressing issues that face us.

I want again to thank this Committee for your support and for the opportunity to testify today, and I would also be happy to address any questions you might have. Thank you, Mr. Chair.

[The prepared statement and biographical information of Mr. Paulison follow:]

PREPARED STATEMENT OF R. DAVID PAULISON, NOMINEE TO BE ADMINISTRATOR, U.S. FIRE ADMINISTRATION

Mr. Chairman and members of the Committee, I am honored to appear before this Committee today and to discuss with you the opportunity to serve President Bush, the fire and emergency services and the nation.

I want to first acknowledge and thank President Bush for nominating me as United States Fire Administrator. As a 30-year fire service veteran, I can think of no higher honor. To Senator Bill Nelson, who has been a close friend for many years, I thank you for your support and for your introduction today. I also thank Senator Graham, from my hometown, and the members of the Florida Congressional delegation who have been so helpful to me for many years.

It is also very important to me to thank FEMA Director Joe Allbaugh for his support of my nomination and who, along with President Bush, has shown such outstanding leadership during this period of national crisis. He and the President have proven themselves, before and after September 11, to be true friends and advocates of America's firefighters and emergency responders.

Also, I would be remiss if I did not acknowledge the outstanding work of Ken Burris the Chief Operating Officer of the United States Fire Administration, who has served so ably as the Acting U.S. Fire Administrator for the past several

months. Ken has transformed the U.S. Fire Administration into a forward thinking, dynamic agency that truly serves our nation's fire services community. I would like to thank Ken, who has been a close friend for many years, and to wish him good luck, as he becomes the Regional Director for FEMA Region IV in Atlanta. The region's gain is certainly our loss, but it also shows again the level of commitment that Director Allbaugh and the Administration have devoted toward building stronger relationships between the fire service and the emergency management community.

I also have with me today my lovely wife Kathy, who along with my two children, have been my strength and my inspiration. I recognize that several Committee members served in World War II, as did my father. I wish he were still with us today, but I know he is watching. My father gave me my work ethic and instilled in me a dedication to public service that is shared by the members of this Committee and the fire service community nationwide.

Our nation's fire service is the front line of defense every day against fires, accidents, floods, natural and manmade disasters of all kinds—and now terrorist attacks. I am extremely proud of the efforts of New York City and Arlington firefighters and of all of the rescuers from across the Nation that responded as part of FEMA's Urban Search and Rescue Program. The events of September 11th have shown our Nation the critical importance of its fire services. A service once taken for granted is now properly viewed as an essential component of the public safety equation. The New York City, Arlington, VA and Shanksville, PA fire departments have proven that our first responders can be called to respond across urban, suburban and rural communities of our country. Fire departments of every type—career, volunteer and combination—across our Nation must be vigilant to heed the call to service at a moments notice.

The very challenges that were faced in the response to the events of September 11th are the same challenges the fire service and emergency management community face in response to all hazards. I thank the Committee members for your concern, your support and your understanding of the need to recognize the fire services' contribution to public safety and their future needs.

At the United States Fire Administration, we must continue to develop and deliver training and educational programs to the fire services on terrorism awareness and response. Many fire departments across the Nation are asking themselves, "are we prepared for this?" or "how on earth are we ever going to handle something like this?" Both of these are good questions, but many other departments are saying just the opposite; they think, ". . . it will never happen here". Make no mistake, the message every fire department in America should have gotten is that we are all vulnerable to the effects of another terrorist attack, and if I am fortunate enough to be confirmed, it will be my privilege and goal to provide the training and support the fire services need to protect themselves and their communities in responding to what was once unthinkable.

I have had the privilege of serving since 1992 as the Fire Chief of Miami-Dade County. Additionally, I have headed Miami-Dade County's Office of Emergency Management (OEM). In that role I have been responsible for mitigation and preparedness for major incidents including nuclear incidents, weather emergencies (hurricane, floods, tornadoes), large immigration influx, hazardous materials emergencies, or multiple-casualty accidents. Having served in both of these capacities, I am absolutely convinced that Director Allbaugh is correct in his effort to strengthen cooperation and understanding between the fire and emergency management communities.

Whether in response to a major fire, as incident commander for Hurricane Andrew or in response to the crash of ValuJet 592, I have seen first-hand the need for communication and cooperation during the planning, response, recovery and rebuilding phases after disasters. As fire services across the Nation respond to emergency incidents, they need strong support from local, state and federal emergency managers to provide coordination and logistical resources quickly. Lives depend on that cooperation.

The United States Fire Administration has developed a series of goals for the next 5 years. They are: to reduce the loss of life from fire by 25 percent for children under 14; to reduce by 25 percent the loss of life by fire of Americans 65 years of age or older; and to reduce the number of firefighter fatalities by 25 percent. The U.S. Fire Administration is also committed to respond to emergent issues. For the past 6 weeks we have encountered a truly emergent issue, domestic terrorism. USFA's work on terrorism began several years ago with the development of training programs, response guides and outreach. I can promise you and the American people that if confirmed I will work with Director Allbaugh, Governor Ridge and the

emergency services community to accelerate that effort and buildupon our past successes. We will work to provide the training and the tools to get the job done.

The fire departments across the Nation need to be an integral part of the planning, training and policy development for terrorism preparedness. While there is a general acknowledgement that the law enforcement community has a significant deterrence and investigatory role, it is also true that the fire services are the first on the scene, and therefore the first at risk. Any future considerations on training and funding for equipment must take this into account.

Quality, robust and consistent communications capabilities must be developed and implemented for the fire services. As a Nation we need to strive to provide the communications infrastructure necessary for multiple agency communications. Currently there is no secure means to provide first responders with important, un-compromised information. Obviously, this void could severely hamper effective fire service operations in a terrorist environment.

Another communications need involves incident management and coordination. We have to communicate with all response and supporting agencies at every level of the Federal Response Plan, which is the framework for the federal support that will be needed in terrorist events. All local fire and public safety agencies and their staffs should be aware of the Federal Response Plan and how it meshes with their state, county and local planning. There should also be training and exercises to ensure understanding and ability to work effectively within this structure.

We cannot manage incidents with entities that have unique or different incident command or incident management systems (ICS/IMS) or with those entities not operationally conversant with the standard incident management system. We need to work toward an institutionalized operating, common ICS/IMS throughout the country.

Response and preparedness for terrorism is a critical issue for USFA, but the other goals I have already outlined must also continue. Every week we lose hundreds of Americans to fire. Young and old are most at risk. Our firefighters, who respond at great risk every day, should not have to give their lives. We honor their sacrifice, but even one is too many.

We need to buildupon the programs we have begun in these critical areas. We need to focus on developing community-based hazard response planning that includes fire response and fire prevention as a critical component. Toward that end USFA has a goal, in the next 5 years, is to identify 2500 communities and work with them to develop a multi-hazard risk reduction plan.

The Assistance to Firefighters Grant Program is a key element in providing assistance to our nation's fire service. Since the terrorist attacks, the Senate has passed the Defense Authorization bill with an authorization of $600 million, $800 million and $1 billion respectively over the next 3 years. The bill is currently in conference. If this program were taken to be fully authorized, USFA would also need authorization for additional salaries and expenses to efficiently administer the program. It would also be important to give the agency the authority to develop the program with greater flexibility to address emergent needs.

As Director Allbaugh has stated, "firefighters are the first in line for budget cuts and the last in line for recognition. This must stop." This program should not, however, replace the primary responsibility for funding and support, which lies with the local and state governments. Federal assistance should be supplemental and should be directed to the areas and programs in greatest need.

State and local support of the fire services must be increased and the federal role should be to foster that participation. Incentives to local governments need to be developed and enacted. Working together, the fire services, emergency managers, and public officials at all levels of government, federal agencies and the Congress, we can make tremendous strides on solving these problems.

To my friends and partners in the fire and emergency services community, I ask for your help and your unity. The fire services community has had many voices, many successes and some failures. If nothing else, September 11 should have shown all of the fire service organizations that we need to work together to solve our problems, to respond with one voice and to acknowledge that some of our differences, while important, pale in comparison to the importance of our mission: to protect the public.

It is not a question of volunteer vs. career, or management vs. labor. It is not a question of fire vs. law enforcement. The question is, can we work together to make a difference in the lives of every single American, find the areas we can agree on quickly and on those issues on which we differ, put aside the rancor and the posturing and work together to address and solve them? I know the answer is "yes" and I pledge my commitment, should I be confirmed, to work with all of you to build those bridges and resolve the pressing issues that face us.

The USFA has made great strides in the past 2 years. The reorganization recommended by the Blue Ribbon Panel and implemented by the staff of USFA under the leadership of Ken Burris has reenergized USFA and transformed it into a dynamic research, training and information agency. I look forward to the opportunity to buildupon that success.

I want to again thank the Committee for its support and for the opportunity to testify today. I will be happy to address any questions you might have.

A. BIOGRAPHICAL INFORMATION

1. Name: Robert David Paulison.
2. Position to Which Nominated: United States Fire Administrator.
3. Date of nomination. Announcement of intent to nominate was 9/20/01.
4. Address: (Information not released to the public).
5. Date and Place of Birth: 2/27/47 Miami, Fl.
6. Marital Status: Married, 30 years. (Happily)
7. Names and ages of children: Amy Paulison Gupta (28) Beth Marie Paulison (24).
8. Education: North Miami High School (1965); Miami Dade Community College (AA degree 1968); Florida Atlantic University (BA 1970).
9. Employment record: 1971–1978 Firefighter, City of North Miami Beach 17150 N.E. 19 Ave. North Miami Beach. 1978–Present Miami Dade Fire Rescue Department worked all Ranks; Firefighter, Lieutenant, Captain, Chief Fire Officer, Division Chief, Assistant Chief, Deputy Director and as Fire Chief since 1992.
10. Government Experience: I am currently the Fire Chief for the Miami Dade Fire Rescue Department. I served as a consultant to the Defense Science Board for Summer studies in 1997, 2000 and 2001. I was part of a vice-presidential delegation sent to Russia in February of 1996 to observe their Urban Search and Rescue Teams.
11. Business Relationships: Board of Directors of the American Red Cross Dade and Monroe Chapters; Cabinet Member of the Dade County United Way; Board of Directors Chief Fire Officers Association of Miami Dade County; Honorary Board Member of the University of Miami/Jackson Memorial Hospital Burn Center. (These are all non-profit or charitable Organizations and I serve at no compensation. I am also a member of these organizations so some of them apply below.
12. Memberships: International Association of Fire Chiefs; National Fire Protection Association Chief Fire Officers Association of Miami Dade County, Florida Fire Chiefs Association.
13. Political affiliations and activities: (a) I have never held any office for any political party. I have never held or been a candidate for any political office. (b) I am a registered Democrat. I have never held an office or provided any services to any political party or election committee. (c) $250.00 donation to Michael Freeman Campaign(D) when he ran for Governor of Minnesota. $250.00 donation to Burt Locke(R) for his campaign for Attorney General of Florida (donation is by my wife). These are the only campaign donations either my wife or I have made.
14. Honors and Awards: Florida Fire Chief of the Year, fellowship to Harvard's State and Local Government Program; R. David Paulison Day for Miami Dade County.
15. Publications: I wrote one article for Fire Chief Magazine on our response to Hurricane Andrew in June of 1993. (attached)*
16. Speeches: I have given numerous speeches during my career but most were not from a written script. All were fire service related and non-controversial.
17. Selection: I believe I was chosen for this position because of my national reputation in the fire service. I have managed several large disasters in my community (hurricanes, airplane crashes, tornadoes, floods, etc.) I also oversee The Office of Emergency Management in Miami Dade County. I was the President of the International Association of Fire Chiefs (1996–1997). I manage a department of over 2,000 people with a budget of over $200,000,000. I believe my experience, skills and excellent reputation qualifies me for this appointment.

B. FUTURE EMPLOYMENT RELATIONSHIPS:

1. I will sever all connections with my present employer, business firms, and business associations and organizations if confirmed by the Senate.
2. I have no plans, commitments or agreements to pursue outside employment, with or without compensation, during my service with the government.

The information referred to was not available.

3. I have no plans, commitments or agreements to resume employment, affiliation or practice with my current employer.

4. No one has made a commitment to employ my services in any capacity after I leave government service.

5. If confirmed, I expect to serve out my full term or until the next presidential election whichever is applicable.

C. POTENTIAL CONFLICTS OF INTEREST;

1. Describe all financial arrangements, deferred compensation agreements, and other continuing dealings with business associates, clients or customers: (a) I will have a retirement payment from the state of Florida for my 30 years in the fire service. (b) I have a deferred compensation account through Miami Dade County payroll deductions. I will no longer contribute to this program if I am confirmed. (c) Through the state of Florida I will receive a lump sum payment from a Deferred Retirement Option Plan when I resign my current position if confirmed.

2. List any investments, obligations, liabilities, or other relationships, which could involve potential conflicts of interest in the position to which you have been nominated: I am a member of the International Association of Fire Chiefs and a past president; I believe that the IAFC has some contracts with FEMA. I will resign from the IAFC, if confirmed.

3. Describe any business relationship, dealing, or financial transaction, which you have had during the last 10 years, whether for yourself, or on behalf of a client, or acting as an agent, that could in any way constitute or result in possible conflict of interest in the position to which you have been nominated? I cannot think of any conflicts I might have.

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 affecting the Administration and execution of law or public policy? The International Fire Chiefs Association supported legislation to pass the Fire Fighter Assistance Grant Program.

5. Explain how you will resolve any potential conflict of interest, including any that may be disclosed by your responses to the above items: I have submitted a "Conflict of Interest Statement" and have included it in this packet.

6. I agree to have written opinions provided to the Committee by the FEMA Ethics Official and by the Office of Government Ethics concerning potential conflicts of interest or any other legal impediments to me serving in this position.

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 other professional Group? 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 minor traffic offense? No.

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? No.

4. Have you ever been convicted (including pleas of guilty or *nolo contendere*) of any criminal violation other than 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. None.

E. RELATIONSHIP WITH COMMITTEE

1. I will ensure that my department complies with deadlines set by congressional committees for information.

2. I will ensure that my department does whatever it can to protect congressional witnesses and whistle blowers from reprisal for their testimony and disclosures.

3. I will 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.

4. To make sure that regulation issued by my department comply with the spirit of the laws passed by Congress I must review and understand what those laws are and mean and work closely with congressional members to comprehend what the intent of those particular laws are.

5. The mission of the U.S. Fire Administration if to reduce life and economic losses due to fire and related emergencies through public education, training, tech-

nology and data research initiatives in coordination with other federal agencies and in partnership with fire protection and emergency service communities. Its major programs are divided into four major areas: **Public Education.—**Develops and delivers fire prevention and safety education programs in partnership with other federal Agencies; **Training.—**Promotes the professional development of the fire and emergency response community and it's allied professionals. The National Fire Academy develops and delivers educational and training courses to supplement and state and local fire service training programs. **Technology.—**Works with the public and private groups to promote and improve fire prevention and life safety through research, testing and evaluation. Generates and distributes research and special studies on fire detection, suppression and notification systems, and on fire and emergency responder health and safety. **Data.—**Assists state and local entities in collecting, analyzing and disseminating data on the occurrence, the control and the consequences of all types of fires. The National Fire Data Center describes the Nation's fire problem; proposes possible solutions and national priorities; monitors resulting programs; and provides information to the public and fire organizations.

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

F. GENERAL QUALIFICATIONS AND VIEWS

1. How have your previous professional experience and education qualifies you for the position for which you have been nominated? I have over 30 years in the fire service. During that time I have served in almost every capacity in my department. I started as a street paramedic and firefighter and worked my way up through the department. I have served the last nine years heading up the largest fire rescue department in the Southeast United States. While in that position I handled some significant disasters such as Hurricane Andrew and the Value Jet crash in the Everglades. I also served as the President of the International Association of Fire Chiefs which has over 12,000 members in 27 countries. I oversee one of the most experienced Urban Search and Rescue teams in the world. This team is on of only two that respond outside the United States. Fairfax, Virginia being the other. Shortly after Hurricane Andrew, Emergency Management for Miami Dade County was turned over to me for restructuring and rebuilding. We have made it a model for the rest for the country. We were also one of the first fire departments to start using thrombolitic or clot busting drugs on our paramedic rescue vehicles. We have been able to save hundreds of lives that in the past would have not survived. I also have served as a consultant to the Defense Science Board and worked on issues such as biological terrorism and chemical warfare. I have a bachelor's degree from Florida Atlantic University and completed Harvard's State and Local Government Program. This program has given me great insight into public policy formulation.

2. Why do you wish to serve in the position for which you have been nominated? It is important to have a fire service related person in this position; someone who not only has front line experience but has handled the administrative duties of a local fire Department and understands the issues local fire departments face each and every day. This person also needs to have handled or at the least, been exposed to major incidents. This is to ensure that whoever is in that position can comprehend the impact on the local community. The Fire Administrator should have national recognition and respect from our nation's fire service. I have those experiences and qualifications and am ready to serve in this capacity. With the recent attacks on our country and the events that have followed, I have never been so proud to be a firefighter and never so ready to serve my country.

3. What goals have you established for your first two years in this position, if confirmed? The first goal is to set up a timetable to review our mission statement and our strategic plan on a regular basis. We need to make sure that our mission statement correctly address the current fire problems. Goal two is to re-establish the confidence the fire and emergency services should have with the Fire Administration. Goal three is to increase the visibility of the Fire Administrator at our large disasters whether natural or manmade. The fire service is the first on the scene of disaster and the ones most visible by the public. The Fire Administrator should be visible to first responders. Goal three is to work toward having a 100 percent participation from our states in the National Fire Incident Reporting System. The information that could be gleaned from a complete and accurate set of data is invaluable in preventing fires and reducing injuries and death among our firefighters and residents. Goal four would be to make research and development a priority. We need better protective clothing, a workable firefighter accountability system. Right now we cannot track our firefighters once they enter a building. It is only through a manual system that we even know who is in the building and who isn't. Once in-

side, we loose track where they are and how they are doing physically. We also should be looking at better ways to protect the public from the ravages of fire through advances in technology similar to the impact that smoke alarms had. There are existing technologies that could be transferred to use by first responders. A viable research and development program can identify those and assist in getting them on the front line. I also want to look closely at expanding off campus training for firefighters. Our state fire training programs could be expanded and provide quality training to more firefighters at a lower cost. Probably one of the more important issues that needs attention is developing a better system of getting feedback and input from our stakeholders. If confirmed, I will be meeting with USFA staff and our stakeholders to implement such a system

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 don't believe I am lacking any needed skills to handle this position. I have the Education, experiences and desire to do the best job possible. I am quick to glean insight and wisdom from those who have been in the system and am a quick study.

5. Who are the stakeholders in the work of this agency? The nation's fire service is a stakeholder but is very diverse. We have volunteers, combination, small, medium and large metropolitan departments. There are fire marshals, fire service instructors, and haz-mat technicians. There are also numerous fore service organizations such as, International Association of Fire Chiefs, International Association of Fire Fighters, the National Fire Protection Association and many others. There are also organizations that are not, on the surface, fire related but have a close relationship with the Fire Administration's mission. The Consumer Product Safety Commission who in the past has worked on the fire resistant sleepwear and child proof lighters, the National Safe Kids Campaign, the National Institute for Standard Techniques and the AARP. Our children and our older adults are at significant risk for be injured or killed in a fire and these organizations have education programs that address these risks. These along with the Congress, and the people of this country are some of the stakeholders.

6. What is the proper relationship between your position, if confirmed, and the stakeholders? I see my job as facilitating how their roles fit into our mission and how our roles fit into their mission. My role is also to make sure we maintain a close, professional relationship with all of our stakeholders.

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? I am responsible for assuring the agency operates in a business like manner. Employees must know what is expected of them and what the fiscal constraints are. The budget requests and expenditures must be in concert with the strategic goals. In fact, the Strategic Plan must drive the budget not the other way around. Regular meetings with staff to receive input and regular review of what is expected and a systematic review of our strategic plan and budget will ensure we operate in a proper manner and within the guidelines of our budget. (b) What experience do you have in managing a large organization? I currently manage a 2,000-person department. These employees are spread out across 1900 square miles and they operate out of 55 facilities on three different shifts. My budget is over 200 million dollars. In the nine years I have been the fire chief, I have never over spent my revenues. I not only manage the Miami-Dade County Fire District, I also manage Emergency Management, Air Rescue (3 trauma transport helicopters), fire service at Miami International Airport, and fire service at Miami's seaport. I have also managed several large disasters in our community, Hurricane Andrew, Value Jet crash, Fine Air crash, several floods, tornadoes and several large storms. I also have to balance several political jurisdictions. I have a County Commission consisting of 13 commissioners elected in single member districts, a county manager, an executive mayor and 5 fireboard commissioners that are elected in single member districts. Along with countywide fire service I also provide fire and rescue services to 25 cites. That adds 25 mayors, councils, etc. If I were not a good manager, I could not have survived the last 9 years as fire chief.

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. Strategic planning with performance goals provides a framework for the organization's mission in an internally consistent, sequential and systemic manner. A well-conceived strategic planning system provides a reference point for evaluating performance, productivity, and progress in a consistent and uni-

form way. Performance measures evaluate how well and to what extent you meet your primary service areas. Identifying performance goals and reporting on the progress of meeting those goals challenges the employee to continually improve performance and proactively create their future. It also allows anyone who reads the report to know where the department is going. It identifies the best approaches for achieving the department's goals and allows all to understand the political, economic and service environment in which the department operates. The success of identifying and reporting on the achievement of performance goals has been validated through a growing number of programs for government and non-profit services. (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? This is a question that all managers deal with. First you need to look at the goals. Maybe they were set too high and were not achievable. There could be management problems or maybe the agency does not have the capacity or finances to function properly. So, there may need to be a change in management or restructuring of the agency or a close look at private business capability of performing the functions of that agency. It could be as simple as setting realistic goals. One major problem with taking action when an agency fails to meet its goals is that it could stifle employee creativity and very may hinder a manager from setting high goals that pushes the staff to perform at its best. If we are having over 100 firefighters killed each year and set a goal of only fifty for next year but end up with 75, we haven't reached our goal but had a significant reduction in firefighter deaths. Should that manager or agency be "punished" for not reaching their goal or should they be rewarded for reducing firefighter deaths by 25 percent? The answer is that if an agency or department does not reach the set goals the first step is to find out why and then decide what the next course of action should be. (c) What performance goals do you believe should be applicable to your personal performance, if confirmed? I would be responsible for the smooth, business-like operation of my area. I should be held fiscally accountable. It is my responsibility to make sure that the primary tool for the day to day management is the strategic plan and the budget. I am responsible to empower staff and make sure they have the needed resources available to achieve stated goals and performance measures. I must be held responsible to hold staff accountable for achieving those goals. I should also be responsible to keep an open line of communication with all of the stakeholders.

9. Please describe our philosophy of supervisor/employee relationships. Generally, what supervisory model do you follow? Have any employee complaints been brought against you? I am a goal-oriented manager who is supportive of staff. I encourage employees to take risks and provide them with an environment that provides security. If you don't provide the security, they won't take risks. I make it very clear, to staff, what is to be accomplished but allow them flexibility to decide the best way to get it done. I usually avoid giving orders, instead, make requests or make suggestions. I find that this works better at getting employee buy-in than barking orders. I give my staff all the support I can and assume that they will do the best they can; they usually do. One important thing, there are times when you simply take charge and make decisions yourself. In times of crisis or when a decision is needed immediately there is no substitute for a strong leader. Someone who is afraid to make decisions or take charge should not be in a position of leadership.

10. Describe your working relationship, if any, with the Congress. Does your professional experience include working with committees of Congress? If yes, please describe. I do have some experience working with Congress. I testified before Senate and House committees on dealing with the aftermath of Hurricane Andrew. I served as the President of the International Association of Fire Chiefs (1996–1997) and had an opportunity to work with several members of Congress during that period. I served as a consultant to the Defense Science Board in 1997, 1999 and 2000. I dealt with issues of homeland defense regarding biological terrorism and chemical warfare.

11. Please explain what you believe to be the proper relationship between yourself, if confirmed, and the Inspector General of your department/agency. The Inspector General's office is a management tool to assure that programs are operating efficiently, effectively and properly. It can be one of the most valuable tools a manager has.

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. To make sure that regulations issued by my department complies with the spirit of the laws passed by Congress, I must review and understand what those laws are and mean. I will work closely with Congressional members to comprehend what the intent of those particular laws is.

13. In the areas under the department/agency's jurisdiction, what legislative action(s) should Congress consider priorities? Please state your personal views. There are a lot of needs in the nation's fire service. I feel that the Assistance to Firefighters program and the grants associated with it need to continue. Terrorism response training needs to go much further than we have. Our nation's fire service must be ready and able to handle acts of terrorism. This includes training and equipment and information. Sometimes it is difficult for local fire. departments to have the same access to critical information that is available to police departments. If confirmed, I plan to set up a meeting with the leaders of the Urban Search and Rescue Teams that responded to New York and the Pentagon and the New York Fire Department to see what we needed on those incidents that we did not have available. This will include existing equipment and technology issues that we do not have but need. Chemical warfare and biological terrorism is a real threat to this country. Most of our fire departments need significant training in these areas, as they are an integral part of our homeland defense. After what happened on September 11 we need to underpin the operational capability of nation's fire service. One way to do this is to set aside a portion of radio spectrum to be used only by the fire service. There is a shortage of this spectrum and once it is gone it is extremely difficult to retrieve.

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. At this time there is only one program that has any discretionary spending under USFA and that is the Assistance to Firefighter Grant Program. This program is almost completed. However if this program is funded beyond the 2002 budget year, we (if confirmed) will include the stakeholders in setting up criteria, in an open fashion, for application and for evaluation. This will ensure that there is an equitable process of distribution based on the established criteria that includes national priorities. If confirmed, I will make sure this process is in place in a timely manner.

Senator WYDEN. Mr. Paulison, thank you. Both of you have given excellent presentations.

Let me go right to the questions. First, on the issue of terrorism, Dr. Bement. We had our hearing for Dr. John Marburger, as you know, who will be heading up Science and Technology, and we discussed the need for a coordinated effort among the federal science agencies in conducting research to combat terrorism. We were concerned about the General Accounting Office report that showed that often the left hand does not talk to the right hand. They said, for example, that the Coast Guard and the Defense Department were doing the same research on chemical weapons detection for cruise ships. So you end up taking dollars away from critically needed functions because of duplication, and you do not have the benefits of the sharing of information.

Why do we not start by having you describe how you see NIST being a part of this fight against terrorism. You have obvious areas with respect to technical competencies, such as quantum computing, encryption, sensing tiny amounts of substances. Describe for us, if you would, what you see as the agency's role in combatting terrorism?

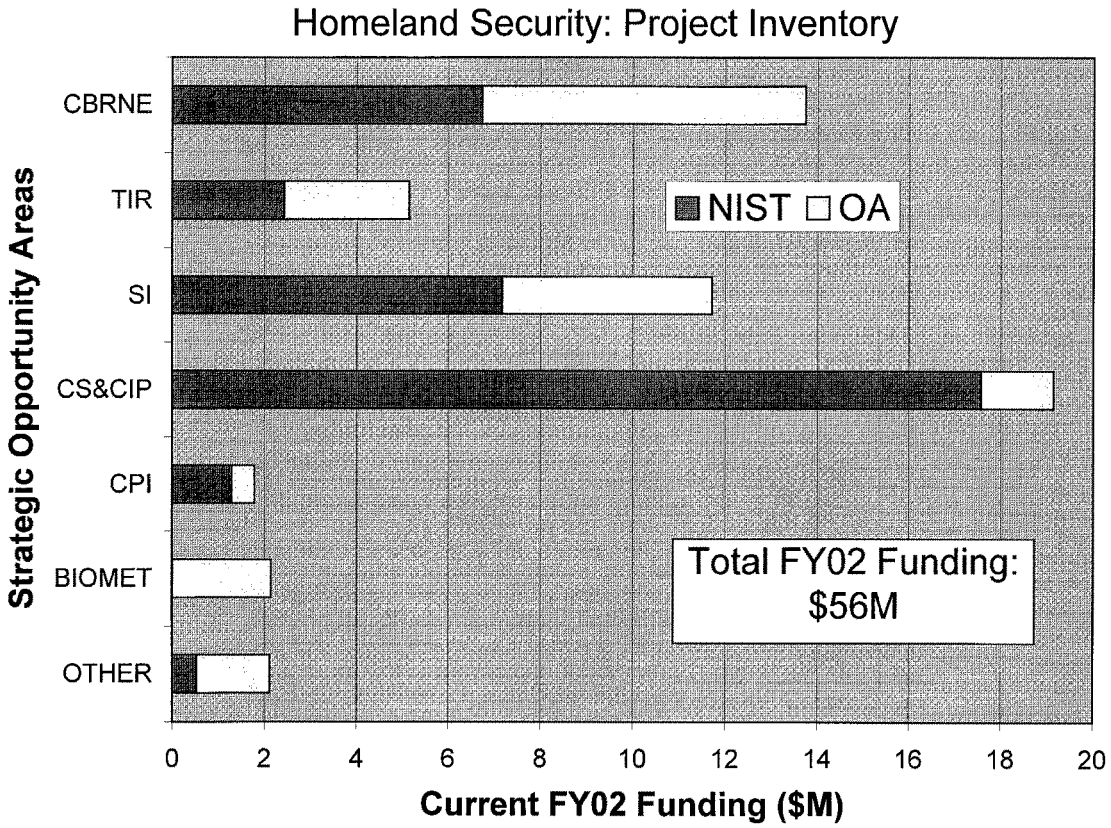
Dr. BEMENT. Thank you, Senator. You have already outlined a couple very important areas. There is very active work at NIST and there was even before September 11th in developing advanced sensors for detecting biological and chemical agents, as well as nuclear materials. You mentioned encryption standards. There is also a very large agenda in building and fire research. Almost every laboratory at NIST has a role to play and also has significant efforts under way, including the Advanced Technology Program, where

there are some initiatives that directly address needs for homeland security.

I would like your permission, if I may, to submit some of these initiatives, which is a rather long list, for the record so that you will have first-hand listing of the various initiatives that are currently under way.

Senator WYDEN. We will hold the record open for that. That would be very helpful.

[The material referred to follows:]


Homeland Security: Project Inventory
Strategic Opportunity Areas
CBRNE
TIR
SI
CS&CIP
CPI
BIOMET
OTHER
NIST
OA
Total FY02 Funding:
$56M
0
2
4
6
8
10
12
14
16
18
20
Current FY02 Funding ($M)

Dr. BEMENT. Thank you very much.

Senator WYDEN. On the question of fire research, as I mentioned, we looked at fire services issues in some depth not long ago. We heard at our hearing testimony from a number of witnesses, including the New York Fire Department, in which they described the need for the development of performance standards for firefighter equipment. They said at this point there are not any standards by which they can credibly evaluate the new equipment, particularly the equipment containing advanced technologies.

After we heard that testimony, I wrote Secretary Evans asking that NIST look into this issue and set up a program to deal with it specifically, such as the one that now exists at NIST for law enforcement services and equipment.

These two agencies have a long history of cooperating. Could you state for the record whether you are willing to put together a program that addresses the concerns raised by the firefighters at the Subcommittee's recent hearing?

Dr. BEMENT. Absolutely, Senator. I consider this to be a very high priority for NIST, not only in providing the technology but also the standards. The interaction with the U.S. Fire Administration under our existing Memorandum of Understanding is already well along. Dr. Jack Snell is here, who is the Director of the Building and Fire Research Laboratory, and he has been very active in this area with the U.S. Fire Administration. I look forward, if confirmed, to working with Mr. Paulison in actually carrying out that agenda.

Senator WYDEN. Tell me then, because that is very helpful and very constructive, to have your position with respect to putting together a program on the standards for the equipment, what other areas of research do you think are promising as it relates to NIST in terms of getting the next generation of advanced firefighting technology out to the firefighters?

Dr. BEMENT. There are two or three areas that I think are paramount. One is in open systems communications, so we do not have the difficulties that we had in New York with the World Trade Center disaster. Better protective equipment, better detection equipment so that one can do a better job of detecting victims of fire, and better early warning devices in some of the buildings are also required.

Some of the building codes are pretty old. Even the World Trade Center, which is a relatively new building, was built according to building codes that probably were put in place in the 1950's. I think updating building codes in the interest of preventing the spread of fire, and also early warning and detection of fire is just absolutely paramount.

Senator WYDEN. Let us talk for a moment about personnel issues. My understanding is you have got one-quarter of your people, something like upwards of 800 people, eligible for retirement this year. Suffice it to say, again and again we are getting these reports about the great need for talented, dedicated people in federal service. GAO has cited the human capital challenges as a top concern affecting many federal managers.

How do you plan to address this issue so that NIST has an adequate supply of young researchers ready to step in? I would like

to know if you plan to expand your postdoctoral program or other kinds of approaches so that we can attract more young researchers.

Dr. BEMENT. Yes. NIST is rather unique among many federal laboratories in that it does have a very active intern program through the national Research Council postdoctoral fellowship research program, as well as a Summer Undergraduate Research Fellowship program to bring budding scientists in their undergraduate years into NIST, not only to become motivated and also to get the spirit of the place, but also to consider NIST for their future career.

As a result, it has been the tradition of NIST for some years to build from the bottom, to select bright young talent that infuse new ideas and new energy into the Institute, and we have people waiting in line to fill some of the senior positions as people retire. So this evergreen character of NIST is something that we treasure and it is something we try and promote very actively. If confirmed, I want to continue to keep that a very active program.

I should say parenthetically that the summer undergraduate program is absolutely wonderful in helping us work our diversity opportunities, because we bring a very diverse mix of students from various colleges from around the country and it gives us a leg up in trying to build more diversity in our scientific and technical ranks. That I would also give very high priority if confirmed.

Senator WYDEN. In terms of your resources, I would like to know whether you think you have got enough resources and facilities to continue the kind of work that has produced the Nobel Prizes, the repeated instances where you have won, and whether you have the resources to deal with the relationship with the Technology Administration, which as you know has always been unique and a big disparity between NIST and the Technology Administration.

Why do you not talk for a moment so we have it on the record how you are going to approach this question of the adequacy of resources.

Dr. BEMENT. Well, for some years now NIST has not been idea-limited, it has been resource-limited, funding-limited. So it really takes inspired management, inspired leadership, to try and restructure the program almost on the run in order to structure programs with the right talent and the right resources to succeed and to succeed cost-effectively in a timely fashion.

So in many cases we are at risk of dropping some activities that are almost in the area of public trust in measurements and standards, in the interest of moving into some of the new technology areas and some of the new needs in standards and measurements. This has been a continuing problem. Fortunately, we have seen a slight plus-up in our budget this year, which we are very grateful for.

But through our strategic planning, I hope I can continue to keep this Committee aware of what cannot happen if we do not continue to get the support that we need.

Senator WYDEN. As I told you yesterday, I have a special interest in the Bayh-Dole statute.

Dr. BEMENT. Yes, sir.

Senator WYDEN. I want to discuss that with you for a few moments. As you know, Bayh-Dole and Stevenson-Weidler are essen-

tially the two statutes that govern cooperative research and the licensing of federal inventions. I am of the view that, at this point, the statute does not work anywhere near as well as it could for all of the stakeholders, businesses, universities and taxpayers. I am interested particularly in the involvement with the laboratories as it relates to universities and businesses. They are constantly talking to me about delays and the amount of paperwork that they have to slog through to be part of the statute.

When you look at the numbers in terms of return on investment research, they look pretty paltry. I have, as I indicated to you yesterday, made it clear that I want to see the Administration look again at this statute and look at ways, working with all of the stakeholders, that it can be improved.

I would like to have you tell me how you see the tech transfer system working at NIST, given the fact that your operation, as we talked about yesterday, is one piece of the puzzle. You have got laboratories, universities, businesses, and taxpayers. I would like to have you describe to me how you think it is working.

Dr. BEMENT. Well, I think it is working well. We have both an intramural and an extramural outlook when it comes to technology transfer and the application of Bayh-Dole. I think the preponderance of our work is done in the public domain, so that we try and make the results available to the public. But we also patent our intramural research. We also develop licensing royalty streams from intramural research. That seems to be going well. I do not know that there is a problem there.

In the ATP program, Bayh-Dole is not an issue. But in some of our CRADA's, where we do have cooperative arrangements with universities and also with other federal laboratories and with industry, it does come up and it is a major issue.

I must confess, I did go through the statute and I agree with you that there is nothing in law that I could find that provides a return stream to the government for investment in inventions. But I also have to confess I never looked at it from that standpoint. I looked at it more from the benefits to universities or the benefits to industry.

It turns out that the Administration of Bayh-Dole is part of the technology transfer responsibilities of the Technology Administration, and if confirmed I will follow up your suggestion and explore that with Secretary Bond. I would very much like to have an opportunity to discuss it with Floyd Kvamme at the first opportunity.

Senator WYDEN. I appreciate that, because my sense is we can do a lot better by all of the stakeholders. I think we can streamline the red tape and the bureaucracy that has been frustrating for businesses and universities, and I think we can shore up the return on investment for taxpayers. That is the way I would like to approach it. Secretary Bond is a good man, and I appreciate your taking it up with him and with Floyd Kvamme, if you will do that and get back to us.

In fact, I would like you, if you would, could you get back to us within 90 days after you are confirmed and give us your sense of how NIST, to the extent you can, and the Administration is willing the proceed as we look to try and strengthen? I would like to see if we could do it administratively if possible. I am always anxious

to avoid getting entangled in legislative rewrites of complicated statutes.

But, I would like to see us take this out through the prism of each of the stakeholders—universities, businesses, laboratories, and taxpayers. I am convinced we can do a lot better. Is that fair enough, 90 days; give me a sense of what you are picking up?

Dr. BEMENT. Can we make it 90 days from confirmation?

Senator WYDEN. That is what I mean, yes.

Dr. BEMENT. Well, Senator, I would be glad to.

Senator WYDEN. We are going to get you confirmed quickly so you can go to work on these and other pressing matters.

Dr. BEMENT. Yes, Senator, I would be happy to stay close with you and to take on that charge.

Senator WYDEN. Very good.

Well, thank you and I think you are going to be spared a little bit now while we will go to Mr. Paulison.

A few questions for you. I think, given the fact that you are there in Miami-Dade, you have seen first-hand what local fire departments are up against. Tell us what you think the biggest needs are and what your priorities would be at the U.S. Fire Administration to address, the big priorities?

Mr. PAULISON. There are several needs, and a couple that I would like to address. Since you talked about technology, one is firefighter accountability. We do not have a method to track our firefighters. We know when they go in a building, when they come out of a building. Once they are inside the building we lose them.

Also, with our forestry firefighters. We know the technology is there for that with GPS, but we are looking for our research friends over here to help us design an accurate ability to track our firefighters, where they are, what kind of condition they are in. We should be able to monitor their health, their blood O2 saturation, their location, and all of those things, and monitor it from a single place.

Communications is another major issue that we are going to tackle. We have to talk about interoperability, what we saw in New York. We dealt with the same thing in Hurricane Andrew, where we had these major incidents and we simply cannot talk to each other, and not just fire department to fire department, but we need to be able to talk to the police and the mayor's office and the manager's office.

That technology is there at the local level, where we can do interface boxes to patch in from one channel to another or one frequency from another, whether you are on 800 megahertz or UHF, but we are simply not doing that yet.

The second part of that——

Senator WYDEN. Let me, if I might—I am very much interested in this area. We are going to have a specific Subcommittee hearing to look at some of the technology aspects of what happened on September 11th. You may have heard that I have actually suggested that we look at something along the lines of a technology equivalent of the national Guard, a kind of effort to mobilize people in the private sector so that we have got the equipment and the brains and the talent, essentially, ready to go.

Tell me, if you would—and sort of step back from what you said earlier—what the problems were in terms of interoperability when people tried to be in contact with each other in that situation and what you think we might do to deal with it?

Mr. PAULISON. The problems we had were—obviously, you have seen it before—where more than one agency comes together on a scene and you cannot communicate. We have resolved that locally by setting up a unified command post, where you have somebody from each agency in that command post with a radio for their particular agency and they pass information back and forth.

That is a very poor way to do that. So we need some method, and I think the long-term solution is a country-wide communication system. That is going to be long-term. We are talking about setting up satellites and towers across the country, where we can have an emergency frequency that everybody can tune into when they have a disaster. To me that is the long-term fix.

Senator WYDEN. You know, the satellites did not go down on September 11th. Everything else crashed, but Global Star, Iridium, all those did not.

Mr. PAULISON. It works all the time, right.

The other system that I was talking about earlier was by having interface boxes where a local community can interface from one agency to another even if they are totally different systems. They can be on 800 megahertz or a UHF system. I am not a technician, but I know there are boxes available that they can—where you can patch that together and go to one emergency frequency for that particular event. I think that is the short-term fix.

Some of the major departments may be able to afford these, but there are literally hundreds of departments across this country that simply are not going to have the money to do this, and I think that is where the federal government and state governments need to step in and help.

The other issue with communications is also the amount of frequency that is available for us to use for public safety. We need to set aside a certain amount of spectrum for public safety use only and say that, not sell it off or do anything else with it, but save it for public safety.

Senator WYDEN. Now, I gather that you tried to do some of these things in the aftermath of Hurricane Andrew. I read the article that you wrote in "Fire Chief" magazine, and it talks about your prepositioning platform aerials around your county and generators and portable repeaters, in effect, a backup kind of communications system. I gather it was really the only thing you had for several days.

Do you think it would be helpful to have people from the private sector in the communications and technology sector in position to try to assist you, a sort of talent pool that you could call on to reestablish normal communications?

Mr. PAULISON. Absolutely. That is where the expertise is. That is where the technology is, in the private sector. If we could have—this is the first I have heard of this idea you are talking about, but it is a tremendous idea, to have a group of private sector people that have that technology, have the equipment, and have the abil-

ity to come in and assist a local government when they are dealing with a disaster like this.

Senator WYDEN. Good, thank you. We will be looking to work with you as we go forward with the hearings in an effort to develop an initiative.

Mr. PAULISON. Yes, sir, we would like to be a part of those.

Senator WYDEN. Very good.

Tell us a bit about the FIRE Act grant situation. As you know, $100 million was awarded. I gather that the requests were many, many times the amount of money that was awarded. There are some questions about whether you have the dollars to administer the program. In a sense, you are going to be coming at it from two standpoints. You are a local fire chief, so you can tell us a bit about what it is like to go through the bureaucracy and the red tape and what you can do to improve the process there, and then I am sure you have had some thoughts already about what you will do after confirmation.

Given the importance of the program, why do you not touch on both issues. What could be done that would really be helpful to a local fire chief, since you hale from those ranks, and then what seems doable to you in terms of the Washington, DC., situation?

Mr. PAULISON. From a local level, the application process was cumbersome. There was not enough flexibility. Sometimes there were things that we felt we needed, but there was not a slot for us to fill in to try to apply for a particular issue. An online process would probably speed things up and make it a lot easier on both ends.

Senator WYDEN. You cannot apply online for this?

Mr. PAULISON. Not yet. That is one of the things we are proposing.

But for a local fire chief or a local fire department to be able to do an online application and then for the U.S. Fire Administration to be able to process that online would save a lot of red tape and speed the process.

The application process needs to be a little bit longer. It is too short. There is too much detail, too much work you have to do. It is stuff that is needed, and we need to extend that application process a little more.

From the U.S. Fire Administrator's position, if we are given another amount of moneys to hand out we are simply going to have to have staff to do that. With the first grant that came out, we pulled people from—I say "we"—U.S. Fire Administration—we pulled people from everywhere. Everybody rallied around and we put an effort out to get these moneys out, and we did it in an extremely timely manner. I am very proud of the staff and what they did.

You cannot keep doing it that way, because everything else will shut down. We just literally shut everything else down to get the grants out. That was the right thing to do at the time, but if this is going to be an ongoing process like I suspect it is going to be, we are going to have to set aside a percentage of those grants funds to provide staffing. If we are going to do the grants, we are going to do it right, we want to do it efficient. We want to make

sure that what we do is purchasing the right thing that is going to have an impact nationwide on the safety of our public.

Senator WYDEN. Now, as you know there is a lot of discussion in the Congress about hiring a substantial number of new firefighters, a discussion of perhaps 70,000 new firefighters. We would like to know if you think a program like this is needed, do you have the resources to administer it, and what you think of the suggestion that the Department of Labor would run it?

Mr. PAULISON. I have heard the rumors about the request for 75,000 firefighters, but I have not seen it in writing yet. My concern is simply the same as what we had with the COPS program. We are hiring people with 30-year careers and we are talking about potentially short-term money, and who is going to pay for those firefighters after the third, fourth, fifth, or tenth year. It may not be insurmountable, but that is my main concern.

I have not discussed it with the Director, but off the top of my head I would say that the Department of Labor may not be a bad place to manage that program if it becomes law.

Senator WYDEN. The only other question I have for you, Mr. Paulison, deals with preparedness coordination. As you know, the General Accounting Office has been making recommendations for several years now to reduce duplication and improve coordination of the assistance programs to the first responders. They cite in their most recent report that there is still some confusion about these various kinds of programs.

What in your view could be done to respond to what the GAO has been talking about with respect to confusion among federal assistance programs?

Mr. PAULISON. If we are talking about a particular group of people like firefighters, I think it needs to be centralized in one place, along with training also, so we have one focus, one agency, one group to go to for questions and answers. The fire chiefs that I talk to struggle with: I cannot get a straight answer out of anybody; I call this person, they say, well, that is not ours, you need to call so- and-so.

They need somebody to go to, one-stop shopping, to coin a phrase, where they can go. So I say if we are going to continue doing these, let us put it in one place and decide where that is going to be, and whoever it is, give them the resources to manage it.

Senator WYDEN. That might be too logical for the federal government. It sure makes sense to me.

Both of you have given excellent presentations. As you can tell, it is particularly hectic right now with so many colleagues being pulled to other meetings. I have got to get over to the Intelligence Committee myself. I am very anxious to get you confirmed. Chairman Hollings is, as well, given the fact that we are already asking you for projects and to do things about standards for firefighter equipment and get into whole areas you never thought you would even be asked about, like Bayh-Dole, Dr. Bement. We have got to get you all credentialed and approved, and I am confident that the Senate is going to do that.

On behalf of the Committee, we are very pleased that two distinguished individuals such as yourselves are interested and willing

to serve our country right now. We always give you a chance to have the last word on these matters. Is there anything else that you would like to add?

Dr. BEMENT. Well, if I may, Senator, I would like to acknowledge the presence here of Deputy Secretary Bodman, Sam Bodman. I have had in my lifetime a very unusual privilege of always moving from one career to another, but working under a person that I could like, that I could respect, and I could learn from. My record is now intact. I have had many good exchanges with Phil Bond. I can assure you that there is going to be a very close and seamless relationship between NIST and the Technology Administration.

I look upon it as a real honor to serve with these people.

Senator WYDEN. Well, I appreciate your singling people in the Department out. They have been very cooperative, starting with Secretary Evans and the other individuals that you have talked about today, and I think that is a very appropriate one to quit on because that is what it is going to take, that kind of bipartisan effort maximize the success of our policies in an area that obviously is in the forefront of the public's attention.

Mr. Paulison, anything you would like to add further?

Mr. PAULISON. I just want to say that, based on what happened September 11th, I have never been so proud to be a firefighter and I am never so ready to serve my country, and I appreciate your support. Thank you.

Senator WYDEN. That is a great way to wrap up. We are very proud of what all of those in your profession have done to help our country when very often it is not at all expected and do it extraordinarily well.

Mr. PAULISON. Thank you.

Senator WYDEN. We look forward to working with you.

With that, the Committee is adjourned.

[Whereupon, at 3:34 p.m., the Committee was adjourned.]

APPENDIX

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN MCCAIN TO ARDEN L. BEMENT, JR.

Question 1. Given the focus from the Secretary of Commerce and the Congress on ATP, what effects has this attention or controversy had on the other programs at NIST?

Answer. I believe that the current close review of the ATP by the Secretary of Commerce is in the interest of establishing a stronger ATP, which will be more sustainable and serve the nation even better. The Committee has been a strong supporter of NIST, and I believe NIST programs are highly effective and productive. I do not believe the attention or controversy around ATP has had an adverse effect on the other programs at NIST. In fact, during the years of debate on ATP, NIST's programs have made notable progress. The laboratories' mission is enhanced by new laboratory facilities in Gaithersburg: The Advanced Chemical Sciences Laboratory was completed recently and the Advanced Measurement Laboratory is now under construction. The Manufacturing Extension Partnership has increased its reach and service to thousands more small manufacturers, and the Baldrige National Quality Program has expanded its scope to health care and education. I am grateful for the Committee's continued championship of NISTs programs and, if confirmed, will work with the Committee to further strengthen these programs.

Question 2. Can you comment on the role of technical standards and the ability of US companies to compete on the International level?

Answer. Internationally recognized technical standards for products and services are key to promoting free trade that strengthens the US economy and benefits the world. Some nations or regions have tried to unilaterally set standards to favor one nation or region over others, often disadvantaging US companies. NIST has worked closely with US standards developing organizations to develop a national standards strategy that promotes US economic interests and global free trade. If confirmed, I will make it a priority to work with American industry, standards organizations, and Congress to make the implementation of our national standards strategy even more timely and effective for the benefit of US companies.

Question 3. In information you have provided to the Committee on your nomination, you stated that changes to the authorizing act for the Advanced Technology Program was a critical need from a legislative standpoint. Why is this a critical need for NIST? When can the Committee expect the results of the Secretary's review of the program?

Answer. I believe NIST, the Department of Commerce, and Congress have an excellent opportunity to make the ATP even stronger and more effective, especially at the earlier stages of the innovation process. ATP has been successful for more than 10 years in promoting development of new technologies with broad benefits to the nation. But global competition for high-technology markets is even more intense today than in the 1980s when ATP legislation was first written. I believe that updating ATP legislation to reflect these changes will help to ensure that the United States maintains a strong environment for innovation. If confirmed, I will work with the Secretary and the Committee to further optimize the ATP.

Question 4. Over the years we have heard about the merits of the Baldridge 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 Baldridge criteria within the laboratory?

Answer. The Baldrige process is an excellent way for companies and organizations to assess their strengths and weaknesses, to develop plans to improve organizational performance, and to monitor progress. If confirmed, I will use the Baldrige criteria and other proven management tools to ensure that NIST continually improves its performance and impact.

Question 5. In recent testimony before the Commerce Committee, Dr. John Marburger, the President's Science Advisor, highlighted the need for more diversity

at all ranks of the science and engineering workforce. Do you feel that this need exists at NIST and if so, what are your specific plans to address this problem?

Answer. In an increasingly diverse America, attracting and retaining top scientific talent is a challenge for NIST and all federal agencies. The challenge will grow in the future, and I believe NIST and all agencies must work harder and smarter to recruit a more diverse workforce. The NIST postdoctoral program has been highly successful in bringing the best young scientists to NIST to work with leading NIST scientists, including NIST's Nobel laureates. I am also learning about other successful programs, such as NIST's Summer Undergraduate Research Fellowship Program, that place a diverse mix of undergraduate students in NIST laboratories to stimulate their interest in science careers. These programs are helping NIST recruit from a more diverse pool. If confirmed, I will strengthen these training and recruitment programs and work with the Committee to find additional ways to ensure NIST continues to have the world-class, diverse scientific staff it needs to fulfill its mission.

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 how this program may assist you in addressing some the priorities that you have announced for the laboratory?

Answer. There is widespread national support for strengthening our educational systems. The Teacher Science and Technology Enhancement Program (TSTEP) focuses on improving science and technology education to help prepare our children for a world increasingly driven by technology. I believe that there is much that NIST can do to help teachers motivate students in learning scientific and technological principles. I also believe that all agencies should contribute as they are able to fulfill this national priority. A concerted effort could only serve to enhance the technical knowledge and capabilities of the United States' workforce upon which NIST and all our technical organizations must increasingly rely. If confirmed, I look forward to working with the Committee to determine how NIST can best contribute to national education priorities in science and technology.

Question 7. What can we do to improve the acceptability of building and fire codes by state and local jurisdictions?

Answer. NIST supports improved building and fire codes in three ways: NIST operates the nation's leading building and fire research laboratory to identify ways in which codes can improve safety and building performance; NIST works with industry, professional, research, and government organizations across the nation to promote better building practices; and NIST works closely with national standards organizations and model building code organizations to develop and implement standards. Over time, more state and local regulators have been adopting national standards and model building codes, which needs to be amplified. If confirmed, I will work with the Committee and our wide range of stakeholders across the nation to accelerate the development and adoption of more up-to-date and effective building and fire codes.

Question 8. Many Americans continue to be worried about the reliability of voting systems, especially after the newspaper stories and recent commission reports about last year's elections. How can NIST play a role in ensuring the accuracy and reliability of voting systems?

Answer. NIST is prepared to contribute to improving voting systems. Two areas where NIST could make key contributions include working with the private sector to develop performance standards and test methods for various voting technologies, and working with local, state, and federal officials and the private sector to develop standards for the reliable operation of voting systems. There may be other roles for NIST as well. If confirmed, I look forward to working with the Committee to determine the best roles for NIST in improving voting systems.

Question 9. In your answers to the Committee's pre-hearing questions, you stated that one of your principal goals will be to "find more effective means to communicate with industry and government decision makers" about NIST's role in the Nation's industrial and technological developments. In your opinion, what are the shortcomings to NIST's current efforts, and how do you intend to resolve them?

Answer. NIST is well-connected with its constituents in industry, academia, and government at the operational level. However, because NIST's contributions are infrastructural in nature, NIST's essential roles and its successes in fulfilling these roles are not necessarily recognized by top decision makers. With technology and the economic environments changing rapidly I believe NIST needs to strengthen and elevate its ties to all its stakeholders in order to continue to have the greatest impact. If confirmed, I will make it a top priority to work with the Technology Administration and the Department of Commerce to improve communications with top in-

dustry and government decision makers to find additional ways to build on NIST's successful collaborations and to ensure that NIST does an even better job in meeting the needs of all of its constituents.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. GEORGE ALLEN TO ARDEN L. BEMENT, JR.

Question 1. Dr. Bement, there is some discussion in Congress about the need for a single standard for digital copyright-protection technology. Some have suggested that if industry groups cannot agree on a standard within a specified time period, then NIST should be required to develop the standard. Would you give us your thoughts about Congress mandating that NIST develop and enforce a single standard for digital copyright-protection technology?

Answer. NIST has historically worked very well with industry, academia, and government to develop voluntary consensus standards. NIST's key contributions to standards development have been in providing unbiased technical advice and facilitating agreement within standards developing organizations, consortia, and other groups. I believe NIST can best serve the nation by continuing in these roles as an objective, neutral partner that brings technical competence and good working relationships to the table, not as a regulator of technical activity. If confirmed, I will work with the Committee to determine the best roles for NIST in digital copyright and other standards issues.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN MCCAIN TO R. DAVID PAULISON

Question 1. In recent testimony before the Committee, several representatives from the firefighting community talked about the need for standards for new equipment. Do you believe this to be the case also, especially in light of the increased purchasing of new equipment via the Assistance to Firefighters program?

Answer. National standards for fire equipment have existed in part for many years. OSHA and NIOSH have standards for equipment. There are also consensus standards that have been developed by the National Fire Protection Association. There does need to be a set of nationally accepted standards for equipment that leverages new technology and increases firefighter safety. The Assistance to Firefighters Grant Program has indeed shown an increase in equipment purchases. In general the equipment being purchased meets or exceeds the existing standards.

Question 2. How responsive is the federal research and development program to the needs of firefighters? Do we need to develop a needs assessment process to ensure better response?

Answer. USFA has for many years had a very successful partnership with NIST on research and development which has yielded significant firefighter safety and response programs and concepts to include:

- Research on Structural Collapse Prediction Technology
- Research on Enhancement of Performance of Personal Alert Safety Systems for firefighters
- Evaluation of Thermal Imaging Systems Technology
- Research of Fire Suppression Effectiveness of Hose Streams
- Evaluation of Structural Ventilation Techniques using Computational Fluid Dynamics
- Technology Transfer—Integration of Research Results in NFA Training Programs
- Recreation of Fire Burn Patterns with Computer Simulations
- Thermal Protective Properties of Firefighter's Personal Protective Equipment

All of these programs are ongoing and have had a direct impact on firefighter safety at emergency scenes. We need to look to additional research and to develop new technologies to assist in first responder tracking systems that provide information on actual location as well as vital health signs. We need to continue to develop technology and research being done by other agencies such as DOD, NASA, and CDC to name a few.

Question 3. You mentioned in your written statement that the federal assistance should be supplemental and should be directed to the areas and programs in greatest need. How can we ensure that the funds in the Assistance to Firefighters Grant Program are supplemental and not a primary funding source?

Answer. Local and state support for the fire services is an age-old problem. Many local governments support their fire departments and many do not, all for varying reasons. Local officials have to make. difficult funding decisions. What is true in all

cases is that local government has the primary responsibility for public health and safety. They need to be encouraged to not just maintain their fire departments but also find additional ways to support them. States also have an important role to play.

Through grant programs, bulk purchasing under state contract and other creative funding and resource acquisition programs, fire departments and local governments can work to improve their capabilities. It is critical that all levels of government work together on these efforts. The fire services also need to acknowledge that they need to come to the table as well. Many local fire departments are volunteer and do not wish a lot of involvement with local governments. That must change and the fire services must be willing to accept some accountability to local governments in exchange for assistance.

Federal efforts should supplement state and local governments in areas that are beyond their capability; that are not technically feasible; or that are financially cost prohibitive. Such federal assistance, however, should only be made available after there is a complete understanding of the local responsibility and those federal dollars should not supplant existing or future local financial support.

Question 4. You have mentioned that the U.S. Fire Administration has some very specific goals for the next 5 years. They include the reducing the loss of life from fire by 25 percent for children under 14; reduce by 25 percent the loss of life by fire of Americans over 65 years old or older; and to reduce the number of firefighters' death by 25 percent. As the President's nominee for Administrator of the Fire Administration, do you agree with these goals? If so, what would be your strategy for achieving these goals?

Answer. I agree completely with these goals and will work to aggressively implement them. USFA last year undertook a major campaign to address the fire safety needs of older Americans, and this year they are undertaking a campaign to assist children. We have developed and should continue to foster the relationships built with the Safe Kids Campaign and the American Association of Retired Person. We have ongoing programs with the National Fire Protection Association on fire prevention.

The Assistance to Firefighters Grant Program also provided many fire prevention grants to national and statewide fire service organizations and burn centers. All of those initiatives are addressing USFA's target audiences. I pledge to continue and where possible increase those efforts.

Firefighter fatalities are the closest to my heart. Even the loss of one firefighter is too many. This year's loses are staggering as a result of September 11, but we still loose far to many firefighters each year. Almost one every 3 days, is lost. We need to address the root causes and they are heart attacks and vehicle accidents. Both of these are preventable. Health and safety programs in fire departments must be robust and likely include prescreening health exams and physical fitness programs. Vehicle operator programs exist through the National Fire Academy and the state and local training entities. The entire training system and the fire services leadership need to,put a new emphasis on driver training and safety.

On both of these specific issues we will work with the CDC, DOT and our partners at the state and local level to develop programs and initiative to reduce these types of fatalities.

Question 5. The U.S. Fire Administration started working on terrorism training programs, response guides and outreach several years ago. Based upon the events of September 11, do you believe this work proved to be effective?

Answer. I do think the programs USFA has developed have been very helpful and effective. These have set the baseline and need to be expanded. We need to look at making this training available to as wide a fire and emergency service audience as possible. We must also continue to work in partnership with other agencies and the Office of Homeland Security to develop even more advanced programs.

Question 6. You mentioned in an article you authored on the Hurricane Andrew disaster "ironically, all the mutual aid we received was also the worst thing that happened to us. It came too fast and was not coordinated." Can you elaborate on that point and how the Fire Administration may be able to help resolve this problem in future disasters?

Answer. Incident management must address coordination issues with the Federal Response Plan. Self-deployment of agencies and assets outside the plan and the Information Management System (IMS) request creates difficulty in coordination and strains the time and attention of legitimate responders. Standardized state and regional mutual/automatic aid plans would be helpful. Also, attention and training must include focus on the problems with maintenance of long-term "campaign" emergency operations that will go on for extended periods of time.

We need to address the area of scene security and safety. The World Trade Center terrorist attacks clearly demonstrated the need to explore a national credentialing system for first responders. Such a system could provide identification of the responder, the responder's qualifications, and any operations limitations and expiration dates. State and local agencies and educational/training institutions should serve as the certifying authorities for qualifications. The certification "card" could then serve as a passport for admission to secured work sites. This should cut down on the "freelancing" we saw on scene in New York and result in improved security.

We need to consider additional training in vehicle/logistics/staging security, personnel security, scene security, control and accountability of teams and resources as well as issues of deployment, sustainability, and recall.

Question 7. In a hearing that this Committee held in October on the Fire Service, Arlington County Fire Chief, Ed Plaugher recommended that the fire services be made part of the National Threat and Warning System. Do you believe that this recommendation is helpful to our Nation's firefighters?

Answer. Yes I do and would look forward to working with the Office of Homeland Security, the FEMA Office of National Preparedness and the Justice Department to develop just such a program.

Question 8. In your opinion, how important is research and development to the role of USFA. Do you believe that USFA has adequate resources to fund research into new fire prevention and control technology?

Answer. Research and development is a critical part of the USFA mission. There are many aspects of firefighter safety, equipment, new technology, etc. that need to be studied and developed. While USFA has enjoyed good support in this area for the past few years, we still cannot undertake all of the research that is requested of us. For USFA to take on additional projects, adequate staffing and funding must be part of the equation.

Question 9. The recent tragedy in New York and heightened need in many jurisdictions for fire fighters to deal with bioterrorist emergencies have created greater demand for firefighters across the Nation. What can the USFA do to help states and local jurisdictions meet this demand?

Answer. In Florida we found that almost 99 percent of the calls were from residents having concerns over receiving mail to their houses that they did not recognize. Most of this mail was bulk mail advertising that usually did not have a return address. Public education is the key to cut down on the shear number of calls to the local first responders. Public education can be handled in cooperation with the postal service and the Office of Homeland Security the public can be briefed on what specifically to look for. However, the local fire departments must have the training, education and tools to respond to a real threat; USFA will work to provide additional appropriate first responder information on responding to potential bioterror events.

Question 10a. The USFA manages the National Fire Incident Reporting System to collect, analyze, and disseminate data and information on fire incidents to state and local jurisdictions. Do you believe that the state and local governments are adequately involved in the National Fire Incident Reporting System?

Answer. No. While many local and state governments have been part of this process, we still do not have even 50 percent of the fire departments reporting to the voluntary National Fire Incident Reporting System. We are aggressively looking at ways to expand state and local participation through the use of technology and outreach.

Question 10b. What role can Congress play in ensuring better state and local participation?

Answer. It is important that we find additional methods of training and education of local and state officials regarding the need for cooperation. Any action Congress takes should consider incentives to local governments to participate but not mandating participation without providing adequate resources to assist local and state governments in implementing this program.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GEORGE ALLEN TO R. DAVID PAULISON

Question 1. One of the major obstacles to an effective response to a major national catastrophe is the inability of fire departments from different jurisdictions to communicate with each other. In the Washington area, the local fire, police, and EMS services have set up a pilot project called the Capital Wireless Integrated Network (CapWIN) program to resolve this issue. Do you have any thoughts on how the USFA can play a role in resolving these interoperability problems?

Answer. Communications is a major problem for all emergency services at large scale incidents especially ones that involve multiple jurisdictions. At the United States Fire Administration (USFA) we agree that this issue needs to be addressed. It must start with a comprehensive study of the systems in use, the availability of radio "spectrum" for emergency services and how a national system can be developed as a "backbone" to support state and local efforts. Fortunately, a lot of this research work has begun or been completed. It is our understanding that Senator Jeffords has introduced legislation that would call for such studies to be undertaken and I look forward to working with you, the Congress and FEMA Director Allbaugh to assist in that effort.

Question 2a. Another major concern expressed at our October hearing was that there is not one federal point of contact for fire services to communicate with in a national emergency. Based on your experiences during Hurricane Andrew and other emergencies, do you believe that this is an accurate concern?

Answer. The federal point of contact for the fire services is and needs to be the United States Fire Administration and FEMA. It is important to remember that the flow of information and coordination must be local to state to federal. Fire and emergency services need to build or expand close working relationships with local and state emergency managers. Ultimately FEMA and USFA will work through that system to provide support.

Question 2b. As head of the USFA, what will you do to resolve this concern?

Answer. As the head of USFA I will work closely with Director Allbaugh and the FEMA regions to build a strong cooperative and supportive relationship between the fire services and the emergency management community at the state and local level. Fire and emergency services at the local level also need to reach out themselves to build or expand close working relationships with local and state emergency managers. Ultimately FEMA and USFA will work through that system to provide support.

Question 3. You mentioned in your written statement that federal assistance should be supplemental and should be directed to the areas and programs in greatest need. As you are aware, the problems for communities, which house federal installations, place an extra burden on their emergency personnel. Local fire, rescue and police departments are the first to respond to any emergency at federal installations. Arlington County was the scene commander at the Pentagon, with significant support from all other area fire, police and rescue departments. These same local emergency response departments will again be the primary responders to any attacks at critical federal facilities, whether it is the Pentagon, or the CIA, or the National Reconnaissance Office in Fairfax, or other major federal offices throughout Northern Virginia. Do you feel that a region such as this demonstrates the appropriate level of need?

Answer. Emergency services are the primary responders to emergencies of all kinds. Incidents on federal property bring additional burdens to those response activities. It is critical that the federal government, specifically the agencies that reside in those communities, work closely with local responders to pre-plan for those facilities, coordinate the response to an incident and the federal government needs to provide resources for that response. Several programs exist to support local response on federal property to include a reimbursement program for fire departments that fight fires on federally owned property. Under Presidential disaster declarations, first response organizations are also eligible to apply for direct assistance through the Public Assistance Program.

Question 4. You mentioned in an article you authored on the Hurricane Andrew disaster "ironically, all the mutual aid we received was also the worst thing that happened to us. It came too fast and was not coordinated." Can you elaborate on that point and how the Fire Administration may be able to help resolve this coordination problem in future disasters?

Answer. Incident management must address coordination issues with the Federal Response Plan. Self-deployment of agencies and assets outside the plan and the Information Management System request creates difficulty in coordination and strains the time and attention of legitimate responders. Standardized State and regional mutual/automatic aid plans would be helpful. Also, attention and training must include focus on the problems with maintenance of long-term "campaign" emergency operations that will go on for extended periods of time.

We need to address the area of scene security and safety. The World Trade Center terrorist attacks clearly demonstrated the need to explore a national credentialing system for first responders. Such a system could provide identification of the responder, the responder's qualifications, and any operations limitations and expiration dates. State and local agencies and educationalltraining institutions should serve as the certifying authorities for qualifications. The certification "card" could

then serve as a passport for admission to secured work sites. This should cut down on the "freelancing" we saw on scene in New York and result in improved security.

We need to consider additional training in vehicle/logistics/staging security, personnel security, scene security, control and accountability of teams and resources as well as issues of deployment, sustainability, and recall. Mutual aid units must also come prepared to be self contained and sustain themselves for two or 3 days without depending on the local department.

Question 5. In a situation like what we experienced on September 11 evacuation of the city is extremely hampered by our overcrowded streets and highways and limited transit system. To what extent does this congestion cripple the ability of first responders and is there anything that you see the federal government or USFA can do to help the situation?

Answer. It is important that local evacuation plans be developed to maximize the ability to get the public out of harm's way and at the same time provide access for emergency services. Most communities that have hurricane or nuclear power plant planning efforts have already taken this issue into account. USFA will work with FEMA and the states to provide the lessons learned and the planning models that are available to those communities and states that need them.

U.S. DEPARTMENT OF COMMERCE,
Washington, DC., March 1, 2002.

Hon. RON WYDEN,
U.S. Senate,
Washington, DC.

DEAR SENATOR WYDEN: At my confirmation hearing, you asked that I submit a written response to the Committee identifying actions by the National Institute of Standards and Technology (NIST) and the Administration that could streamline and improve the processes for technology transfer in the context of the Bayh-Dole Act. After consulting with Under Secretary of Commerce for Technology Phillip Bond, I am happy to submit our joint response to you.

This letter includes three sections: (I) brief contextual information about the Bayh-Dole Act, (II) description of the major roles and responsibilities of the Department of Commerce's Technology Administration, particularly of two of its component bureaus: the Office of Technology Policy and NIST; and (III) actions to implement improved technology transfer at NIST and to identify areas for possible improvements in federal technology transfer within the current statutory framework.[1]

I. BACKGROUND AND EXPERIENCE WITH THE BAYH-DOLE ACT AND RELATED LEGISLATION

The fundamental concern that drove The Patent and Trademark Act Amendments of 1980 ("Bayh-Dole Act") was that federally funded innovations were not sufficiently utilized and commercialized by industry for public benefit.[2] The General Accounting Office and others have attributed this lack of commercialization of federal research to two key factors, both of which the Bayh-Dole legislation attempted to address: (1) the government normally retained title to inventions made with federal funds, and (2) government agencies usually licensed federally funded technologies on a nonexclusive basis, thereby discouraging companies from making significant investments in product development.

There has been debate about the degree to which the Bayh-Dole Act and related legislation and Executive Orders have affected technology transfer between federal laboratories, American businesses, and our nation's research universities. However, to date there has been little systematic research that conclusively identifies direct causal relationships between legislative and policy changes, the technology transfer activities of the many actors involved, and other factors. What is known is that the annual number of patents issued to universities has increased dramatically since

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[1] The recommendations included in this letter propose areas for clarification or administrative/regulatory changes that could be made to improve the efficiency and effectiveness of federal technology transfer at NIST within the context of the Bayh-Dole Act and related legislation, as you requested at my confirmation hearing. They do not address other potential areas of modification, such as the recoupment of funds from companies that develop commercially successful products based on government-funded inventions. Such revisions would require legislative action.

[2] According to the General Accounting Office (GAO): "At the time [of Bayh-Dole], fewer than 5 percent of the 28,000 patents being held by federal agencies had been licensed, compared with 25 percent to 30 percent of the small number of federal patents for which the government had allowed companies to retain title to the invention" (GAO/RCED–99–126).

passage of Bayh-Dole,[3] particularly in the life sciences, and that government laboratories developed new mechanisms to facilitate technology transfer in response to Bayh-Dole and other legislation. Under these authorities, federal agencies established offices to manage technology transfer activities and to monitor the protection and licensing of intellectual property; developed programs and procedures to license government-owned inventions to the private sector; entered into thousands of Cooperative Research and Development Agreements (CRADAs) and other types of technology transfer arrangements with the private sector; and now report annually to Congress on their technology transfer activities. By and large, the primary purpose of these activities is to maximize the commercialization of government-owned inventions for public benefit.

II. TECHNOLOGY ADMINISTRATION ROLES AND RESPONSIBILITIES

The Department of Commerce's Technology Administration has specific roles and responsibilities in the area of technology transfer, particularly through two of its component bureaus: the Office of Technology Policy and NIST. These functions are detailed below.

Technology Administration, Office of Technology Policy

The Office of Technology Policy (OTP) plays a significant role in the development, implementation, and analysis of technology transfer policies and practices, in close consultation with Congress and other agencies. As the Administration's focal point for discussion of technology transfer issues, OTP also coordinates and works closely with the interagency Joint Working Group on Technology Transfer (JWGTT). This group comprises technology transfer practitioners and coordinators from all federal agencies with extramural research programs. With OTP leadership, the JWGTT discusses a wide range of agency activities and issues related to technology transfer, recommends policies and implementation strategies related to technology transfer, and coordinates the submission of data for congressional reports.

OTP's statutory responsibilities include:

- Assisting agencies in the implementation of relevant laws, including the Bayh-Dole Act and the Stevenson-Wydler Act;
- Developing policies and issuing regulations governing the ownership of patents arising from federally funded research and the licensing of federally owned inventions (see implementing arrangements in 37 CFR Parts 401 and 404); and
- Compiling and analyzing information and reporting on agency implementation of technology transfer mechanisms such CRADAs and patent licenses.

Through FY 2000, the Office of Technology Policy was responsible for producing a Biennial Report to Congress on the technology transfer activities of all federal agencies (May 2000 report enclosed).

Requirements in the Technology Transfer Commercialization Act of 2000 (TTCA) shift this reporting responsibility to an annual basis.

Beginning in the current fiscal year and based on the TTCA, each agency with a federal laboratory must produce with its budget submission an annual report on its technology transfer activities and outcomes. In addition, the Secretary of Commerce is required to prepare a governmentwide summary report, based on agency submissions. The Office of Technology Policy is responsible for: (1) coordinating the submission of the Department of Commerce's annual technology transfer report, and (2) producing the Secretary's summary report to the President and the Congress each year after the President's budget request for the next fiscal year becomes public.

In the role of coordinator and leader of the JWGTT, OTP has crafted and obtained Administration support for a number of technology transfer-related provisions and legislation, including the recently passed Technology Transfer Commercialization Act of 2000. As the Administration considers ways to improve the efficiency and speed of technology transfer, it is important to consult the technology transfer practitioners throughout the government, as well as their counterparts in industry and universities. OTP's experience and relationship with the JWGTT has been, and will no doubt continue to be, a strong asset in organizing such consultations, identifying recommendations, and prioritizing appropriate administrative or regulatory action.

[3] The Association of University Technology Managers (AUTM) reports that fewer than 250 U.S. patents were issucd annually to universities prior to Bayh-Dole implementation. Since 1993, surveys conductcd by AUTM have shown an average of more than 1,600 patents annually, and greater than 2,000 in recent years, issued to universities. In addition, AUTM's survey results show a 198 percent increase in new U.S. patent applications and a 133 percent increase in licenses for U.S. universities from 1991–1999. However, AUTM figures include funding from all sources to universities—not just federal funds. [See *http://www.autm.net/*]

Technology Administration, NIST

NIST's mission is to develop and promote measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life. The NIST laboratories develop and disseminate measurement techniques, reference data, test methods, standards, and other infrastructural technologies and service that support U.S. industry, scientific research, and the activities of many federal agencies. NIST works directly with industry partners (and consortia), universities, associations, and other government agencies, and utilizes diverse mechanisms to transfer the knowledge and technologies that result from its laboratory research.

In keeping with its mission, NIST's technology transfer activities are focused on pursuing the most efficient and effective path to utilization and commercialization, which often necessitates the broad dissemination of research results, rather than the creation of patents and associated licenses. NIST's policies and mechanisms for technology transfer are further explained in the attachments to this letter.

Activities carried out by NIST related to technology transfer include:

• NIST's Office of Technology Partnerships is the focal point of NIST's formal technology transfer activities.

• Pursuant to the Technology Transfer Commercialization Act of 2000, NIST will report on its technology transfer activities annually to the Technology Administration's Office of Technology Policy. This information will be incorporated into a Department-wide report. A copy of NIST's fiscal year 2001 submission is attached, for your information.

• NIST works closely with the Office of Technology Policy on other technology transfer-related issues, through participation in the interagency Joint Working Group on Technology Transfer (JWGTT), the Federal Laboratory Consortium for Technology Transfer (FLC), and informal consultation.

III. OPPORTUNITIES FOR IMPROVING FEDERAL TECHNOLOGY TRANSFER

During my first few months as Director of NIST, I have engaged members of my staff in discussions about technology transfer issues, and they have identified areas in which NIST has experienced difficulties in licensing or otherwise making available government-owned technologies, Based on these discussions and input received from Under Secretary Bond and others, highlighted below are several opportunities for streamlining or improving the processes for technology transfer at NIST.

1. Modifications of licensing regulations, particularly with regard to definitional issues. Identified below are two examples of specific areas where additional guidance could improve the effectiveness of NIST's technology transfer processes by clarifying ambiguities.

• **"Substantially manufactured" requirement.** While commendable in its intent to promote domestic manufacturing, the statutory requirement that inventions or products made using a government-owned invention must be "manufactured substantially in the United States" has multiple interpretations, which can impede NIST's ability to license federal technology to certain domestic and foreign entities for commercialization. NIST has struggled to determine what "manufactured *substantially*" means. Further, the multinational nature of many modern businesses makes this requirement difficult to understand and implement.

• **"Reasonable and necessary" requirement.** When granting an exclusive or partially exclusive license to an applicant, an agency must find that such a grant is "reasonable and necessary" for the commercialization of the technology. Finding that an exclusive license is "necessary," in the strictest sense of the word, for the commercialization of a technology can hamper NIST's ability to expeditiously license a technology. The word "necessary," seems to preclude NIST from granting; an exclusive license in any situation where at least one nonexclusive license application is received.

In both of these cases (and likely others), additional regulatory guidance as to the definition of certain terms or phrases could resolve some of the confusion that NIST staff has encountered.

2. Regulatory modifications of appeal rights. Appeal rights provided to parties whose license applications have been denied by a government agency can, when fully exercised significantly delay the granting of an exclusive or partially exclusive license. Current licensing regulations do not impose time limits on the appeals process, nor do they limit the number of allowable application refilings. There is a need to identify ways to preserve the right of appeal of an aggrieved party, while at the same time preserving the ability of an agency to proceed with the granting of an exclusive license. This could be accomplished, in part, by imposing time limits on appeals, refilings, and decisions. This is one issue that OTP has agreed to raise for discussion in the JWGTT.

3. Improved reporting and analysis of technology transfer tools utilized by federal agencies. As mentioned above, efforts already are underway, as a result of the Technology Transfer Commercialization Act of 2000 (TTCA), to improve the annual reporting procedures of agencies. This new reporting framework provides an opportunity for agencies to identify the efficacy of their technology transfer programs, and provide information demonstrating how the technology transfer tools employed support to each agency's unique mission.

For NIST, technology transfer activities are focused on pursuing the most efficient and effective path to utilization and commercialization, which often necessitates the broad dissemination of research results, rather than the creation of patents and associated licenses. To reflect the diverse ways in which NIST transfers technology and knowledge to its customers, NIST's fiscal year 2001 report provides data for Cooperative Research and Development Agreements (CRADAs), invention disclosures, licenses, acrd license income, but also for other important tools utilized by the laboratories, such as Standard Reference Materials available, technical publications produced, items calibrated, and guest researcher collaborations. Please refer also to the attachments.

In a broader context, there may be other types of data that can assist NIST and other agencies in evaluating the success of their technology transfer programs—For example, GAO noted in a 1999 report that, "no data are available on the extent to which the government is using its royalty-free licenses to federally sponsored inventions." This may be another important improvement that can be discussed with agencies in the JWGTT process.

The ideas noted above describe opportunities for improvement that, if addressed, will improve the efficiency and effectiveness of federal technology transfer at NIST within the context of the Bayh-Dole Act and related legislation. Additional opportunities for the Administration to identify and prioritize governmentwide improvements in technology transfer procedures through regulation or statute will be considered by the JWGTT. Under Secretary Bond and I appreciate the opportunity to share these ideas with you, and we hope you find them constructive. We welcome further discussions with you on this important topic.

Sincerely,

PHILLIP J. BOND,
Under Secretary of Commerce for Technology.

ARDEN L. BEMENT, JR.,
NIST Director.

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