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TO: ROBERT SIMON
FROM: ALTRIVELPIECE
SUBJECT: DRAFT - SOME SUGGESTIONS FOR KNOXVILLE REMARKS -
DATE: 2/16/92

I,ve just come from the Department of Energy's Oak Ridge National Laboratory. I'm sure that all of you here know the key role that this famous place has played our national defense. It was founded in 1943 to demonstrate and perfect the methods to produce the materials needed for our first atomic weapons. It then went on to play a key role in the development of nuclear power. The employees of this Laboratory have continued their dedication and service to our Country right up the present. Under great pressure, and in a short time, they developed the computer programs used by the Military Airlift Command to schedule the planes that carried the men and material to the Persian Gulf. And, some of the employees at the Lab are in the Reserve and served in the Persian Gulf. I congratulate them and Lab for its fifty years of outstanding service to our Nation.

But, what I really want to tell you about is the role that this Laboratory now plays, and will play in the future, by helping to develop the science and technology that is critical to our national competitiveness. At the Lab I visited one of the Nation's most important research tools. The High Flux Isotope Reactor. The scientists and engineers working at this remarkable facility showed me what it does. They use beams of neutrons from this reactor to study measure the properties of special materials, such as the recently discovered high temperature super conductors. This was the only way to learn about the structure of this important new material. They also used this reactor to pioneer the production of the special isotopes that are critical to the diagnosis and treatment of cancer and other diseases. Tens of millions of our citizens benefit from this each year. Many of these isotopes are now produced by industry, but this Lab showed the way. A good example of technology transfer. They still produce a few special isotopes such as the ones used in the equipment to detect bombs in luggage at our airports.

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And then they showed me something that I could really relate to. They showed me some of a former President, Zachary Taylor's. It was suspected that he died of arsenic poisoning. Two of the Lab's scientists, Larry Robinson and Fred Dyer, explained to me how they used the reactor to prove that he didn't die from arsenic poisoning. Personally, I have always suspected that it was broccoli that really got old Zach, but Fred and Larry said that their reactor wasn't able to test for broccoli.

I also was briefed about the Department of Energy's plans to build a new research reactor at the Laboratory to replace the one that I saw. It will be called the Advance Neutron Source. This new facility would be the best research reactor in the world. It would give our scientists and engineers one of the essential tools that they need to help them create and understand the new materials that we are going to need to remain technologically competitive in the next century.

Science and technology play a key role in our national defence and our national economic development. You can't get through the day without using some development that only a few years ago would have been considered a miracle. Watching Desert Storm showed just how important high technology is to our national security interests. Personal computers have only been around for about ten years. I am happy to report that I am making good progress in learning how to use mine. Microwave ovens, nuclear medicine, robots for manufacturing, radar, television, and VCR's are just a few of the things that we take for granted. Many of these developments are based on the work of scientists and engineers in our country, but we don't seem to be doing as good a job as we should at converting some of our recent development into products that we are manufacturing.

The facilities of the Department of Energy, like the Oak Ridge National Laboratory, have played a key role in the development of some of the technologies that we use today. Even so, the Department, and other agencies of our government have been handicapped by

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effective technology transfer. That is to take the discoveries and make them into practical products. One of the efforts to improve this situation happened only recently. I signed the National Technology Competitiveness Act of 1991 into law just over a year ago. This law allows industry and the national laboratories to work cooperatively on projects that can result in industry obtaining the kind of rights to the discoveries and developments that they need to protect them in manufacturing. This law encourages Cooperative Research and Development Agreements, or CRADA's as they are known. The Department of Energy now has 85 of these agreements in place, with about 200 in the pipe line. This represents an investment of over \$200 million in research. The Oak Ridge National Laboratory now has 23 of these CRADA's in place. One of the most recent agreements with General Motors took only 15 days to complete. Jim, that has to be a record of government effectiveness. The lawyers must have been on their annual two week vacation during this period. Congratulations to the Department and to General Motors. Keep up the good work.

While I was visiting Oak Ridge, I witnessed the signing of a new CRADA between the Coors Structural Ceramics Company and Martin Marietta Energy Systems, which operates the Oak Ridge National Laboratory for the Department of Energy. This new CRADA was developed to perfect the technology of precision machining of ceramic components. This work will be sponsored by the Department of Energy's Defense and the Conservation and Renewable Programs. This work will take advantage of the facilities at the Oak Ridge both at the Lab and at the Y-12 Plant.

Most of us think of ceramics as plates, saucers and teacups, not as parts of automobile engines. At the Oak Ridge Lab, I was shown some pieces of ceramic that made that are tougher than steel. This whisker toughened ceramic material, which was invented and perfected at ORNL's High Temperature Material Lab, is now used to make many of the cutting tools for lathes and milling machines. One of the companies that makes these cutting tools, Hertel, decided to locate one of its manufacturing facilities in Oak Ridge, in part to be near the facilities and scientists at the Laboratory.

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I know that the Secretary of Energy, Jim Watkins, has been encouraging the use of the facilities of the Department to help improve the education of our young people in math and science. Through what is largely a volunteer effort, the Laboratory at Oak Ridge has about 20,000 K through 12 student visit each year to see what working scientists and engineers do. They have several other programs to involve teachers in science and technology programs. This way our young people and their teacher can learn something about what wonderful opportunities there are in these fields.

This increasingly close cooperation between private industry and our national laboratories is essential for the United States to maintain its leadership position in technology development.

Bob: I don't know if any of this fits with what you need or want. There are some points where acknowledgements could be made. If you are interested in getting more background on any of these items or suggestions, call. I have also included some of the "Fact Sheets" that we use. Good luck, Al.

OAK RIDGE OVERVIEW INFORMATION

The Oak Ridge Reservation covers an area of more than 55 square miles, embracing the Oak Ridge Field Office (OR), three major plants, ancillary facilities and support systems. The estimated replacement value of these facilities is more than \$20 billion.

The principal missions of the three primary plant facilities (Oak Ridge National Laboratory, the Y-12 Plant, and the K-25 Plant) are conducting a diversified research and development program on a variety of energy technologies, supporting the Nation's nuclear weapons program, and conducting extensive environmental restoration and waste management activities.

The Management and Operating (M&O) contractor responsible for

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(MMES). They have about 15000 employees at these facilities and a budget for 1992 of over \$1 billion.

The Oak Ridge Field Office oversees the operation of these facilities as well as the Paducah (Kentucky) and Portsmouth (Ohio) Gaseous Diffusion Plants (also operated by MMES), the Oak Ridge Institute of Science and Education, the Continuous Electron Beam Accelerator Facility (CEBAF) in Virginia, and the national Formerly Utilized Sites Remedial Action Program (FUSRAP) with sites in various states. The overall budget for all their activities in 1992 is approximately \$3 billion. OR is staffed with 705 federal employee positions. There are site offices staffed with federal employees at each of the principal facilities.

OVERVIEW OF ORNL

The Oak Ridge National Laboratory (ORNL) is one of DOE's major multiprogram laboratories. Built in 1943 as part of the Manhattan Project, its original mission was to produce and chemically separate gram quantities of plutonium. Today ORNL's resources are focused on energy research and development and other R&D challenges that are important to DOE and the Nation.

The Laboratory conducts applied R&D in energy technologies: conservation, fission, magnetic fusion, health and environmental protection, waste management, renewable resources (biomass), and fossil energy. Basic research includes experimental and theoretical research directed toward investigating fundamental problems in physical, chemical, materials, computational, biomedical, earth and environmental sciences; to advance scientific knowledge; and to support energy technology R&D. Science and technology transfer to U.S. industries and universities is an integral component of ORNL's R&D missions. ORNL also undertakes R&D for non-DOE sponsors

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when such work is synergistic with DOE missions and is approved by DOE.

ORNL designs, builds, and operates unique research facilities (user facilities) for the benefit of university, industrial, and national laboratory researchers. These user facilities act as a catalyst in bringing national and international research elements together for important scientific and technical collaborations. The High Temperature Materials Laboratory is the newest major addition to the Laboratory's user facilities.

ORNL helps to prepare the scientific and technical work force of the future by offering innovative and varied learning and R&D experiences at the Laboratory for students and faculty from preschool level through postdoctoral candidates and by establishing new relationships (partnerships) with educational institutions from elementary to universities.

Although ORNL is located 10 miles southwest of the center of the city of Oak Ridge, significant segments of the Laboratory's activities are at Y-12 and K-25 sites. Approximately 4,500 ORNL personnel, including 1,500 scientific and technical research professionals, are supported by 850 others primarily from engineering, computing, and information organizations. ORNL annually hosts over 2,900 researchers guests from U.S. and foreign industry and universities, 30,000 visitors, and 16,000 precollege students. Dr. Al Trivelpiece is the MMES Laboratory Director.

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OVERVIEW HIGH FLUX ISOTOPE REACTOR (HFIR)

Following a growing interest during the late 1950s on transuranic elements--manmade elements beyond uranium on the periodic chart of elements, ORNL designed a High Flux Isotope Reactor. Criticality was achieved on August 25, 1965 and the low-power testing program was completed in January 1966.

One of the primary purposes of the HFIR is the production of transuranium isotopes for research, industrial, and medical applications. Beyond its contributions to isotope production, the HFIR also provides for a variety of irradiation tests and experiments that benefit from the exceptionally high neutron flux available. In the fuel element flux trap, a hydraulic rabbit tube provides access to the maximum thermal-neutron flux in the reactor for short-term irradiations, and other positions are ideal for fast-neutron irradiation-damage studies. A recent modification of the flux trap experiment facilities has provided two locations in the maximum flux region that can accommodate instrumented capsules and engineering loops. The beryllium reflector contains numerous experimental facilities. These facilities can accommodate static experimental capsules, complex fuel-testing engineering loops, and special experimental isotope irradiations.

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OVERVIEW OF THE HIGH TEMPERATURE MATERIALS LABORATORY (HTML)

The High Temperature Materials Laboratory (HTML) is a modern research facility located at the Oak Ridge National Laboratory (ORNL). It is designed to help solve high-temperature materials problems that now limit the efficiency and reliability of advanced energy conversion systems. Cooperation with U.S. industry is a particular focus of the HTML. One major objective is the performance of research which assists U.S. industry in meeting the current challenge of foreign competition in the area of high-temperature materials. Another is to assist in the education and training of materials researchers by the university community, and the training of industrial researchers on the latest material characterization instruments and techniques. The HTML is supported by the Assistant Secretary for Conservation and Renewable Energy.

The HTML serves as a focal point at ORNL for multidisciplinary research on new ceramics and metallic alloys used at high temperatures or having potential for high-temperature applications. The HTML User Program is organized to facilitate the use of the HTML in the performance of research by users. The state-of-the-art research instruments have extensive capabilities for characterizing the microstructure, microchemistry, physical, and mechanical properties of materials over a wide range of temperatures. They operate in six user centers in the HTML. The user centers include (1) Materials Analysis, (2) X-ray Diffraction, (3) Physical Properties, (4) Mechanical Properties, (5) Ceramic Specimen Preparation, and (6) Residual Stress and are the principal way by which candidate

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performing, and conducting experimental research and interpreting research results.

A major objective of the HTML is utilization of its capabilities in performing research on high-temperature materials. Users include researchers from the industrial and university communities, in addition to those from other federal laboratories and ORNL. The Cooperative Research and Development Agreement (CRADA) signed February 19, 1992 between MMES and Coors will involve cooperative work performed at HTML. Machining equipment formerly used at the Oak Ridge Y-12 Plant will be moved to HTML to support work under the new CRADA.

Both proprietary and nonproprietary research are performed in the HTML User program. Nonproprietary research in the HTML is normally performed with no direct costs to the user for use of the facility. Proprietary research is done with full cost recovery using DOE guidelines for ORNL costs. Generally, neither classified research nor research with radioactive materials are performed in the HTML.

On July 15, 1987, the first two user agreements (both nonproprietary) were signed for participation in the HTML User Program. One agreement was with a university and the other was with an industrial company. Since that time, a total of 105 nonproprietary agreements have been signed (49 industry and 56 university); 22 proprietary agreements have been signed (21 industry and 1 university); and we have interacted with five other government facilities.

At the end of the 15th Quarter of Operation (March 1991), over 200 research proposals had been submitted requesting use of the HTML facilities.

Proposals are evaluated quarterly by a committee including industrial, university, and DOE representation. Approximately 250 individual outside researchers have worked in the HTML on approved projects through April 1991.

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OVERVIEW ADVANCED NEUTRON SOURCE (ANS)

The proposed Advanced Neutron Source (ANS) is a new reactor facility for research in neutron scattering, heavy element production, materials irradiation, and nuclear physics. Currently, these types of research activities are carried out by Oak Ridge National Laboratory's High Flux Isotope Reactor and Brookhaven National Laboratory's High Flux Beam Reactor. However, these facilities are over 20 years old and it would be uneconomical to modify them to meet future neutron research needs. Recently, the ANS project initiated a conceptual design effort on reactor and experimental systems and supporting non-reactor systems. If approved, detailed design and construction will occur in FY 1994-2000 time frame with operation thereafter. The ANS project has been supported by the DOE Office of Energy Research and the Assistant Secretary for Nuclear Energy.

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OVERVIEW OF THE Y-12 PLANT

The Y-12 Plant was built in 1943 for the U.S. Army Corps of Engineers as part of the Manhattan Project of World War II. The original mission was to separate fissionable isotopes of Uranium-235 for use in an atomic weapon. Y-12 used the electromagnetic process for isotope separation. The K-25 Plant was built at about the same time as a gaseous diffusion plant. Since the gaseous diffusion process proved more economical, the Y-12 process was shut down. After the war, Y-12 was converted to a fabrication facility for nuclear weapons components.

The mission at Y-12 is changing following the President's September 27, 1991 speech on arms reduction. Y-12 in the future will be more involved in nuclear weapons dismantlement, providing production support to the existing nuclear weapons stockpile and the limited weapons testing program. In addition, the unique machining and fabrication capabilities are used in support of other federal agencies (including the DOD), and supporting growing technology transfer initiatives to assist the private sector. The Cooperative Research and Development Agreement (CRADA) being signed February 19, 1992 will involve machining support from Y-12.

The plant covers 811 acres and has over 400 buildings occupying 7,000,000 square feet. It has become a world class manufacturing facility utilizing state-of-the-art machining, fabrication, chemical processing, certification, inspection, packaging, and computer technology. Some components for every nuclear weapon have been manufactured at Y-12. The principle products are made from uranium (both enriched and depleted) and lithium components. On the eastern end of the plant, Y-12 hosts the Oak Ridge National Laboratory (ORNL) Biology and Fusion Divisions.

The plant is occupied by about 6,500 employees. Labor union representation consists of the International Guard Union of America and the Atomic Trades and Labor Council (consisting of 18 separate craft unions).

The FY 1993 budget for Y-12 is approximately \$668 million dollars.

EXAMPLES OF TECHNOLOGY TRANSFER

□ Nickel Aluminide - A material with excellent high temperature properties. Early license development was with Cummins Engine for use in their diesel engines. Most recently a CRADA has been executed with General Motors for use in improved longer life heat resistant assemblies for heat treating furnaces that utilize Carburing atmosphere. The successful development of these materials with General Motors will enable a more energy-efficient manufacturing process for producing automotive parts and improved tool life.

□ Alternative Fluorocarbons - Environmental acceptability study with a consortium of twelve large international companies involves cooperative research to find chlorofluorocarbon (CFC) alternatives to phase-out production and use of CFCs.

□ Microwave Sintering of Ceramic Engine Components - Allied Signal Aerospace's Garrett Ceramic Component Division is performing cooperative research to use microwaves for improved fabrication of ceramic engine components. Microwave processing of Ceramics offers the potential to produce materials with improved strength and toughness for a broad range of applications.

□ High Temperature Superconductivity - Cooperative research with American Superconductor Corporation to develop superconductors and effective manufacturing techniques for wire production. ORNL is one of three High Temperature Superconductivity Pilot Centers designated by the Department of Energy.

□ Ceiling Panels - Cooperative research with a small business, Foamseal, Inc., to improve the thermal insulation of ceiling panels. Commercially available ceiling panels will be tested in the Large Scale Climate Simulator of the Roof Research Center at ORNL.

□ Gelcasting as Method of Making Complex Ceramic Shapes - ORNL technology which is licensed to Coors Ceramics offers improved cost efficiencies in preparation of complex ceramic shapes

For Talk in Knoxville

They are doing great things at Oak Ridge and at the University of Tennessee here in Knoxville as well. I just came from the signing of a cooperative R&D agreement between Coors Ceramic Company and DOE through its contractor, Martin Marietta Energy Systems which runs the Oak Ridge National Laboratory. This agreement is the most recent of 24 executed at Oak Ridge with industry under the National Competitiveness and Technology Transfer Act of 1989. The first CRADA was between ORNL and a consortium of the world's top chemical companies on developing CFC substitutes to help protect the ozone layer.

This most recent one should help get advanced ceramic materials into the market for many applications. For example, the development of a high-efficiency gas turbine for automobiles and trucks depends on using high temperature ceramic materials. If the work at Oak Ridge is successful it will mean more efficient automobiles which are environmental cleaner and have reasonable costs. This is what we need to do as a nation to retain our competitive posture and maintain a liveable environment.



Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-

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FACSIMILE NUMBER (202) 456-6218 VER. NO. (615) 576-2900

FROM Dr. Truesdell, ORNL TEL. NO. FTS 626-2900

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APPROVED BY _____

Information for Dr. Trivelpiece

Due to the programs managed by Martin Marietta Energy Systems, Inc. (Energy Systems), under Prime Contract DE-AC05-84OR21400 (major multipurpose National Laboratory, Environmental, Work for Others, Technology Transfer) more than 38 companies have located in the Oak Ridge area over the last 6 years. Of these, three companies (Coors Technical Co., Inc., Hertel Cutting Technologies, Inc. and CHEMRAD Tennessee Corporation) have located major manufacturing facilities locally, employing over 230 employees. Additionally, nine "start up" companies are under license agreements with Energy Systems.

To: SIMON, ROBERT H

Fax Phone: 02024566218,,,64705044566829

From: ALVIN W. TRIVELPIECE

Fax Phone: 615 483 1297

Voice Phone: 615 483 1292

Date: Monday, February 17, 1992 10:27 AM

615-483-1292

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OAK RIDGE NATIONAL LABORATORY

AT (615) 576 2912

TO BOB SIMON
FROM:ALTRIVELPIECE
SUBJECT: AN ADDITIONAL FACT SHEET
DATE: 2/17/92

THIS FACT SHEET PERTAINS TO THE AGREEMENT THAT WILL BE
SIGNED AT THE HIGH FLUX ISOTOPE FACILITY.

I WILL BE AT HOME UNTIL ABOUT 1:30 PM.
NUMBER 615 483 1292

The purpose of the CRADA is to develop advanced technology and manufacturing practices for machining and inspecting structural ceramic components. Current manufacturing methods are time consuming, labor intensive and produce unacceptable product variability. Successful development of this technology will enable higher quality ceramic components to be manufactured with higher efficiency, higher yield and lower cost.

The CRADA with Coors Structural Ceramics Company, one of the nation's largest producers of precision ceramics is the first to be entered into under a just initiated cooperative program for Precision Machining of Cost Effective Ceramics Components, funded by DOE's Offices of Conservation and Renewable Energy and Defense Programs.

The CRADA which is for an initial 3 year period will be cost shared 50-50 with Coors and DOE (through Martin Marietta Energy Systems Inc.), at a total cost of \$3.6 million. It will bring together the technical capabilities of precision machining and inspection resident at DOE's Y-12 Plant and Oak Ridge National Laboratory's (ORNL) materials properties expertise. Operations will be conducted in a Ceramic Manufacturability Center which is being established in the High Temperature Materials Laboratory at ORNL.

NATIONAL TECHNOLOGY INITIATIVE

For Release
Jan. 24, 1992

Contact: **Mat Heyman (DOC)**
301/975-2762

Paul Edwards (DOE)
202/586-5806

GOVERNMENT, INDUSTRY TO KICK OFF TECHNOLOGY INITIATIVE FEB. 12

The top officials of four federal agencies will join with industry and academia in a Feb. 12 conference at the Massachusetts Institute of Technology to launch the "National Technology Initiative."

The conference is the first in a series of regional meetings intended to spur U.S. economic competitiveness by promoting a better understanding of the opportunities for industry to commercialize new technology advances. The program will highlight the federal government's investment in advanced technologies, much of which may have commercial potential. It also will stress recent changes in federal policies designed to foster private sector cooperation in commercializing technology.

Energy Secretary James D. Watkins, Acting Commerce Secretary Rockwell A. Schnabel, Acting Transportation Secretary James B. Busey and National Aeronautics and Space Administration Administrator Richard H. Truly described the joint initiative as a way to address one of the key challenges facing industry -- the need to translate new technologies into marketplace goods and services.

Encouraging closer cooperation among U.S. companies and better links with federal laboratories is a central element of the initiative.

-more-

They said President Bush believes that such cooperation will help to improve the competitiveness of U.S. companies in the global market, leading to more American jobs and greater economic growth.

The MIT conference and subsequent meetings around the country will provide an opportunity for a discussion among government, industry, and universities and increase awareness of federal science and technology programs that can benefit U.S. firms. In recent years, Congress and the Bush Administration have taken steps to better enable the private sector to commercialize federally supported research.

The conference, hosted primarily by the U.S. Departments of Commerce, Energy and Transportation and NASA, will offer a forum for government and private sector representatives to discuss their programs -- and share practical techniques for translating government-sponsored research into commercial products and services.

Admiral Watkins, Acting Secretary Schnabel, Acting Secretary Busey and Admiral Truly will open the program with remarks at 8:45 a.m., following a welcome by Massachusetts Governor William Weld.

Plenary sessions will focus primarily on financing research and development, contractual and licensing arrangements for government-business research cooperation, and promoting manufacturing excellence.

In addition to those plenary topics, workshops will focus on protection of private ownership rights of technology in cooperative programs and commercial use of government-sponsored environmental and biotechnology research.

Conference registration fee is \$95. Participants may register in advance by contacting Maria Clara Martin, 617/253-0213 (phone) or 617/258-6148 (fax).

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NATIONAL TECHNOLOGY INITIATIVE

PURPOSE AND SCOPE OF THE NATIONAL TECHNOLOGY INITIATIVE

- To promote U.S. industry's use of technology to strengthen the domestic economy and to compete in global markets, Federal agencies are joining together with the private sector in the National Technology Initiative (NTI).
- The Initiative will promote a better understanding of opportunities for industry to commercialize new technology advances. It will highlight the Federal government's investment in science and technology, much of which may have commercial potential. The Initiative seeks business expansion through:
 - increased application of both Federally and privately supported technology,
 - the creation of more high value-added jobs for Americans, and
 - the establishment of new contacts for business cooperation.
- Conferences will be held during the year in several regions. They will parallel a successful 1991 series to promote exports.
- In conjunction with these conferences, Federal agencies will be accelerating their efforts to make it easier for the private sector to commercialize technology advances.
- In recent years, government-business ties have improved dramatically in addressing key barriers to the private sector's commercialization of new technologies. For example:
 - Legislation and Presidential orders have made it easier for firms to cooperate on research and development (R&D).
 - Government and industry are co-funding and cooperating in R&D programs.
 - The Bush Administration has advanced a series of regulatory, tax and legal incentives to help firms develop and apply new technologies.

- The focus of each NTI conference will be on:
 - raising industry awareness of government-sponsored programs, services and laboratories,
 - identifying ways in which government-industry and industry-industry cooperation can help the private sector to commercialize technology, and
 - providing feedback to Federal, state and local government officials on successes and difficulties in commercializing technology.
- Each meeting will address manufacturing excellence, mechanisms for cooperative R&D and long-term investment and financing, and intellectual property. In addition, conferences will target technologies of interest to each region's industry.
- Experts from business, academia and government agencies at all levels—including senior policy makers from the Departments of Commerce, Energy and Transportation and the National Aeronautics and Space Administration—will explore with conference participants practical ways for making better use of our Nation's technological strengths. The conferences will feature a discussion format.

NATIONAL TECHNOLOGY INITIATIVE

TECHNOLOGY STRENGTHENS AMERICA AND GENERATES JOBS

- Developing advanced technology and fully exploiting its capabilities in products, processes, and services are key to ensuring that U.S. businesses can compete successfully at home and abroad.
- In 1990, the United States posted a \$34.1 billion surplus in overall high-technology trade. But we ran deficits in important industries, another sign that Germany, Japan and other countries also view advanced manufacturing technology and high-technology products as critical to their future competitiveness and prosperity.
- The United States has the scientific foundation, creativity, technological tools and entrepreneurial skills needed to compete at the forefront of commercial technology. The competition demands, however, that U.S. firms be quick to identify and pursue market opportunities in key technology areas.
- In addition to funding about half of all research and development (R&D) in the United States, the Federal government is helping U.S. businesses rise to new technological challenges in global competition for world market share. Some examples:
 - Easing of antitrust restrictions has enabled firms in the same industry to engage in cooperative, precompetitive research. More than 200 industrial research consortia have been formed since 1984.
 - To foster technology transfer, rules for licensing Federal inventions have been streamlined, and the more than 700 federal laboratories now are encouraged to conduct cooperative research with industry. As of late 1991, Federal labs had entered into more than 650 cooperative R&D agreements.
 - The Advanced Technology Program of the National Institute of Standards and Technology (NIST), a research agency in the Department of Commerce, made 11 grants in 1991, providing partial funding to single firms and joint ventures that proposed high-risk, potentially high-return research projects. The program's aim is to establish the technical feasibility of emerging critical technologies of potentially broad value to industry.

- **NASA recently restructured and upgraded its Technology Transfer Network to better serve U.S. business and industry in the 1990s and beyond. This has involved establishing six Regional Technology Transfer Centers with enhanced, client-oriented capabilities and broadening the network to include all Federal R&D agencies and laboratories active in technology transfer.**

- **Long recognized for scientific and technical excellence, the Department of Energy's 31 laboratories, with an annual budget of more than \$6 billion, have made technology development and transfer high priorities. In 1991, DOE laboratories issued more than 90 licenses for use of new technologies by private businesses. To date, DOE and its laboratories have signed more than 80 cooperative R&D agreements with business partners.**

- **The Aircraft Situation Display (ASD) was developed by the Volpe National Transportation Systems Center with and for the Federal Aviation Administration (FAA) to assist in national air traffic flow management. The system is used throughout the United States at FAA's Air Route Traffic Control Centers, several Terminal Radar Approach Control facilities and the Air Traffic Control System Command Center in Washington, D.C. As the system became operational for the FAA, the airlines quickly realized that near-real-time information on the location of their airborne aircraft could yield benefits in managing their own operations more efficiently and permit them to improve passenger service. Reciprocal information from the airlines on their real-time dispatching and re-routing decisions could also prove advantageous to the FAA, particularly during adverse weather conditions. Thus, the FAA is initiating a Cooperative Research and Development Agreement through the Air Transport Association for the exchange of real-time operating data with the airlines. Together, they will explore the potential for overall improvements in the management of national air traffic flow. Having stimulated the dialogue, the Aircraft Situation Display will now serve as a key tool in that process.**

- **In its first eight years, the Small Business Innovation Research program awarded grants totaling \$2.2 billion to about 5,500 firms. A study of 3,000 research projects found that one in four resulted in commercial products within four years of initial funding.**

NATIONAL TECHNOLOGY INITIATIVE

U.S. MANUFACTURING: A CRITICAL SECTOR

- The manufacturing sector matters a great deal—to future economic growth and to the Nation's ability to support a rising standard of living for U.S. citizens.
 - Production by some 360,000 manufacturing firms—98 percent of which employ fewer than 500 people—accounted for 23.3 percent of the GNP in 1990—the highest level since World War II—and 80 percent of merchandise exports, or \$347 billion.
 - Manufacturers and their immediate suppliers in the service sector employ one American worker in four at wages that exceed the national average. One in six U.S. jobs are linked to exports of manufactured goods.
 - Between 1986 and 1990, U.S. manufacturing exports grew at an annual rate of 15 percent, fueling over a third of the Nation's economic growth from 1988 to 1990.
 - U.S. manufacturers fund about 90 percent of private-sector research and development. They invest, on average, more than 3 percent of sales in R&D.
- U.S. manufacturers face determined foreign competitors, many of whom are investing heavily in advanced manufacturing technology that lends itself to greater productivity, quality and flexibility. Competing successfully against world-class firms will require continuously improving product quality and reliability, automating to control processes, shortening product-development cycles, rapidly commercializing inventions and discoveries, and developing closer relationships with suppliers and customers.
- A growing array of Federal programs are helping U.S. manufacturers strengthen their manufacturing capabilities and exploit emerging technological and marketing opportunities. Some examples:
 - Federal support for manufacturing-related research totaled \$1.2 billion in 1991.
 - Five regional Manufacturing Technology Centers, sponsored by the Department of Commerce in partnership with state and local organizations, are providing expert hands-on assistance to small and mid-sized local manufacturers as they make the transition from yesterday's manually operated equipment to today's computer-controlled manufacturing systems. Two more centers will be selected this year.

- By conducting fundamental and systems-oriented research, NASA's aeronautical programs assist U.S. industry to maintain pre-eminence in the production of civilian and military aircraft. Cooperation with industry is extensive and includes research on control systems, materials and structures, and aerodynamics, as well as the use by industry of NASA wind tunnels.

- U.S. Department of Energy laboratories are developing hundreds of new

NATIONAL TECHNOLOGY INITIATIVE

PROTECTING—AND INVESTING IN—THE ENVIRONMENT

- Businesses know that protecting environmental resources can be costly, but they also know that not protecting the environment can be more costly—and that the market for sales of environment-related products and services is growing.
- Increasingly, U.S. companies are recognizing that they can save money in the long run by redesigning their processes with a goal of preventing pollution rather than simply capturing it before it leaves the plant. These efforts often go hand-in-hand with corporate goals for quality and productivity improvement.
- Analysts project that by the mid-1990s, U.S. industry will be spending \$100 billion annually on pollution abatement and that by the year 2000, 2.8 percent of the gross national product will be invested in pollution control.
- U.S. companies have new opportunities to supply overseas markets, especially in the newly democratized eastern European and former Soviet states. Exporting based on these U.S. capabilities can return large dividends to American companies and our economy, creating new jobs and growth.
- The Federal government spends more than \$1.5 billion annually on environment-related research and development. Government-sponsored environmental R&D is providing understanding, innovative ideas, scientific data and the technology necessary to achieve environmental quality goals.
- New outreach and cooperative research programs offer private companies the opportunity to tap Federal R&D assets for commercial purposes. For example:
 - NASA's need to protect ground and flight equipment from corrosion—in particular coastal area erosion induced by salt spray—led to the development of many types of coatings that spun off to commercial use. For example, the Statue of Liberty wears a NASA-developed interior coating, and a variety of other coatings are protecting office buildings, tank farms, ships, oil rigs and other structures.
 - The U.S. Transportation Department's Coast Guard funded development of an Air-Deliverable Anti-Pollution Transfer System (ADAPTS). This consists of an apparatus that can be lowered into the hold of a crippled tanker to pump out the oil it carries. This pumping system has been commercialized by Marine Pollution Control, Inc. of Detroit and other firms. According to one estimate, the use of this system has saved oil greater in value than the entire cost of the U.S. Coast Guard's pollution control research program to date.

- The Coast Guard also funded development of the Open Water Oil Containment and Recovery System (OWOCRS). Developed over a period of about five years, this system began as an oil spill containment device to which skimming and recovery capabilities were later added. The device was originally commercialized by Offshore Devices, Inc. of Peabody, Mass. Subsequently, rights have been sold to Adjit Shah, Inc., a California firm.
- A technology transfer alliance between the Department of Energy's Pacific Northwest Laboratory (PNL) and Recomp, Inc., a waste management company in Bellingham, Wash., has achieved a breakthrough in the treatment of municipal waste. Recomp uses a technology developed by PNL for the treatment of high-level radioactive waste to trap in a glass matrix the hazardous inorganic material found in the ash of incinerated municipal waste. The glassified ash can be crushed and sold as fill or road construction material.
- Researchers at the Department of Energy's Pacific Northwest Laboratory (PNL) have developed the Waste Acid Detoxification and Reclamation (WADR) process. The system employs fractional distillation operating on a continual basis to dispose of spent acid streams containing heavy metals—one of the most challenging problems facing industry today. The WADR system greatly increases the quantity of material that can be treated in comparison with the old batch process. The system also increases the purity of the recovered spent acid by 10 times and reduces waste volume by 90 percent.
- Chlorofluorocarbons (CFCs)—a family of chemicals used widely for refrigerants, foam in building insulation, furniture, and car seats—are breaking down the ozone layer, which protects the Earth from harmful levels of ultraviolet radiation from the Sun. With support from the American Society of Heating, Refrigerating and Air-Conditioning Engineers, the Air-Conditioning and Refrigeration Institute and the Electric Power Research Institute, researchers at the Commerce Department's National Institute of Standards and Technology (NIST) compiled data on materials that could be used to replace ozone-destroying CFCs into a computerized database. The database gives the properties of several pure and mixed refrigerants and helps users to design new processes and equipment based on alternative refrigerants. In related research, NIST continues to work with such companies as Trane, Du Pont and York to evaluate alternative refrigerants.

NATIONAL TECHNOLOGY INITIATIVE

BIOTECHNOLOGY: THE PROMISE AND REALITY

- Biotechnology is a set of powerful tools based on biological knowledge. Mastery of these tools will ultimately touch every facet of American life—from the food we eat and the water we drink to the energy that fuels our machines and the materials from which they are constructed.
- The impact of biotechnology on the Nation's economy is growing explosively as diverse industries capitalize on the fruits of biotechnology research. In 1991, sales of biotechnology products approached \$4 billion. Sales are expected to increase to more than \$50 billion during the next 10 years.
- Hundreds of companies involved in agriculture, energy, health, manufacturing and pharmaceuticals are using biotechnology to develop products and processes. Some examples are:
 - In agriculture, researchers have produced virus-resistant varieties of cucumbers, tomatoes and potatoes, and new and improved varieties of flowers.
 - In energy, biological processing of fossil fuel resources offers several potential advantages: less energy is required, and processing can be more efficient and have a more benign environmental impact.
 - In health, recombinant DNA, monoclonal antibodies, transgenic animals, gene amplification and protein engineering all are being used to prevent, diagnose and treat disease.
 - Manufacturers are using living cells, proteins and enzymes to make a variety of products, such as chemicals, foods, drugs and vaccines.
 - New pharmaceuticals based on biotechnology are lengthening lives of kidney patients and heart attack victims.
- The United States has been the world leader in biological research for the past 30 years, providing a foundation for the current U.S. pre-eminence in biotechnology research. This leadership, however, clearly is being challenged as the field changes and expands rapidly.
- The Federal research investment in biotechnology is approximately \$3.8 billion in FY 1992, for projects ranging from the use of micro-organisms to clean up the environment and marine biotechnology to human genome research and molecular medicine.

- A major Presidential Initiative in biotechnology seeks \$4 billion for FY 1993 and emphasizes that a major objective of this research is to accelerate the transfer of biotechnology research discoveries to the private sector for commercial applications.
- Advanced imaging and other computer-related technologies have greatly expanded the horizons of biological and biochemical research. New capabilities of national laboratories and other government research activities create opportunities for research collaboration with companies pursuing commercial applications.
- Examples of national laboratory-private sector cooperation include:
 - Researchers at the Department of Energy's Los Alamos National Laboratory (LANL) have developed the ability to detect a single fluorescent molecule in a liquid. LANL's detector will allow DNA sequencing rates hundreds of times faster than those attainable with present techniques. One benefit may be rapid screening for any of the 3,500 known genetic diseases, such as diabetes, cystic fibrosis and Alzheimer's disease. LANL and Life Technologies, Inc., a Maryland biotechnology company, recently signed a Cooperative Research and Development Agreement to develop the DNA sequencing method.
 - Industry and government cooperation has yielded a commercially available robotic system for protein crystallization, a technique vital both in research and in getting biotechnology products and processes to market. Produced by ICN Biomedicals of Costa Mesa, Calif., the system creates the right conditions to coax the usually jumbled protein molecules into repeating crystal patterns that are much easier for scientists to study. The database was compiled by the Center for Advanced Research in Biotechnology (CARB), which is jointly operated by the Commerce Department's National Institute of Standards and Technology (NIST) and the University of Maryland. In another joint activity, IBM at Kingston, N.Y. and NIST have agreed to work on the development of a user-friendly portable software system that will be able to execute more than 20 biotechnology application programs. Their objective is to make computer studies of biological molecules faster and easier.

- An unclassified computer code developed by the Department of Energy's Lawrence Livermore National Laboratory (LLNL) to model the effects of stress traveling through structures has become a promising medical research tool. DYNA3D (dynamics in three dimensions) is used by more than 1,000 companies to avoid destructive testing of products that will be subjected to stress. Recently, researchers have discovered that DYNA3D can be used to design medical equipment and to model surgical procedures and the effects of body injuries. At least five companies sell adaptations of DYNA3D, which is available to others through LLNL.
- Medical laboratories currently analyze body fluid samples with an automatic system that detects and identifies disease-producing mechanisms in the human body. Handling as many as 240 samples at a time, the system provides faster analysis—thus earlier treatment—and minimizes human error. Successful transfer of this technology, originally developed to detect bacterial contamination aboard an unmanned NASA planetary spacecraft, resulted in formation of a new company.

NATIONAL TECHNOLOGY INITIATIVE

SMALL U.S. HIGH-TECHNOLOGY BUSINESSES AND FINANCING

- Small businesses account for 99 percent of all establishments in the United States and employ 50 million people (non-farm). About 10 million people are directly employed in the high-technology sector; this figure does not account for those businesses that are dependent on high technology but provide services or low-technology products.
- There are about 75,000 small (having less than 500 employees each) high-technology firms in the United States. They have approximately 1.75 to 2.0 million direct employees engaged in key high-technology areas (with "high technology" being defined by standard governmental classification codes).
- This sector of the economy has some unique characteristics.
 - Small high-technology firms innovate more than larger firms, producing two to four times the number of products and patents per employee and per R&D dollar and generating half of the major technical innovations, according to public studies.
 - They create jobs and contribute two to three times their proportionate share of new jobs as compared to other economic sectors.
 - They grow rapidly and, according to one survey of venture-backed firms, increase assets, export sales, and tax payments at 23 percent, 136 percent, and 233 percent compound annual rates, respectively.
 - And they increase productivity of all businesses with innovative products (e.g., personal computers) and stimulate the formation of entirely new businesses.
- The life-cycle of a new high-technology enterprise follows a familiar pattern that begins with the "seed-level" investment (generally less than \$250,000), followed by "start-up" phase funding (typically \$500,000 to \$5 million or higher), after which the firm is either sold or "taken public" with a regulated offering of equity securities (an "IPO" or "underwriting").
- Informal, non-professional (or "angel") investors are the predominant source of funds in the high-risk, seed-level phase of small businesses, while professional venture capital sources generally become important in the start-up and later-stage phases of business development.

- Angel investors are very sensitive to high capital gains tax treatment and are not always exceedingly wealthy individuals. According to one study, one third of the informal investors surveyed earned under \$60,000 per year.
- The amount of available venture capital has declined 75 percent since 1986, and there is strong evidence that angel investment has also been sharply diminished, with new incorporations down by nearly 20 percent since the 1986 capital gains tax reform.

(This information provided by the White House Office of Science and Technology Policy.)

NATIONAL TECHNOLOGY INITIATIVE

ENCOURAGING PRIVATE SECTOR COMMERCIALIZATION OF FEDERAL RESEARCH

- In the past 10 years, the Federal government has put in place a set of laws and policies that have dramatically improved the private sector's ability to commercialize federally funded research.
- The Federal Technology Transfer Act (FTTA), the National Competitiveness Technology Transfer Act and Executive Order 12591 enable Federal laboratories (including the Department of Energy's system of government-owned, contractor-operated laboratories) to participate in Cooperative Research and Development Agreements (CRADAs) with the private sector.
- With these authorities, Federal labs can now grant title or licenses for Federal inventions to private sector participants in CRADAs, waive ownership rights to intellectual property in advance under CRADAs, and receive royalties as a part of these agreements (at least 15 percent of which go to the Federal employee responsible for the invention).
- As an inducement to private sector participation in CRADAs, the Federal labs are authorized to protect commercially valuable information produced under the CRADAs from public access for up to five years.
- The Department of Energy's contractor-operated laboratories also are able:
 - To license to private companies intellectual property owned by the labs' contractors; and
 - To assert copyright in and license software developed by the contractors.
- The National Aeronautics and Space Administration has separate, broad authority to encourage private sector use of NASA space research and technology, as well as a long history of working with industry. NASA's mandates include both the 1958 Space Act and the President's National Space Policy issued in 1989.

NATIONAL TECHNOLOGY INITIATIVE

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*
**REMARKS BY ROCKWELL A. SCHNABEL
ACTING SECRETARY OF COMMERCE**

**AT THE
KICK-OFF OF THE NATIONAL TECHNOLOGY INITIATIVE
CAMBRIDGE, MASSACHUSETTS
FEBRUARY 12, 1992**

* As prepared for delivery: actual remarks
varied slightly.

11/29/89
LEGIS 225-7772

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- **"Make investments to help us compete in the marketplace."**
 1. **Reduce capital gains (formation) TQR.**
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 3. **Increase Federal spending on R&D -- 76.6**
 4. **15% deposits (ITC).**

I. Introduction

A. Two weeks ago, in his State of the Union message, President Bush said we needed to "make common sense investments that will help us compete, long-term, in the marketplace."

B. The President backed this call to action with proposals to reduce the capital gains tax, to make the R&D tax credit permanent, and to increase federal spending on R&D to the record-high level of \$76.6 billion.

II. President's proposed boost of federal R&D spending will help ensure that America's R&D remains the best in the world.

A. Our vast network of corporate, university, and government laboratories is unrivaled by any other nation.

1. We must continue to forge ahead in developing new technologies.
2. We must work together to commercialize those new technologies as rapidly as possible.

C. In a way, we need to recover our inventor/entrepreneur tradition. Edison, Ford, the Wright Brothers, and many others successfully commercialized their inventions. Edison quote: "My studies and experiments have been with the objective of inventing that which has commercial ability."

IV. Before getting into the specifics of the NTI itself, I want to put it into perspective -- i.e., to explain how NTI builds on what has been done so far under the Reagan and Bush

Administrations to spur technology development and to help American companies become more competitive.

A. National Cooperative Research Act of 1984:

allowed companies to work together on long-term, generic research projects without fear of violating the antitrust laws.

B. Federal Technology Transfer Act of 1986:

permits government-owned, government-operated labs to enter into cooperative research agreements with private companies, universities, and other interested parties.

C. Bush Administration has tried to be a catalyst in promoting public-private partnerships to commercialize American technology. To date, about 650

cooperative research and development agreements (CRADAS) have been concluded between private industry and federal labs.

V. Role of the Commerce Department in a (a) developing and (b) commercializing new technologies.

A. Developing new technologies.

1. DOC's Advanced Technology Program (ATP)

a) Supports industry-led ventures to develop higher-risk generic technologies.

b) ATP provides grants for R&D on fundamental technologies that underlie a broad range of potentially important commercial

products, but does not support the development of actual products.

c) Program open to companies and joint ventures.

d) President Bush's FY '93 budget proposes a 36% increase to support these efforts (from \$50 million to \$68 million.

2. National Institute of Standards and Technology (NIST)

a) NIST conducts joint research with industry in such commercially important high-tech fields as biotechnology, lightwave electronics, automated manufacturing. NIST has more than 100 formal cooperative R&D

agreements, and works informally with literally thousands of companies and academic institutions.

- b) NIST's mission is to help U.S. manufacturers, large and small, become more competitive.**
- c) President Bush's proposed budget for FY'93 calls for a 26% increase in funding for NIST. From \pm \$246 million to \pm \$310 million.**

3. Federal Coordinating Council on Science, Engineering and Technology (FCCSET)

- a) This is an inter-agency committee under the aegis of the White House Office of Science and Technology.**

- b) **FCCSET's job to better coordinate investments in manufacturing and R&D among different federal agencies.**

B. Technology Commercialization

1. **New technology commercialization and outreach efforts at Commerce.**
2. **For example: the regional Manufacturing Technology Centers (MTCs)**
 - a) **MTC's mission is to help this country's small and medium-size businesses sharpen their competitive skills.**
 - b) **MTCs help these businesses acquire new technologies -- from government, university, or private**

research labs -- and to improve their manufacturing techniques.

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d) Since MTCs became operational in 1989, more than 6,000 firms have participated in NIST activities.

4. Bush Administration wants to do more to promote cooperative efforts of this kind.

5. And speaking of cooperative efforts, the DOC does not work alone when it comes to assisting the private sector to

commercialize technology -- works in partnership with other departments and agencies, such as DOE, DOT, NASA, etc.

(More on that from my fellow-panellists.)

VI. Quality

- A. American companies need to show the same commitment to quality as our competitors.**
- B. The good news is that American companies have gotten the message on this issue, and are adopting quality management principles and techniques.**
- C. Here again, the Commerce Department is playing an active part through our management of the Malcolm Baldrige National Quality awards.**
- D. A report issued last year by the General Accounting Office attests to the positive influence of the Baldrige award program.**
 - 1. GAO studied 20 major companies that were among the highest-scoring applicants in 1988 and 1989 for the Baldrige award.**

2. Competing for the award brought these companies a host of benefits:

- a) Better employee relations, higher productivity, greater customer satisfaction, increased market share, and improved profitability.**
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VII. National Technology Initiative

A. This conference is the first of a series per White House request that will be held throughout the country. Purpose of each event is to engage in a dialogue on:

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2. **Encouragement of long-term financing for U.S. technology companies.**
3. **Promotion of excellence in manufacturing in U.S. industry.**

B. Each of these town meetings will concentrate on developing those technologies most likely to create new enterprises, new jobs, and economic growth in the region where the meeting is being held.

IX. Conclusion

Before I yield the floor to my fellow-panelists, I'd like to remind you that today is the birthday of Abraham Lincoln, and to quote a remark of Lincoln's that seems particularly appropriate on this occasion.

1. **Lincoln once said that the purpose of the**

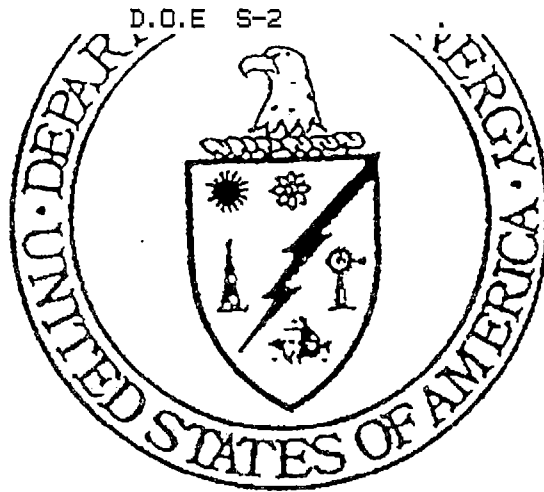
U.S. patent system was to "add the fuel of interest to the fires of genius."

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- 3. a) American companies are competing successfully world-wide. Since 1986, a third of the growth in our GDP has been generated by exports. Exports doubled from '86 to ± 450 billion.**
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TO Gary Gershowitz

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B. U.S. easily outspends its competitors on total R&D. In addition to the over \$72 billion a year that the federal government already spends, the private sector spends a comparable amount. Total: nearly \$150 billion.

III. Superior technology alone, however, will not make us winners in the world marketplace.

A. We must convert that technology into useful, marketable products -- or others will do it for us. The transistor, the VCR, other new technologies were invented here, but successfully commercialized abroad.

B. Those of us here today -- in industry, academia, and government -- face a dual challenge:

- 1. We must continue to forge ahead in developing new technologies.**
- 2. We must work together to commercialize those new technologies as rapidly as possible.**

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FEBRUARY 12, 1992

(21)
PINKERTON ACADEMY
FEBRUARY 15, 1992
7:00 P.M.

THANK YOU, GOVERNOR. IT'S GOOD TO SEE KATHY GREGG;
GOV. JOHN SUNUNU; GOV. JOCK MC KERNAN [MAINE] AND WIFE
CONGRESSWOMAN OLYMPIA SNOWE; GOV. BILL WELD; LT. GOV.
PAUL CELLUCCI; SENATOR WARREN RUDMAN; CONGRESSMAN BILL
ZELIFF; MAYOR JACK DOWD [MAYOR OF DERRY]; THANKS TO
THE PARENTS, STUDENTS AND STAFF OF PINKERTON ACADEMY
FOR OPENING THE GYM FOR TONIGHT'S EVENT. THANKS TO THE
SHAW BROTHERS FOR SENDING A LITTLE MUSIC OUR WAY. //
AND OF COURSE, MY THANKS TO ARNOLD. [[ARNOLD'S WORKING
ON A NEW FILM ABOUT CONGRESS: HE CALLS IT THE
PROCRASTINATOR. // BUT YOU KNOW, I MAY JUST TAKE A
TIP FROM THE KINDERGARTEN COP. WHEN CONGRESS DOESN'T
BEHAVE -- TAKE AWAY THEIR RECESS.]]

*AND let's get something
done for the country*

THANKS TO ALL OF YOU FOR COMING FROM THE FOUR
CORNERS OF NEW HAMPSHIRE TO DERRY ON THIS SATURDAY
NIGHT. WE'VE COME HERE FOR ONE REASON: TOGETHER,
WE'RE GOING TO WIN AN ELECTION ON TUESDAY.

AND IN ABOUT NINE MONTHS, WITH YOUR HELP, WE'RE
GOING TO WIN AN ELECTION IN NOVEMBER.

WE'VE GOT MUCH TO BE PROUD OF -- MANY CHALLENGES
STILL AHEAD OF US. BUT THE REMARKABLE CHANGES OF THESE
LAST THREE YEARS HAVE SHOWN WITHOUT A DOUBT -- THE
UNITED STATES IS THE UNDISPUTED LEADER OF THE WORLD.

FROM THE FALL OF THE BERLIN WALL TO THE LAST GASP
OF IMPERIAL COMMUNISM -- FROM THE FOUR DECADES OF THE
COLD WAR TO THE FORTY DAYS OF DESERT STORM -- AMERICA
HAS LED THE WAY. AMERICA HAS CHANGED THE WORLD. //

NOW THE CHANGE -- AND THE CHALLENGE, AS IT HAS
BEFORE -- HAS COME HOME. TIME AFTER TIME, WE'VE LIFTED
OURSELVES UP. TIME AFTER TIME, WE'VE ASKED MORE OF
OURSELVES -- MORE OF EACH OTHER.

EACH TIME, AMERICA MET THE CHALLENGE.

THIS TIME, AMERICA WILL DO IT AGAIN. //

NEXT TUESDAY, NEW HAMPSHIRE MAKES ITS CHOICE. YOU TAKE PART IN THIS STATE'S PROUD TRADITION AS FIRST IN THE NATION. YOU KNOW THIS IS SERIOUS BUSINESS. YOU UNDERSTAND THE IMPORTANCE OF YOUR VOTE. YOU GO TO THE POLLS -- NOT TO SEND A SIGNAL. NOT TO REGISTER A PROTEST. YOU GO TO THE POLLS TO ELECT A PRESIDENT

*OF THE
United
States of America*

THE FIRST ORDER OF BUSINESS IN OUR COUNTRY AND IN THIS ELECTION IS THE ECONOMY. COUNT ON THIS: WE WILL GET THIS ECONOMY MOVING AGAIN -- AND WE WILL GET NEW HAMPSHIRE BACK ON THE ROAD TO RECOVERY.

THREE WEEKS AGO I LAID OUT MY TWO-PART PLAN TO NEW HAMPSHIRE AND THE NATION -- SHORT-TERM TO JUMPSTART OUR ECONOMY -- LONG-TERM TO KEEP US COMPETITIVE AND STRONG INTO THE NEXT CENTURY. I WANT, AND THE COUNTRY NEEDS, BOTH PARTS ENACTED BY THE CONGRESS THIS YEAR -- IT'S JUST THAT IMPORTANT.

MY PLAN BOOSTS INVESTMENT -- GIVES INCENTIVES TO BUSINESSES TO BUY EQUIPMENT, UPGRADE THEIR PLANTS, AND HIRE MORE WORKERS. IT HELPS RESTORE THE VALUE OF REAL ESTATE -- GETS THE HOUSING MARKET GOING AGAIN -- GIVES A \$5,000 TAX CREDIT TO FIRST TIME HOMEBUYERS. AND OUR PLAN TAKES AN AXE TO 246 GOVERNMENT PROGRAMS -- BECAUSE GOVERNMENT IS TOO BIG AND SPENDS TOO MUCH.

BUT THERE'S ONE THING MY PLAN DOESN'T DO: IT WON'T RAISE TAXES ON AMERICAN FAMILIES.


YOU KNOW WHAT I THINK: MY PLAN IS JUST WHAT THE ECONOMY ORDERED. BUT WHEN IT COMES DOWN TO ME AND THE OTHER CANDIDATES -- FROM THE LEFT OR FROM THE RIGHT -- HERE'S THE ONLY DIFFERENCE THAT COUNTS: I HAVE A PLAN -- AND THEY DON'T HAVE A CLUE.


EVERYONE KNOWS WE'VE GOT TO WORK FAST TO GET THE ECONOMY UP ON ITS FEET. BUT SOME ARE PUSHING PROTECTIONISM -- ESCAPE FROM ECONOMIC REALITY. THEY SAY THEY'RE GOING TO PLAY DEFENSE. THEY'RE GOING TO FIGHT BACK. / SOUNDS TOUGH -- UNTIL YOU THINK ABOUT IT. IT'S NOT THE SCHOOL-YARD BULLY -- IT'S THE BOY WHO WANTS TO TAKE HIS BALL AND GO HOME.

WELL, AMERICA'S NOT THAT KIND OF COUNTRY. OUR NATIONAL SYMBOL ISN'T THE OSTRICH -- IT'S THE EAGLE.

NEVER IN THIS NATION'S LONG HISTORY HAS AMERICA TURNED ITS BACK ON A CHALLENGE. TO SUCCEED ECONOMICALLY AT HOME -- YOU'VE GOT TO LEAD ECONOMICALLY ABROAD. YOU SEE: I BELIEVE IN THE AMERICAN WORKER. WE'LL GO HEAD TO HEAD WITH ANYONE. THE AMERICAN WORKER CAN OUT-THINK, OUT-PRODUCE AND OUT-PERFORM THE COMPETITION -- ANYWHERE, / ANYTIME.

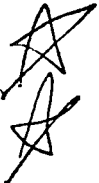
THESE ARE THE THINGS NEXT TUESDAY IS ABOUT: THE COURSE WE SET FOR OUR COUNTRY AND THE FUTURE WE BUILD FOR OUR KIDS.

 AID Intermyat

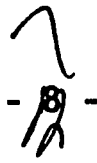

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SURE, THIS IS A TOUGH RACE. BUT I'VE BEEN IN TOUGH RACES BEFORE. AND YES, THE STAKES ARE HIGH -- NOT JUST FOR ME, BUT FOR YOU AND OUR COUNTRY AS WELL. I KNOW THE VOTERS OF NEW HAMPSHIRE. YOU'VE BEEN SUBJECTED TO A LOT OF THIS NEGATIVE CAMPAIGNING. YOU'VE SEEN THE ADS -- THE KIND THAT TEAR PEOPLE DOWN -- AND I BELIEVE TURN PEOPLE OFF. WELL, I'M CONFIDENT THAT ~~YOU~~ YOU UNDERSTAND THAT THIS ELECTION ISN'T ABOUT WHO CAN TRASH ANOTHER'S CANDIDACY IN A THIRTY SECOND SPOT.

NEW HAMPSHIRE VOTERS HAVE ^{EVEN} BEEN TOLD SOME FLAT OUT LIES ABOUT THE PLAN I SENT TO THE CONGRESS.

 HERE'S THE BILL I SENT TO THE CONGRESS IMMEDIATELY AFTER THE STATE OF THE UNION. IN IT ARE PROVISIONS FOR STUDENT LOAN DEDUCTIONS, AND PERHAPS MOST IMPORTANTLY, TAX RELIEF FOR AMERICA'S FAMILIES WITH CHILDREN.

IT'S ALL RIGHT HERE -- GIVES ME ANOTHER OPPORTUNITY TO SAY TO THE CONGRESS -- PASS THIS PLAN, THE WHOLE PLAN.



NEXT TUESDAY MATTERS -- BECAUSE YOU DON'T JUST
CHOOSE A CANDIDATE -- YOU CHOOSE A FUTURE, SET THE
COURSE THIS COUNTRY WILL FOLLOW FOR THE NEXT FIVE
YEARS. HERE'S WHAT I KNOW ABOUT THIS COUNTRY'S FUTURE:
NO MATTER HOW TOUGH TIMES ARE NOW -- AMERICA'S BEST DAY
ALWAYS LIES AHEAD. / I BELIEVE THAT NOW.~ I'LL
BELIEVE IT EVERY DAY I LIVE -- BECAUSE THAT'S THE GREAT
GLORY OF AMERICA. //



I FELT IT TODAY, FROM NASHUA TO NEW BOSTON. THE
PEOPLE OF NEW HAMPSHIRE -- LIKE CITIZENS ALL ACROSS
THIS COUNTRY -- ARE READY TO MOVE AHEAD, READY TO MOVE
FORWARD TO MEET A NEW AMERICAN DESTINY.

EVERYONE SEES THE NEED FOR CHANGE. EVERYONE FEELS
THE EXCITEMENT. EVERYONE IS IMPATIENT TO BEGIN. //
EVERYONE, THAT IS -- EXCEPT THE CROWD THAT CONTROLS THE
CONGRESS. //

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SO YOU WON'T BE SURPRISED TO HEAR WHAT'S HAPPENING TO MY ACTION PLAN -- THE PART TO JUMPSTART THIS ECONOMY. ON WEDNESDAY, THE DEMOCRATS WHO CONTROL THE WAYS AND MEANS COMMITTEE PULLED A BACK-ROOM STUNT -- AND TRIED TO MAKE MY PLAN DISAPPEAR.

THANK GOODNESS I KEPT A COPY.

I'M A PATIENT MAN. I KNOW CONGRESS CAN'T PASS MY PLAN OVERNIGHT. . . . THAT'S WHY I GAVE THEM 52 DAYS.

I KNOW, THEY SAY: THE DEADLINE IS ARBITRARY.

THEY SAY: THE DEADLINE IS TOO EARLY.

THEY SAY: THE DEADLINE IS UNFAIR. //

YOU KNOW WHAT I SAY.

THE DEADLINE IS MARCH 20. ///



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~~I CHALLENGE THE LIBERAL LEADERSHIP: DON'T BURY MY
PLAN IN SOME SUB-COMMITTEE / DON'T DECLARE IT D.O.A. /
DON'T RESORT TO PARLIAMENTARY TRICKS TO MAKE MY PLAN
VANISH WITHOUT A TRACE. // I SAY TO THE LEADERS WHO
CONTROL THE CONGRESS: BRING MY PLAN TO THE FLOOR. PUT
MY PLAN TO A VOTE. PASS MY PLAN -- AND GET THIS
ECONOMY MOVING AGAIN. //~~

BUT YOU KNOW, I CAN'T DO IT WITHOUT YOUR HELP.

More done his

~~THE~~ NEXT TUESDAY, SEND THIS PRESIDENT BACK TO
WASHINGTON FOR FOUR MORE YEARS. //

THANK YOU, NEW HAMPSHIRE, FOR YOUR TRUST AND
SUPPORT. AND GOD BLESS THIS GREAT LAND WE SHARE -- THE
UNITED STATES OF AMERICA.

#

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TO: Gary Gerschowitz **DATE:** 2/18/92 **TIME:** 3:45PM

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FROM: Linda Busch

PAGES TO FOLLOW: 3

NOTES: I am transmitting herewith pages 1, 2 and 7 of
Ambassador Schnabel's NTI speech, as requested.

FACSIMILE COVER SHEET

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NUMBER OF PAGES 2 **(INCLUDING COVER SHEET)**