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REMARKS BY

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CONSORTIUM FOR OCEANOGRAPHIC RESEARCH
AND EDUCATION

BEFORE THE
26TH ANNUAL AAAS COLLOQUIUM ON
SCIENCE AND TECHNOLOGY POLICY

MAY 3, 2001
THE OMNI SHOREHAM HOTEL
WASHINGTON, D.C.

"Advancing Innovation: A Call for Presidential Leadership"

I was asked by the Director for Science and Policy Programs, AAAS, to speak on the content of one recent report by the Center for the Study of the Presidency entitled "Advancing Innovation: A Call for Presidential Leadership." But before so doing, I thought it might be useful for me to review for you the variety of vantage points from which I have witnessed processes related to governance of science and technology initiatives at the national level.

As Chief of Naval Operations and a member of the Joint Chiefs of Staff in the '80s, I watched science and technology work well in national defense and eventually win the Cold War -- our strong suit was and remains the timely fielding of new threat-detering technologies and systems born out of innovative research. Of course, in that case, the Russians provided the needed catalyst which forced us to institute an aggressive and sustained national security R&D program. The Soviets could not win the frantic back-and-forth of this S&T competition; they knew it, and finally gave up the race at Reykjavik. We must not forget this lesson which included the powerful S&T threat to the Soviets that came out of our accelerated R&D commitment to move away from a distasteful strategy of mutually assured destruction toward one more acceptable called strategic defense.

Then as Chairman of President Reagan's Commission on the AIDS Epidemic, I watched my number one recommendation be ignored, i.e. to work with the States and researchers to develop suitable curricular material for K-12 science teachers and students in human biology, properly tailored to the level of student maturation, for inclusion within all required pre-college science curricula. Few, if any, received or cared about this message -- the concept here was to equip our

youth with knowledge about their own physiology and therefore become part of the solution to many emerging and complex health-related problems. For youth would now be exposed to the scientific basis on which to "say no" themselves to self-destructive behavior without being pontificated to by we adults. Remember the Charlottesville Conference on Education which set one of six national goals to be number one in math and science by the year 2000? As far as I know, only fourth graders have come close to achieving the goal.

Subsequently, as Secretary of Energy at the decade's turn into the '90s, I saw Defense S&T begin to degrade in priority toward the end of the Cold War. The old habit of using "The Russians are coming" to drive so much of our national R&D effort became quickly outmoded. In its place were: "peace dividend;" "dual-use technologies;" drive toward "relevance" as the priority setter for future scientific investments; rapid Defense drawdown in its research portfolio; and general apathy and little political support for maintaining a strong national scientific research base. In fact, for most of the decade of the '90s, it was a monumental annual struggle to defend basic research needs for Defense -- despite the exploding number of national security uncertainties facing the post-Cold War world. The latter should demand more not less basic research and technology development to keep open all options for addressing future unknowns. Of course, such a struggle has classically been the case in the non-Defense agencies where support for R&D has always been an annual and difficult fight, except for NIH.

In the non-Defense side of my Department of Energy work, I watched the sad story of the SSC as it fell in 1992 to the new buzz world of "relevance;" to indifference to basic research and possible resultant new discoveries (e.g. high temperature superconducting materials); and to a totally unresponsive policy-making process in the area of S&T and foreign affairs. This was a loss of one

exciting crusade to understand the fundamental make-up of matter. I also watched the advocacy-only policy approach in dealing with another new and emerging challenge called "global warming." Prior to the U.S. participation in the international Climate Change Conference in Rio in 1992, I witnessed our inadequate intergovernmental preparation. We had prepared no integrated and coordinated set of S&T objectives to parallel political advocacy. As a result, we can rightfully be criticized for just being "down on" the emerging international protocols rather than being "up on" good science-and-technology based alternatives in some reasonable balance with the real world of modest sustained economic growth consideration for our nation.

Finally, I have watched emergence of a general public and Congressional apathy toward scientific justification for underpinning good public policy legislation in such fields as national energy policy; nuclear, toxic and hazardous waste management; reliability and safety of the nuclear weapons complex. In fact, good science underpinning to effect rational public policy is often seen by many single-purpose "advocates" as a thinly-veiled threat to throw obstacles in the path of their advocacies.

From all of these vantage points, I have concluded that our nation's science and technology policy-making process is antiquated; ineffective and inefficient; and needs radical restructuring to be competitive in the new dot-com and mono-polar world of the 21st century. As a matter of fact, I was questioned recently at a public "Seminar on the 43rd President and the 107th Congress," a seminar sponsored by the Center for the Study of the Presidency. Dr. David Abshire, the Center's President, asked me as a member of the Panel on S&T the following: "Jim, if you were to advise the President on S&T, what would you tell him?" I said I would tell him the following:

Mr. President, one of the sad commentaries on our political process is the benign neglect too often assigned to one of the most powerful long-range drivers of a continuing strong national economy, healthy quality of life, and assured national security, that is, an effective science and technology strategy and an efficient process for its implementation. Alas, few politicians are ever elected on the basis of their interests in such a thrust. Yet, repeated studies and reports have assessed our current S&T process at the national level as broken and in need of repair.

Let me just mention a few of these studies and reports on S&T conducted over the past decade since the end of the Cold War.

- “Science and Technology in U.S. International Affairs” -- 1992 (Carnegie Commission; nothing was done until just last year -- I will address later)
- “State-Federal Technology Partnership Task Force” under Dr. Jack Gibbons -- 1995 (Celeste-Thornburgh; no lasting infrastructure improvements evident as yet)
- “Allocating Federal Funds for Science and Technology” -- 1995 (Frank Press for the National Academy of Sciences made 13 recommendations in this report but no real impact noted as yet)
- “Unlocking the Future -- Toward a New National Science Policy” -- 1998 (Representative Verne Ehlers chaired the hearings for the House Science Committee and made a wide

range of recommendations which came out in his report. Little has resulted to date.)

- “The Pervasive Role of Science, Technology, and Health in Foreign Policy” -- 1999 (Frosch for the National Academy of Sciences; Will State Reform? Maybe -- but not without strong external intervention by the new Administration and not without strong interest by both the Science and Foreign Affairs Committees of the Congress.)
- The Center for the Study of the Presidency of 3 November 2000 “Advancing Innovation: Improving the Advisory Structure and Policy Process” wrapped up those ten years of expressed concerns and made many of the recommendations all over again.

What these leading national experts have all been saying, since the end of the Cold War, is that the current science and technology process is flawed and needs considerable rework to assure maintenance over the long haul of a competitive U.S. world leadership position in nearly all matters that define our way of life. In ocean science and technology alone, more than 30 ocean S&T studies by the National Academy of Sciences have been published. No more studies are necessary.

So, Mr. President, here are just a few specific recommendations born out of all these reviews and studies that should be taken by you and your new team:

- Appoint a Presidential Science Advisor with stature to whom you will actually listen and act on broad national S&T

matters of import to the nation and world. In addition, you should assign this individual as principal S&T Advisor to the OMB Director to help ensure coordinated S&T budget guidance to those agencies involved in research, particularly those adopting structured R&D approaches where horizontal R&D budget integration is deemed important (e.g. ocean science and technology wherein 12 Federal agencies are now integrated by law).

- Have your people work with the Hill Authorization and Appropriations Committees to encourage them to accept a five-year non-Defense basic research from each of the major agencies with a S&T portfolio. This will add long-sought-after stability to the scientific research base. Congress has always allowed this for DOD and is now beginning to move in this direction selectively for other agencies (e.g. NSF for 2002 in selected areas) but needs further push from your Administration.
- Give guidance to your people to integrate R&D among Federal agencies in those broad areas of science wherein they can receive mutual benefit from more structured interaction with each other by leveraging scarce research dollars. Ocean S&T successes are only tip of iceberg.
- Direct OMB to track S&T separately from R&D as defined by the NAS report so that the U.S. can present a clear picture of what we are truly investing in for the long haul in the national science portfolio and better facilitate adjusting priorities and focus when appropriate. For example, we ought to set our sights on doubling

the NSF budget over the next five years so that investments in basic scientific research across all their core science areas will be more in balance with the basic research investment in health at NIH. To do this properly, we first need to know what our science portfolio is today.

- Revamp the existing Science Advisory Board Structure vis-a-vis PCAST/OSTP/OMB to make them more interconnected (i.e. with SEAB/DSB/NSB/NOAA SAB etc.) .
- Have your people work with Capitol Hill leadership to encourage them to accept in addition to the classic, vertically-oriented budgets, a horizontally-integrated budget mark for those S&T areas brought together in formally-established multi-agency partnerships as has now been done in the area of ocean science and technology under the National Oceanographic Partnership Act of 1996. In this connection, also encourage Hill leadership to hold periodic Joint Authorizing and Appropriation Committee hearings on selected broad cross-agency S&T matters to address interactive programs among participating multiple Federal agencies. This will need a push from both you and Hill leadership to overcome traditional committee jurisdictional problems.
- Help bring the Department of State and its Authorizing and Appropriations Committees on Foreign Relations into the S&T game -- encourage them to do what the Frosch and Ehlers reports said to do. Congress must be an early and continuing partner when planning any large future investment that could be born out of promising research, particularly when international

collaboration will be required. An example of the latter case would be the development and fielding of an integrated ocean observing system for enhanced climate prediction modeling with all its potential to address global warming and population growth ramifications on health, agriculture, coastal hazards, etc. -- all now achievable because of rapidly emerging technologies. This process is already underway for the oceans but will need your support in if it is to become self-sustaining.

- Bring a task force together to integrate these and the remaining recommendations of the Center for the Study of the Presidency in their paper on "Advancing Innovation" along with portions of other reviews I highlighted which are still relevant to this matter. This task force should develop a broad S&T strategy therefrom for your consideration and implementation in close consultation with Hill leadership.

Mr. President, the timing seems to be right to do all this, and fortunately our information also says that the Hill would be receptive to such a broad S&T restructuring process, one which cries out for top level attention. If you will do this, you will have given new life to one of our strongest national suits, i.e. developing new technologies, born out of the finest research intellects and institutions in the world, to maintain our economic competitiveness, quality of life and national security in the 21st century.