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**Record Group/Collection:** George H.W. Bush Presidential Records  
**Collection/Office of Origin:** Science and Technology Policy, Office of (OSTP)  
**Series:** Bromley, D. Allan, Files  
**Subseries:** General Science Files

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**OA/ID Number:** 62041  
**Folder ID Number:** 62041-002

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**Folder Title:**  
Physical Science: General [2 of 8] [1991]

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"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124946  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
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FROM: RILEY, Peter: UNIVERSITY OF TEXAS AT AUSTIN

TO: DR. Charles Townes

DATE OF  
CORRESPONDENCE: 11/20/91

SUBJECT: A COPY OF HIS LETTER TO DR. TOWNES REGARDING HIS  
CONCERN OVER THE PROPOSED BUDGET CUTS IN THE NUCLEAR  
PHYSICS RESEARCH PROGRAMS.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

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SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*  
WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/27/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:





DEPARTMENT OF PHYSICS  
THE UNIVERSITY OF TEXAS AT AUSTIN

Austin, Texas 78712-1081

4446  
RECEIVED

November 20, 1991  
91 NOV 27 10:18

OSTP  
MAIL ROOM

Prof. Charles H. Townes  
Chair, SEAB Task Force  
Physics Department  
557 Birge Hall  
University of California  
Berkeley, CA 94720

Dear Professor Townes:

I am writing as a nuclear physicist and Professor of Physics at the University of Texas at Austin to express my concern over the consequences of the large budget cuts that nuclear physics is being asked to accept. I urge your panel to express in the strongest possible terms that such the proposed budget is simply unacceptable.

This cut, if implemented and followed by the projected flat budgets, will have a disastrous effect on the field of nuclear physics. Our community developed a long range plan in 1989 which called for continuing operation of the nations' major nuclear science facility, LAMPF, as well as for construction of two new facilities, CEBAF and RHIC. The scenarios presented recently to NSAC will make it impossible to carry out this long range plan. Further, the NSAC endorsement of the new initiatives was based on funding levels that did not require a severe disruption of the base program to fund them. The budgets being discussed will not permit this and therefore will require a complete reevaluation of the priorities set out in the long range plan of 1989.

My research is centered at LAMPF, using the intense polarized neutron beam made possible by the recent development, at LAMPF, of a high intensity, optically pumped ion source (OPPIS). Our recent measurements have allowed determination of elastic nucleon-nucleon phase shifts and amplitudes for both isospin 0 and 1 near 800 MeV.

LAMPF is one of the very few existing U. S. research facilities where forefront nuclear science research can be carried out and where graduate students can receive their training. At present I have 3 students hoping to complete Ph. D. dissertations based on work at LAMPF. Students who I have guided through thesis work at LAMPF are now employed as faculty in our Universities, staff at our national labs, and as scientists in industry. It is clear to me that a large, national facility such as LAMPF is absolutely essential to maintain the scientific and technical leadership of this nation. I strongly urge that you take every possible action to reverse this alarming funding trend.

Sincerely,

A handwritten signature in dark ink, appearing to read "Peter Riley".

Peter Riley,  
Professor of Physics

Copies to:

Dr. William Happer  
Director, Office of Energy Research  
U.S. Dept. of Energy  
Washington, D.C. 20585

Prof. Herman Feshbach  
Member, SEAB Task Force  
on Energy Research Priorities  
Massachusetts Institute of Technology  
Dept. of Physics  
6-307  
77 Massachusetts Ave.  
Cambridge, MA 02139

Prof. Steve Koonin  
Member, SEAB Task Force  
on Energy Research Priorities  
California Institute of Technology  
MS 106-38  
W.K. Kellogg Radiation Laboratory  
1201 California Blvd.  
Pasadena, Ca 91125

Dr D.A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Ave.  
Washington DC, 20506

Admiral James D. Watkins  
Secretary of Energy  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington DC 20585



"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124830  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: LONGACRE, Ronald S.: BROOKHAVEN NATIONAL LABORATORY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/19/91

SUBJECT: RE: HIS CONCERN OVER THE PROPOSED BUDGET CUTS IN THE  
DOE NUCLEAR PHYSICS PROGRAMS.

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DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

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SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

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WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/19/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:



4830  
Dr. Ronald S. Longacre  
Department of Physics  
Brookhaven National Laboratory  
Bldg. 510A, 20 Pennsylvania St.  
Upton, NY 11973

91 NOV 19 A9:10

OSTP  
MAIL ROOM

Dr. D.A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Ave.  
Washington DC, 20506

Dear Dr. Bromley,

Basic research in Nuclear Physics should be a long term commitment in which long term goals are formulated in the most economic manner. To this end an implicit agreement was made with the nuclear science community only two years ago. At that time the community struggled to produce a responsible long range plan which was presented to DOE and NSF in 1989. The importance of community involvement in that plan was treated with highest concern, the DNP organized a series of workshops and town meetings to help formulate a responsible Long Range Plan. These meetings involved the various subfields and were held in several locations to permit all active scientists in the field to participate. The ideas developed were presented to NSAC at the Long Range Plan Working Group, which met for a week in Boulder, Colorado in August, 1989. The resulting plan was responsible in that it fit within the financial constraints presented at that time and was one which the community endorsed. The solution involved considerable sacrifice and included recommendations for imminent closing of several facilities which had excellent science programs and strong user groups. This plan, so carefully and responsibly wrought, is now in grave danger of unravelling because its implementation would be undercut by the recent precipitous action proposed by the DOE.

During the recent meeting of the Division of Nuclear Physics (DNP) held in East Lansing, it was announced that the Nuclear Science Advisory Committee (NSAC) had been charged with giving advice on Department of Energy budgets which would involve a ten percent cut in FY1993 coupled with decreasing or low growth future projections. As a members Brookhaven staff I am writing to you to request your assistance in averting the great harm that such a budget scenario would create. I believe strongly that this plan is not in the best interests of the United States, is clearly counterproductive, and breaks the implicit agreement I mentioned above.

I realize that DOE is suffering from budget constraints due to past operations that has generated nuclear waste and environmental concerns, but both the severity and particularly the suddenness of the proposed cuts directed at nuclear physics will cause serious and perhaps irreparable damage to a significant and vital part of the US scientific enterprise. The Savings and Loans ran into trouble because the government did not effectively control their operations. That situation is analogous to the problems DOE has run into with nuclear waste from weapons production. Like the S&L the cost has to be spread around and not added as a 10% tax on basic research.

As the proposed budget reduction will affect all construction and operations in nuclear physics, our community is concerned that nuclear physics is particularly threatened. Such a sudden cut will have the



regrettable consequence that the hiring of students and young researchers will be most severely affected, since hiring decisions for this group are made each year. I personally work with three students on the heavy ion experiment E810. With our TPC we are able to measure strange particles that live for  $1 \times 10^{-10}$  seconds and are in the process of searching for strange matter. The discovery of and the development of strange matter could solve the problem of energy storage and propulsion for long space flights.

With a 10% cut many students will be forced out of school. This diminished capacity to contribute to the training of young people seems a false economy from the perspective of an increasingly competitive and technological world market. It is estimated that a 10% decrease in funds would result in a decrease of about 200 scientists in nuclear physics, some at the Ph.D. level and others still in graduate school. These losses will be compounded if budgets remain flat. In the past approximately two thirds of the Ph.D.'s trained in nuclear physics are recruited into areas beyond the basic research environment of the field because of the strong demand for their technical training and broad expertise.

There are many ongoing projects implicitly agreed upon in the 1989 long range plan that play a crucial role in nuclear physics. The understanding of the evolution of the universe, the properties of nuclear and subnuclear hadronic matter at both high and low temperature are all apart of this unique and important research. Nuclear physics as a field has also contributed greatly to our society through the transfer of technology. The examples of detector, accelerator, and radioisotope techniques being applied to our national needs are numerous. I am worried that the cessation of ongoing or planned accelerator or detector development in our field would harm this constant flow of technology from the nuclear physics laboratory to the marketplace.

I am gravely concerned that the DOE's role as guardian of the national trust is being compromised by the DOE budgetary emphasis on other aspects of its program and making basic research a secondary if not a dispensable function.

*Dr. Ronald S. Longacre*

Dr. Ronald S. Longacre  
Physicist  
Department of Physics  
Brookhaven National Laboratory  
Bldg. 510A, 20 Pennsylvania St.  
Upton, NY 11973



"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124938  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
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FROM: DYTMAN, Steven A.: UNIVERSITY OF PITTSBURGH

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/19/91

SUBJECT: A LETTER EXPRESSING HIS CONCERN OVER THE IMPACT DOE  
BUDGET CUTS WILL HAVE ON BASIC RESEARCH PROGRAMS IN  
NUCLEAR PHYSICS.

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DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

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SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

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REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/27/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:





# University of Pittsburgh

FACULTY OF ARTS AND SCIENCES  
Department of Physics and Astronomy

Dr. D.A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Ave  
Washington, DC 20506

4938  
RECEIVED

91 NOV 27 AID: 55

November 19, 1991

OSTP  
MAIL ROOM

Dear Dr. Bromley:

I am an active researcher in nuclear physics with experimental programs at Bates, CEBAF and IUCF. I also represent all Bates users as the President of the Bates users group. My work directly supports 5 students and 1 postdoc at the University of Pittsburgh with funds largely dependent on the federal government. Therefore, I am distraught over recent actions regarding the DOE funding of basic research. At this point in the process of establishing cutbacks (some variation of a permanent 10% decrease in DOE support of nuclear science), I see a future with a rapid decline in our research capabilities and in our ability to train students.

I am somewhat aware of the process that got us to the present predicament. We heard rumors in the summer about coming problems, but the discussions and tentative decisions came very rapidly and often behind closed doors. The Townes Committee, NSAC and HEPAP all were forced to make quick and painful decisions, wiping out the national consensus that had been built supporting the long range plans for nuclear and particle science.

My main concern is over the impact on basic research. The science communities have been recommending shutdown of older facilities to maintain a reasonable budget as the new facilities are being built. However, the 10% permanent cut will have a permanent negative impact. Significant long-term projects for which we are carefully preparing will be delayed and/or cancelled. (For example, I have 2 students working full time on CEBAF projects even though the accelerator will not be finished until 1994.) The main problem I see is in the support of students and young researchers. As a result, theses will be delayed or heavily altered and young faculty will not be able to do projects required for career advancement. In my case, the research opportunities I provide for undergraduates will also be endangered. The field will not be immediately destroyed, but we will have severe problems with morale and progress among our youngest people, those who hold the future of the field.

There apparently continues to be a national consensus that basic research must be supported by DOE. However, the seemingly arbitrary and unplanned cutbacks now being considered send a quite different message. If long-term planning is to be sacrificed to short-term politics, we will all lose.

Sincerely,

Steven A. Dytman  
Associate Professor of Physics

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124871  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
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FROM: LOMON, Earle L.: MIT

TO: TOWNES, Charles: SEAB TASK FORCE

DATE OF  
CORRESPONDENCE: 11/18/91

SUBJECT: HE IS FORWARDING A COPY OF HIS LETTER TO DR. TOWNES  
REGARDING THE PROPOSED BUDGET CUTS BY THE DOE IN THE  
NUCLEAR PHYSICS PROGRAM.

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DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

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FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:



4871

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
DEPARTMENT OF PHYSICS  
CAMBRIDGE, MASSACHUSETTS 02139

Center for Theoretical Physics, Room 6-304  
(617) 253-4877 — Bitnet: LOMONG@MITLNS — FAX: (617) 253-8674

November 18, 1991

Professor Charles Townes  
Chairman, SEAB Task Force  
Physics Department  
557 Birge Hall  
University of California  
Berkeley, CA 94720

Dear Professor Townes,

The cuts being considered in the U.S. nuclear research budget would gravely endanger a field which is vital to science and to the health of the nation. In the past the importance of nuclear physics to the basic understanding of nature has been recognized, both because of its direct insights and through the transfer of ideas to other branches of physics. Its vast practical applications to modern technology have also been valued. If there is some perception that this era is over, perhaps that its role has been replaced by that of particle physics, I argue that that perception is fallacious. Nuclear physics is still frontier research in (i) the dynamics of few- and many-body strongly interacting systems, (ii) the fundamental interactions of the lighter elementary particles (quarks, gluons, leptons) through intermediate and low-energy reactions, and (iii) the search for effects of higher-mass elementary particles through symmetry violations. High-energy particle physics is admittedly of great fundamental importance, as are other fields such as condensed matter, and a balanced program must be maintained with the available national resources. To do less would be to gamble with scientific progress.

Within the field of nuclear physics, experimental hadronic physics seems to be in the most danger due to an accident of timing. Several years ago LAMPF was near the peak of its productivity of important research in medium-energy, strong-interaction hadronic and nuclear physics; and IUCF was beginning its forefront research with its cooled proton beam probe. It was then appropriate, as recommended by NSAC, to schedule new electron beam and heavy-ion beam facilities ahead of a nucleon and meson facility. The priority was only one of order, not of importance. The need for a new generation hadronic probe in the next few years is urgent. That need was expected to be satisfied by starting construction on a new facility or major upgrade as the construction on CEBAF and RHIC phases out. The newly threatened budget reduction would prevent that, leaving this fundamental area of nuclear physics in a shambles. It will be even worse if the budget of LAMPF is curtailed before a new hadron accelerator is built.

November 18, 1991

Granted it seems that the Canadian KAON accelerator may become a reality. This of course does not help at all until it comes on line. Even when it does, this one facility will not cover all the needs in terms of the number of experiments than can be handled, or the variety of beams that are operational. It is likely to concentrate on producing secondary beams with its highest energy (30 GeV) primary beam, leaving the 3 GeV (Saturne II) to 12 GeV region unexplored (Brookhaven's AGS beam operates from 12-30 GeV.) The accepted KAON proposal does not include either variable energy, polarized proton beams, or intense pion beams of higher energy than now available at LAMPF. For these reasons it is important that either LAMPF or IUCF, or both, be enabled to proceed with a major upgrade in the next few years. Of course a different site could be acceptable if it were cost-effective.

I urge that the nuclear physics community and the Department of Energy jointly plan the mode and time for major new nuclear physics facilities, adequately support the completion of those under construction, and maintain the operation of the present facilities at least until replacements are available for each type of probe.

Sincerely yours,



Earle L. Lomon  
Professor of Physics

cc: Dr. William Happer, Director of Energy Research, Department of Energy  
Dr. D. A. Bromley, Executive Office of the President  
U.S. Representative Chester Atkins

ELL:ttl



"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9124931

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

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FROM: KOSTER, James E.

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/18/91

SUBJECT: A LETTER EXPRESSING HIS DISTRESS OVER RECENT EVENTS  
CONCERNING THE FUNDING OF NUCLEAR AND HIGH ENERGY  
PHYSICS RESEARCH BY THE DOE.

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DIRECTORATE  
ASSIGNED:

STAFF  
ASSIGNED:

ACTION  
REQUIRED:

STAFF  
ACTION:

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SENDER'S DUE DATE:

OSTP DUE DATE:  
DATE COMPLETED:

STAFF DUE DATE  
DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

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EXT:

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OSTP RECEIVED: 11/27/91  
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:

*Karl Sub*

4930

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91 NOV 27 410:59

James E. Koster

LANL  
MAIL ROOM  
MS H803

Los Alamos, NM 87545

November 18, 1991

Dr. D.A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360  
17th and Pennsylvania Ave.  
Washington, D.C. 20506

Dear Dr. Bromley,

I am distressed by recent events concerning the funding of nuclear and high energy physics research by the Department of Energy. The Task Force on Energy Research Priorities, chaired by C.H. Townes, the Nuclear Science Advisory Committee (NSAC), and the High Energy Physics Advisory Panel have been charged with assessing the effects of an approximately 10% reduction in next year's budget. This scenario is cause for concern for a number of reasons.

- 1 Cuts in basic research in these areas will jeopardize the technological strength of the country. Such cuts will reduce the number of students being trained in areas fundamental to a solid technology base, as well as reduce the number of experienced researchers and the quantity of work being done. A drastic reduction in funding, even for the short term, can therefore take years from which to recover.
- 2 Realistic goals for nuclear science were recognized by NSAC through a Long Range Plan which was produced with advice from throughout the nuclear physics community. This plan set a thoughtful course for nuclear research for the next several years—an appropriate time scale for fundamental research. The plan did not consider unrealistic increases in funding. Sudden cuts in next year's budget largely undo



the deliberations so carefully conceived by the community.

- 3 The funding cuts indicate that a zero sum game is being played between the Superconducting Supercollider and the rest of basic research—given that the SSC is relieved of a similar reduction in budget. The original proposal for the SSC saw it as an additional scientific endeavor that would not take money from other research. Clearly, now other fields of physics are faced with a far smaller slice of the pie since the appetite of the SSC is unfettered. This new situation may find many of the original proponents of the SSC far more reluctant to continue their support. While the SSC may be important, it is disturbing to term the project, in effect, the number one priority in basic research funded by the Department of Energy. Colloquially, this may be called putting all your technological and scientific eggs in one basket.

I appreciate that the Department of Energy disposes of limited funds. But as a member of the scientific community as well as a US citizen, I conclude that such drastic cuts in basic physics research are not in the best interest of our country.

Sincerely,



James Koster

THE WHITE HOUSE  
WASHINGTON

February 4, 1992

Dear Dr. Koster:

Thank you for your letter expressing concern over possible 10% budget reductions for DOE-supported particle and nuclear physics research. We at the Office of Science and Technology Policy (OSTP) shared this concern.

Dr. Karl Erb, OSTP Associate Director for Physical Sciences and Engineering, and I worked closely with DOE and the Office of Management and Budget to explore alternate funding priorities as we prepared the President's FY 1993 budget request. I am pleased that deep reductions in funding proved not to be necessary.

Our next challenge will be to convince Congress to appropriate the funds requested for R&D by the President. Your assistance in this could be pivotal, as Congress will face strong demands to shift funding away from research and into other activities.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. Allan Bromley". The signature is fluid and cursive, with the first name "D." being small and the last name "Bromley" being larger and more prominent.

D. Allan Bromley  
The Assistant to the President  
for  
Science and Technology

cc: Karl A. Erb

Dr. James E. Koster  
Los Alamos National Laboratory  
MS H803  
Los Alamos, NM 87545



"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124976  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
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FROM: KIENLE, Paul: INPC

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/18/91

SUBJECT: A THANK YOU LETTER TO DR. BROMLEY FOR HIS ACCEPTANCE  
TO ADDRESS THE CONFERENCE. DR. KIENLE IS PROVIDING  
MORE INFORMATION ON THE CONFERENCE.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

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SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES  
INTERNATIONAL/POLICY

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WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

OSTP RECEIVED: 12/03/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:

July 26 – August 1, 1992

Wiesbaden, Germany

4476

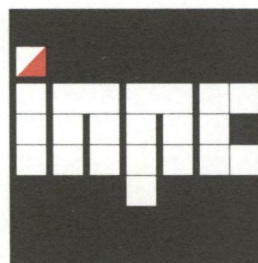
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91 DEC 3 P4:17

OSTP  
MAIL ROOM

Dr. D. Allan Bromley  
Assistant to the President  
for Science and Technology  
The White House

Washington  
USA



c/o GSI, Postfach 11 05 52, D-6100 Darmstadt  
Phone 49.6151.359-888 and 889  
Fax 49.6151.359-989  
Telex 04 19593 gsi d

Darmstadt, November 18, 1991

Dear Allan,

Thank you very much for your kind response to our invitation to the INPC92. We are very glad that you accept to give an opening address and an evening lecture. Indeed, we are well aware of the priorities in the White House, which may cause your plans to change.

We shall make special arrangements for your pleasant accomodation in Wiesbaden, where, of course, you will be our very distinguished guest.

Enclosed please find the second circular of the conference. We will provide you with further information.

I am looking forward to seeing you in Wiesbaden.

Yours sincerely,

*P. Kienle*

Professor Dr. Paul Kienle  
Conference chairman  
Yours sincerely,





1992

# International Nuclear Physics Conference

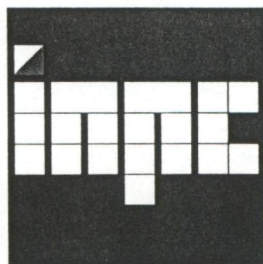
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|----------------------|------------------------------------|--|-----------------------------------------------|------------------------------------------------|------------------------------------------------|--|
|                      |                                    |  | Nuclear<br>Reaction<br>Dynamics               |                                                | Nuclear Physics<br>in Other<br>Research Fields |  |
|                      | Hadrons<br>and Quarks<br>in Nuclei |  |                                               | Experimental<br>Techniques<br>and Accelerators |                                                |  |
| Nuclear<br>Structure |                                    |  |                                               |                                                |                                                |  |
|                      |                                    |  | Fundamental<br>Interactions<br>and Symmetries |                                                |                                                |  |

July 26 – August 1, 1992, Wiesbaden, Germany



**2<sup>nd</sup>**

Circular



1992 International Nuclear Physics Conference  
July 26 – August 1, 1992  
Wiesbaden, Germany

## Registration (please return as soon as possible)

Name: \_\_\_\_\_

First Name: \_\_\_\_\_

Title: \_\_\_\_\_

Institute/Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Telex: \_\_\_\_\_

Fax: \_\_\_\_\_ Bitnet: \_\_\_\_\_

- ☐ I will attend the INPC'92
- ☐ I intend to submit a contributed paper

Number of accompanying persons: ☐

I/We will participate in the boat excursion.  
Total number of persons (no extra charge): ☐

I/We will attend the conference dinner.  
Total number of persons (DM 90 per person): ☐

I/We intend to participate in the tour of the  
GSI facility.  
Total number of persons: ☐

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

Mrs. G. Eisold  
INPC'92  
GSI  
P.O. Box 110552  
D-6100 Darmstadt 11  
Germany

Phone 49 6151 359888 and 359889  
Fax 49 6151 359989  
Telex 04-19593  
BITNET INPC@DDAGSI3



Contact person: A. Gobbi

Address: GSI, Postfach 110552, D-6100 Darmstadt, Germany

# Ternary Processes from 12 to 19 MeV/u

A. Olmi, A.A. Stefanini, P.R. Maurenzig  
Università di Firenze and INFN, Firenze, Italy

J. Albinski, A. Gobbi, S. Gralla, N. Herrmann, K.D. Hildenbrand,  
H. Stelzer, W.F.J. Müller, J. Kuzminski, M. Petrovici  
Gesellschaft für Schwerionenforschung, Darmstadt,  
Germany

The most characteristic feature of deep-inelastic collisions between heavy nuclei is the complete damping of the relative kinetic energy into internal degrees of freedom, leading to high excitations of the dinuclear complex formed by target and projectile. Up to 700 MeV highly excited ejectiles produced at incident energies between 10 and 20 MeV/u might display new decay patterns, like enhanced emission of light particles, emission of more complex fragments of fission.

We present preliminary results of an experiment performed at GSI Darmstadt with the symmetric system  $^{100}\text{Mo} + ^{100}\text{Mo}$  at incident energies between 12 and 19 MeV/u. Fig. 1 shows the experimental set-up; during the experiment two-, three- and many-fold coincidences between heavy fragments were recorded.

A kinematic coincidences analysis was performed and a least  $\chi^2$  procedure was used to estimate, on an event by event basis, mass and momentum of each fragment, under the constraint of exact conservation of total mass and momentum. It was possible to evaluate and subtract 3- and 4-body background from the 2-body coincidences and 4-body background from 3-body coincidences. The data were, by means of Monte Carlo calculations, corrected for the geometric efficiency of the experimental set-up. Fig. 2 shows center-of-mass energy distributions of the 2- and 3-body events.

The 3-body yield increases with total kinetic energy loss (TKEL) and at complete damping becomes comparable with that of the binary events. Within the present preliminary data, ratios between 3-body and 2-body spectra show that the 3-body probability depends mainly on the TKEL of the first reaction step and is almost independent of incident energy.

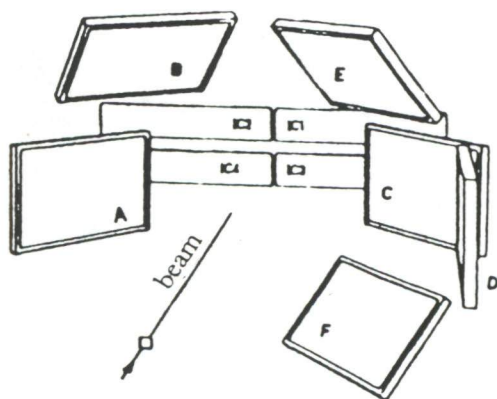


Figure 1  
Experimental set-up; A-F are position sensitive parallel plate avalanche counters

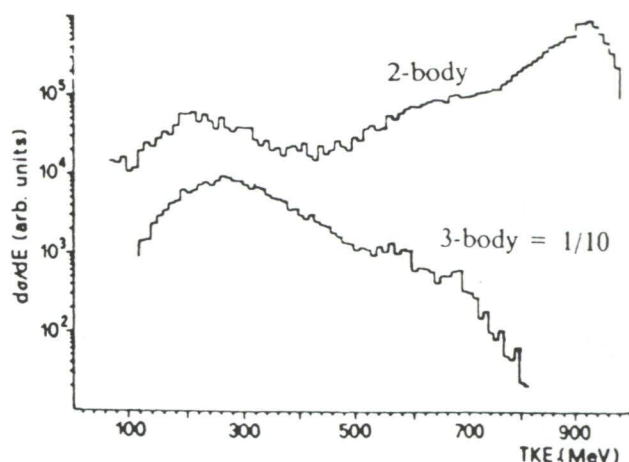


Figure 2  
TKE-spectrum at 19 MeV/u for 2-body and 3-body events, corrected for detector geometry and after background subtraction

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Approx.  
Arr. Time \_\_\_\_\_

Date \_\_\_\_\_ Signature \_\_\_\_\_

Please print in block letters or type. Please mark where appropriate with (X).

Contact person:  
Address:



"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124950  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: HALLER, Eugene E.: LAWRENCE BERKLEY LABORATORY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/15/91

SUBJECT: A LETTER REGARDING DR. BROMLEY'S INTERVIEW IN  
PHYSICS TODAY, AND DR. BROMLEY'S STATEMENT REGARDING  
CONTRIBUTIONS SOVIET SCIENTISTS COULD MAKE TO  
U.S.-SOVIET COLLABORATIONS IN MATERIALS RESEARCH.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT: 12/19/91  
\*\*\*\*\*

COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES  
INTERNATIONAL/POLICY

\*\*\*\*\*  
WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

CLOSED

OSTP RECEIVED: 11/27/91  
FILE: PHYSICAL SCIENCES  
CENTRAL FILES: Pres

DEPT RECEIVED:

# Withdrawal/Redaction Sheet

## (George Bush Library)

| Document No.<br>and Type | Subject/Title of Document                                                                                       | Date     | Restriction | Class. |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|----------|-------------|--------|
| 01. Letter               | To: Allan Bromley From: Eugene Haller<br>Re: Bromley's statement regarding Soviet materials research<br>(2 pp.) | 11/15/91 | (b)(1)      |        |

**Collection:**

**Record Group:** Bush Presidential Records  
**Office:** Science and Technology Policy, Office of (OSTP)  
**Series:** Bromley, D. Allan, Files  
**Subseries:** General Science Files  
**WHORM Cat.:**  
**File Location:** Physical Science: General [2 of 8] [1991]

|                               |             |                             |           |
|-------------------------------|-------------|-----------------------------|-----------|
| <b>Date Closed:</b>           | 3/19/2010   | <b>OA/ID Number:</b>        | 62041-002 |
| <b>FOIA/SYS Case #:</b>       | 2005-0336-F | <b>Appeal Case #:</b>       |           |
| <b>Re-review Case #:</b>      |             | <b>Appeal Disposition:</b>  |           |
| <b>P-2/P-5 Review Case #:</b> |             | <b>Disposition Date:</b>    |           |
| <b>AR Case #:</b>             |             | <b>MR Case #:</b>           |           |
| <b>AR Disposition:</b>        |             | <b>MR Disposition:</b>      |           |
| <b>AR Disposition Date:</b>   |             | <b>MR Disposition Date:</b> |           |

### RESTRICTION CODES

**Presidential Records Act - [44 U.S.C. 2204(a)]**

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P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]  
P-3 Release would violate a Federal statute [(a)(3) of the PRA]  
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]  
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]  
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

**Freedom of Information Act - [5 U.S.C. 552(b)]**

(b)(1) National security classified information [(b)(1) of the FOIA]  
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(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]  
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]  
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]  
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]  
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]  
(b)(9) Release would disclose geological or geophysical information



THE WHITE HOUSE  
WASHINGTON

December 19, 1991

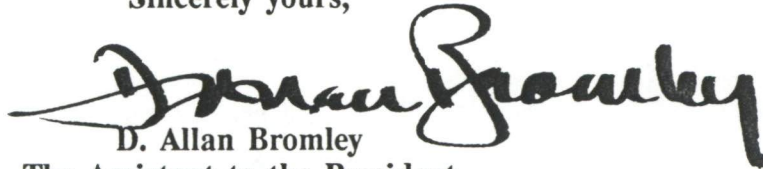
Dear Professor Haller:

Many thanks for your letter of November 15 with its correction of my statement about ultra-pure Soviet material. I am afraid that I allowed myself to fall into the trap of relying on memory rather than checking all the factual input and I had recalled from the '50s when Academician Joffe had initiated a very special program in the USSR Academy laboratories to focus on production of ultra-pure materials. For at least a short time thereafter the Soviets did have an edge on the rest of the world and, in chatting with Irwin Goodwin, I made the unwarranted assumption that the Soviets had maintained that lead.

In any event, many thanks for the correction and for your kind comments about the interview as a whole.

With all best wishes,

Sincerely yours,

A handwritten signature in dark ink, appearing to read "D. Allan Bromley". The signature is fluid and cursive, with a large, stylized initial "D" and a long, sweeping underline.

D. Allan Bromley  
The Assistant to the President  
for  
Science and Technology

Professor Eugene E. Haller  
Lawrence Berkeley Laboratory  
1 Cyclotron Road  
Berkeley, California 94720

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9124895

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

\*\*\*\*\*

FROM: LONDERGAN, J. Timothy: INDIANA UNIVERSITY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/15/91

SUBJECT: A REQUEST FOR ASSISTANCE REGARDING THE PROPOSED DOE  
BUDGET CUTS IN THE NUCLEAR PHYSICS PROGRAM.

*make for  
copy for  
Chadler  
2 more  
effort*

\*\*\*\*\*

DIRECTORATE  
ASSIGNED: PHYSICAL SCIENCES

STAFF  
ASSIGNED:

ACTION  
REQUIRED: DIRECT REPLY

STAFF  
ACTION:

\*\*\*\*\*

OSTP DUE DATE: 12/06/91  
DATE COMPLETED:

SENDER'S DUE DATE:  
STAFF DUE DATE  
DATE COMPLETED/DEPT: 2/3/92

\*\*\*\*\*

COPIES TO: D. Allan Bromley

\*\*\*\*\*

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OSTP RECEIVED: 11/22/91  
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:







## INDIANA UNIVERSITY

DEPARTMENT OF PHYSICS

Swain Hall-West 117

Bloomington, Indiana 47405

(812) 855-1247

Telex #272279 INDIANA U BLOM

FAX: 812-855-5533

91 NOV 22 P 3: 41

November 15, 1991

OSTP  
MAIL ROOM

Dr. D. Allan Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Avenue  
Washington, DC, 20506

Dear Dr. Bromley:

We are writing, as Chair of the Indiana University Physics Department and Director of the Indiana University Cyclotron Facility, to request your assistance in countering recent proposals from the US Department of Energy [DOE], regarding funding of their vital basic research programs in Nuclear Physics and Particle Physics. As we understand it, in September of this year the Secretary of Energy Advisory Board Task Force, chaired by Charles Townes, was told to consider scientific priorities based on a flat budget scenario. A draft report from this committee [enclosed] was to be made available for public comment until October 31, 1991.

Before this date, however, the DOE called meetings of both the Nuclear Science Advisory Committee [NSAC] and the High Energy Physics Advisory Panel [HEPAP], at which they announced that the fiscal 93 budget would be reduced by 10% from the FY-92 budget; this amounts to a 15% cut when cost-of-living increases are factored in. We believe that this plan is precipitous, is not in the best interests of the United States, would have a calamitous effect on basic research in these areas, and would unnecessarily imperil a significant and vital part of the US scientific enterprise.

Why these sudden cuts? One hears the following reasons cited: first, that Presidential Initiatives, such as the Space Station and the SSC, have been exempted from any such cuts [indeed, the SSC funding appears to be immune to the proposed cuts]; second, that the Waste Management initiatives are now cutting deeply into basic research budgets; third, that other areas of the DOE budget related to the national energy policy are eating into the basic research sector.

It is true that a crisis exists in Waste Management; we have suffered from a half-century of mismanagement of these facilities. However, to tax basic research to clean up this mess is short-sighted and inefficient; it would seem more reasonable to redirect those sectors which previously were dedicated to the weapons program to this cleanup, particularly with the sweeping reductions in nuclear arms proposed by President Bush.

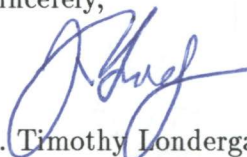
The advances and training of scientists which occurs in the basic research sector is largely responsible for our international leadership in advanced science and technology. Indeed, as more and more enterprises in commerce become transparent to borders between countries, the human resources of the US remain one of our country's unique strengths. The proposed cuts would do great harm to our mission of attracting and training many of this country's most brilliant young scientists. Particle and nuclear physics have provided scientists who have made tremendous contributions to applied physics, technology, defense and industry.

The suddenness of these proposed cuts is puzzling, and does not represent responsible stewardship of our scientific enterprise. It represents a discontinuous break with past planning, and makes a mockery of the responsible and painful planning which these groups have undergone for the past several years. Both particle and nuclear physics panels have set up priorities for funding, and have made tough choices among many competing projects of outstanding scientific merit. What is particularly surprising is the significant difference between the budget scenario studied by the Townes committee and the dramatically different picture presented to NSAC and HEPAP.

Under normal circumstances, the appropriate lines of appeal would be through the DOE bureaucracy, particularly through Dr. William Happer and eventually Secretary Watkins. However, we feel that these proposed actions have the potential of dealing such a devastating blow to the infrastructure in such important areas that it is important that you be made aware of these plans immediately. We therefore appeal to you to present the case for maintaining the basic research budgets for Particle and Nuclear Physics within the DOE. We understand the severe budget constraints under which the federal government is operating, and are not requesting immunity from fiscal prudence. Indeed, both NSAC and HEPAP were willing to consider level budgets. However, the sudden and deep cuts proposed by the DOE, aimed at very specific sectors of the DOE budget, seem to us punitive and ill-considered. We urge you to assist us by maintaining a strong and sensible level of support for basic research in Particle and Nuclear Physics at the DOE.

Thank you for your continued support.

Sincerely,



J. Timothy Londergan  
Professor of Physics  
Chair, Physics Department



John G. Cameron  
Professor of Physics  
Director, Indiana University  
Cyclotron Facility

JTL/JGC/le

copies: William Happer, Department of Energy  
Charles Townes, Professor of Physics,  
U.C. Berkeley





**Secretary of Energy Advisory Board**  
Washington, DC 20585

FOR PUBLIC COMMENT THROUGH OCTOBER 31, 1991

**DRAFT**

The Honorable James D. Watkins  
Secretary of Energy  
U.S. Department of Energy  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585

Dear Admiral Watkins:

On September 19-20, 1991, the Secretary of Energy Advisory Board Task Force on Energy Research Priorities met at the Forrestal Building. This letter report summarizes that meeting and outlines the Task Force's recommendations to you and Dr. William Happer, pursuant to the Terms of Reference for the Task Force (Attachment 1).

Introduction

The Task Force met to consider scientific priorities among programs in the General Science portion of the budget for the Office of Energy Research (ER) and other large facility construction programs being proposed for initiation by ER over the next few fiscal years. The Task Force based its discussion of scientific priorities on several sources of information:

■ twenty presentations concerning the scientific need, merit, cost, and schedules of the programs being reviewed, made in public session at the meeting (see Attachment 2);

■ nearly two hours of public comment, during which representatives of professional societies, user groups, and other interested members of the public provided insights and comments to the Task Force;

■ a review by Task Force members prior to the meeting of the following major studies of scientific priorities within programs discussed at the meeting:

■ Report of the HEPAP Subpanel on High Energy Physics and the SSC Over the Next Decade (DOE, 1989)

■ Report of the HEPAP Subpanel on the U.S. High Energy Physics Research Program for the 1990s (DOE, 1990) -

**DRAFT**



- Nuclei, Nucleons, Quarks: Nuclear Science in the 1990s (DOE, 1989);
  - Major Facilities for Materials Sciences (NAS, 1984);
  - Final Report of the Fusion Policy Advisory Committee (DOE, 1990); and
  - chapters from the National Energy Strategy (DOE, 1991) on "Fusion Energy" and "Fundamental Science and Engineering."
- the prior background and knowledge of its members, many of whom had served on previous study committees evaluating scientific priorities for the fields which were discussed at the meeting.

#### General Recommendations

Prior to discussing specific programmatic priorities, the Task Force members agreed on several recommendations of more general scope.

- All of the programs reviewed by the Task Force were of high quality. If budgets were not constrained, there would be no objection on the Task Force to proceeding with all of them.
- The Task Force believes a carefully considered and increased investment in scientific research is critically important to the welfare and competitive success of the Nation. Every effort should be made to secure a future ER budgetary profile that is more in keeping with the outstanding scientific opportunities before the Nation and the traditional role of the DOE as a major source of support for fundamental science and engineering research. The current ER budgetary caps and out-year allowances -- combined with the increasing cost of conducting frontier research and development in compliance with modern standards of responsible environmental, occupational, and financial management -- will result in a substantial decline in the size of the ER scientific program from fiscal year 1992 through 1996. If not reversed, this decline will lead to a seriously inadequate scientific and technical effort in support of the goals and objectives of the Department of Energy.
- The progress of any branch of science will be paced by the number and capability of its best people, and the support of such researchers must be accorded preferential status when priorities are set. In times of budgetary stress, high priority must be given to maintaining support for the best and most creative researchers, particularly those who are at early stages in their scientific careers. The Department of Energy might explore special methods of ensuring the encouragement of students and outstanding individual researchers.
- The Task Force also believes that DOE needs to establish a better structure for international collaboration on megaprojects.
- The magnitude and near-term implications of the budgetary crisis for DOE's basic science programs, resulting from the legislated budgetary caps,



have not previously been fully appreciated by the relevant scientific communities. The recommendations outlined below should be followed up by taskings to the appropriate ER scientific advisory committees to develop long-term priorities among ongoing base programs and contemplated new initiatives. This Task Force stands ready to help in the integration of the more detailed recommendations that would come forward from those advisory committees.

### Specific Recommendations

The specific recommendations of the Task Force for addressing the constrained fiscal picture facing the Office of Energy Research follow:

#### High Energy Physics Programs

The Task Force recommends that the Department not proceed at this time with the construction of either a B-Factory or the Main Injector at Fermilab, although the latter was authorized by Congress for initiation in FY 1992. While at the time of the last HEPAP review the Main Injector was given highest priority next to the SSC, the projected budget for high energy physics on which the priority was based assumed, optimistically, a moderate increase during the first half of the decade followed by a compensatory decrease during the second half. The Task Force believes that the current budgetary situation urgently requires a new, overall review of base program priorities against initiatives such as these, assuming a flat or declining budgetary scenario.

The Task Force believes that the Department should make every effort to ensure the success of the SSC, the flagship effort for the high energy physics community. During the Task Force meeting, though, some questions were raised about potential expenditures for SSC operations prior to the completion of the construction project. The Task Force recommends that the cost accounting for spares, and any costs for operation of SSC components before commissioning be recognized as an SSC expense, but that physics research by SSC Laboratory staff be competed against other programs in the high energy physics base program.

#### Nuclear Physics Programs

The Nuclear Science Advisory Committee (NSAC) developed a long range plan that contained explicit priority recommendations for a budget scenario with a moderate budget increase during the construction of the Continuous Electron Beam Accelerator Facility (CEBAF) and the Relativistic Heavy Ion Collider (RHIC). This plan gave high priority to moving forward with RHIC, even at the expense of other facilities. In this report and in follow-on exercises, NSAC identified the Bevelac at the Lawrence Berkeley Laboratory and the Holifield Heavy Ion Accelerator at Oak Ridge National Laboratory as two facilities that should be phased out. The Task Force urges the Department to move forward with the implementation of these recommendations at the earliest possible time.



The incremental costs of RHIC in the near term will require other economies in the ER nuclear physics program. The Los Alamos Meson Physics Facility (LAMPF) and other elements of the hadron nuclear physics program were assigned a lower priority than other elements of this subfield by NSAC in its 1989 Long-Range Plan. The Task Force concurs, particularly under a constrained budget and with the approval by Canada last week of the KAON facility. Consideration should also be given to whether there are any economies possible through alternative strategies for managing the RHIC project. The sense of the Task Force was also that university-based research facilities should be preserved in whatever arrangements are made to cope with budget limitations over the next several years. NSAC should be reconvened to consider its most recent long-range plan in the light of current budgetary stringencies and to recommend on programmatic priorities for flat and declining budgetary scenarios in constant dollars.

### Fusion Energy Programs

The Task Force believes that funding for the magnetic fusion program must increase at a modest rate (e.g., 5 percent real growth per year) even at the expense of other programs. This recommendation follows from the opportunity to participate in the International Thermonuclear Experimental Reactor (ITER), as well as a recognition that no major fusion facilities have been authorized since 1976 and many programs have been canceled, so that the domestic program is in danger of no longer being able to fulfill its scientific and educational mission.

Such a modestly growing program is incompatible with authorization of the Burning Plasma Experiment (BPX), especially since the estimated cost of BPX has risen.

The primary vehicle for studying the crucial physics of burning plasmas, then, must be the international ITER program, although valuable preliminary data will come from the Joint European Torus (JET) and the Tokamak Fusion Test Reactor (TFTR). A vision of ITER as the next major physics step, to be followed by a second engineering phase, has been advanced by the European ITER group. We believe the United States should support this vision and move expeditiously towards international cooperation and an international construction decision.

Concept exploration should begin to define a new experiment in the \$500 million class for the purpose of scientific study of tokamak improvements (e.g., second stability, steady state, bootstrap current) that could suggest new operating modes for ITER and permit the design of more reactor-desirable follow-ons to ITER. Such a scientific focus is required to ensure that the domestic program remains vital and able to attract the best young talent. Some increase in budget is also required for optimum use of existing facilities.

In the long run, as fusion becomes primarily a development project -- perhaps with the second phase of ITER -- consideration could be given to spinning off the fusion program from the Office of Energy Research.



Materials Sciences Programs

The Task Force supports the continuation, on the current baseline of cost and schedule, of the Advanced Photon Source (APS). The APS was the highest priority of the 1984 National Academy of Sciences study on major materials facilities, and the Task Force believes that the construction of this third-generation synchrotron facility remains a very high scientific priority for the Department.

The Task Force notes that the Advanced Neutron Source (ANS) is still in the conceptual design stage. The ANS is a much needed scientific facility for the Nation, but this need is not so urgent that the project must advance to architectural/ engineering studies in FY 1993. The Task Force recommends maintaining approximately the current level of design effort while the material sciences community examines the optimal timing for the construction of this facility under budgetary constraints.

Conclusion

The Task Force believes that the adoption of these recommendations will go a considerable way towards meeting the challenges of crafting an ER program that is supportable by the level of resources now projected to be available over the next few years. The Task Force stands ready to assist further in reviewing programs and priorities of the Office of Energy Research.

Sincerely,

Charles H. Townes  
Chairman  
SEAB Task Force on Energy Research  
Priorities

Attachments

## OFFICE OF SCIENCE AND TECHNOLOGY POLICY

# STAFFING SHEET

**SUBJECT:** From letter - Doc Budget - Lindergan & Cameron, Indiana

ORIGINATOR: K. ERB PHONE: 5130

DATE ORIGINATED: 2/3/92 DATE DUE: SEAP CORR TRACKING NO: 9124895

**EXTERNAL COORDINATION:**\_\_\_\_\_

|                 | COMMENTS | DATE |
|-----------------|----------|------|
| DIRECTOR        |          |      |
| GENERAL COUNSEL |          |      |
| EXEC. ASST.     |          |      |

**ACTION REQUESTED:**

[illegible]



THE WHITE HOUSE  
WASHINGTON

February 3, 1992

Dear Dr. Londergan:

Thank you for your letter expressing concern over possible 10% budget reductions for DOE-supported particle and nuclear physics research. We at the Office of Science and Technology Policy (OSTP) shared this concern.

Dr. Karl Erb, OSTP Associate Director for Physical Sciences and Engineering, and I worked closely with DOE and the Office of Management and Budget to explore alternate funding priorities as we prepared the President's FY 1993 budget request. I am pleased that deep reductions in funding proved not to be necessary.

Our next challenge will be to convince Congress to appropriate the funds requested for R&D by the President. Your assistance in this could be pivotal, as Congress will face strong demands to shift funding away from research and into other activities.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Allan Bromley". The signature is fluid and cursive, with the first name "D. Allan" and the last name "Bromley" clearly distinguishable.

D. Allan Bromley  
The Assistant to the President  
for  
Science and Technology

cc: Karl A. Erb

Professor J. Timothy Londergan  
Professor of Physics  
Chair, Physics Department  
Swain Hall-West 117  
Indiana University  
Bloomington, IN 47405

THE WHITE HOUSE  
WASHINGTON

February 3, 1992

  
Dear Dr. Cameron:

Thank you for your letter expressing concern over possible 10% budget reductions for DOE-supported particle and nuclear physics research. We at the Office of Science and Technology Policy (OSTP) shared this concern.

Dr. Karl Erb, OSTP Associate Director for Physical Sciences and Engineering, and I worked closely with DOE and the Office of Management and Budget to explore alternate funding priorities as we prepared the President's FY 1993 budget request. I am pleased that deep reductions in funding proved not to be necessary.

Our next challenge will be to convince Congress to appropriate the funds requested for R&D by the President. Your assistance in this could be pivotal, as Congress will face strong demands to shift funding away from research and into other activities.

Sincerely,



D. Allan Bromley  
The Assistant to the President  
for  
Science and Technology

cc: Karl A. Erb

Professor John G. Cameron  
Professor of Physics  
Director, Indiana University  
Cyclotron Facility  
Indiana University  
Bloomington, IN 47405



"Document Control"

TYPE: ACTION DOCUMENT NUMBER: 9124802  
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS  
\*\*\*\*\*

FROM: NIELSEN, Don: MIDWATCH INC.

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/15/91

SUBJECT: RE:THE DEVELOPMENT OF AN ENGINE MODIFICATION TO  
REDUCE EMISSIONS AND IMPROVE ENGINE EFFICIENCY.  
WOULD LIKE TO PROVIDE MORE INFORMATION FOR DR.  
BROMLEY IF HE SO DESIRES.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: PHYSICAL SCIENCES ASSIGNED: Jim Ling (as of 2/2/92)

ACTION STAFF  
REQUIRED: DIRECT REPLY ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
OSTP DUE DATE: 12/02/91 STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT: 11/3/92

\*\*\*\*\*  
COPIES TO: INDUSTRIAL  
D. Allan Bromley

\*\*\*\*\*  
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REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/18/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:



EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF SCIENCE AND TECHNOLOGY POLICY  
WASHINGTON, D.C. 20506

January 13, 1992

Dear Mr. Nielsen:

This is a follow-up to your telephone conversation on January 6 with Dr. Ling of our office. As he indicated to you, our recommendation is that you contact the Army Tank Automotive Command concerning the Entec Cycle Engine. The Army is in a position to evaluate the technical aspects of the engine and give you a more detailed response.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Douglas Beason', with a large, stylized flourish at the end.

J. Douglas Beason  
Senior Policy Analyst

Mr. Don Nielsen  
President  
MIDWATCH, Inc.  
P.O. Box 357  
Flint Hill, VA 22627



**MIDWATCH, Inc.**  
**Consulting Services**  
Don Nielsen, President  
PO Box 357, Flint Hill, Va. 22627

Nov. 15, 1991

Dr. D. Allan Bromley,  
Science Advisor to the President,  
Washington, D.C.

Dear Dr. Bromley,

A small business in Atlanta, the ENTEC Corporation, has invented and patented an engineering modification to the internal combustion engine which, in the view of a number of respected engineering concerns, offers the potential for revolutionary improvement in engine emission control, operating efficiency and fuel versatility.

This invention has culminated in the Entec Cycle Engine, a brief technical summary of which is appended. We are anxious to put this information in your hands for your review since we feel that the development of this engine, if credited in part to the foresight of the administration, might provide the President with a valuable domestic plank in his re-election platform.

As indicated in the attached technical summary, the Entec Cycle Engine offers a significant reduction in air pollution, longer engine life through lower operating temperatures and the versatility of operation on a variety of alternative fuels. Equally important, the technology can be made available through a relatively inexpensive modification to the thousands of deisel engines in trucks and busses already on the road with poor emission control.

The Entec Corporation is seeking private capital to enable the production of prototypes, and to complete the testing and computer modelling we feel is needed before production can begin. While government funding would, of course, be welcomed, we recognize the difficulties in obtaining such funding in the current environment, and would be pleased if, at this stage, we can obtain recognition, advice and--to the extent appropriate--endorsement by government offices most concerned. We have contacted several of these offices, notably in the Departments of Energy, Transportation and Defense, and have been encouraged to continue our efforts.

We will, of course continue to explore avenues of possible support within the Executive Branch and we also have obtained offers of support from within the Congress. Our purpose in contacting you, however, is to express our interest in working with your office for two reasons: first, to obtain your advice and assistance on how best to proceed to develop government support and, second, to offer information on this truly startling technological advance to add emphasis and substance to the President's positions on concern for both the environment and for technical growth.

We have extensive additional data attesting to the technical soundness and environmental value of the Entec Cycle Engine, and we would be pleased to provide it for your review or, preferably, to give it to you as part of a briefing or meeting on our technology.

I am a retired Navy Officer, working with the Entec Corp, to assist them in establishing contact with the appropriate offices in the federal government. I live in Northern Virginia, and I am available to provide you with additional information, or to arrange for follow up meetings with Entec officials. I am at your service at your first convenience.

Thank you very much for your time and interest.

Sincerely,

Don Nielsen  
MIDWATCH, Inc.  
Phone or Fax: (703) 675-1379

Attachment:

"The Entec Cycle Engine" information brief



## THE ENTEC CYCLE ENGINE

### Information Brief

#### Summary of the Proposed Concept

The concept is of a multi-cylinder reciprocating internal combustion engine operating in a new working cycle having inherently much higher thermal efficiencies than those of either the Otto or the Diesel cycles. This working cycle is characterized by a greatly extended expansion process, by extreme charge turbulence in the combustion chamber, by much higher compression for gasoline operation and by dramatic power density increases.

This concept further provides for multi-fuel operation with similar efficiencies with a wide range of fuels, including the volatility range from Diesel oil to high-test gasoline and the octane range from zero to that of the best aviation fuels. In addition, the extra burning time of the extended expansion process coupled with a cool, more turbulent charge will lessen polluting emissions.

The means are as follows: Atmospheric air is received and compressed in an auxiliary compressor and then expressed into a high pressure manifold-reservoir. The entire air charge is intercooled and aftercooled so that combustion starts at 250 degrees F. providing charge densities greater than that of a four-stroke or two-stroke engine of the same displacement. The engine can also be highly supercharged.

The manifold supplies two-stroke cylinders. These cylinders have normal combustion chambers which receive, near the end of its scavenging stroke, a cool, highly compressed, high velocity charge along with the fuel, then ignites the charge, for the power stroke. The manifold contains a volume sufficient to prevent an appreciable overall pressure drop when a charge is received by a cylinder. (Expansion always begins at maximum compression.)

A cool charge and greater flame velocity means that the initial combustion reaction is cooler, peak pressures and temperatures are much lower, and the end gas is also cooler. This results in knock-free operation in the gasoline mode to a 14:1 compression ratio without detonation, regardless of the octane rating of the fuel. In addition NO<sub>x</sub>, CO, CO<sub>2</sub> and unburned HC emissions are greatly reduced. With diesel fuel particulate matter is also greatly reduced.

The higher compression and greater charge densities assures a power-to-weight ratio greater than that of conventional Otto or Diesel cycle engines. (The cylinders are "ideal" two-stroke cylinders since scavenging is by positive displacement and there is no loss of air charge or fuel in the scavenging process.) Fuel economy is achieved by an extended expansion process and by more complete combustion, and by the greater efficiency inherent in higher compression.

The technical details of the Entec cycle engine are fully explained in the accompanying technical presentation.

### Expected Impact on Military Operations

This engine will have great positive impact upon military tactical craft and combat vehicles. Because of the greater expansion and cooler exhaust temperatures, reliability and maintainability of engine component parts will be greatly increased. Less rejected heat should permit elimination of the liquid cooling system for less sensitiveness to conventional cooling system damage and extreme environmental conditions.

Fuel economy improvements translate into increased vehicle range which, with the multi-fuel capabilities, provide greatly reduced logistic concerns.

Increased power over current engines will result in a reduction in both weight and volume for the same horsepower level for improved vehicle response and reduced armor cover requirements.

### Technical Feasibility and High Risk Areas

There are no special barriers to quantity production, neither in production methods nor in tooling. The technology is current and every component is already present in existing engines. Conversions to the Entec cycle requires changes only in the cylinder head, valve drive train, and in the manifold air distributor.

These engines can be built on present assembly lines and indeed can be retrofitted to any existing engine. The latter feature is important where large expensive engines are concerned.

### Expected Availability Date

A prototype can be designed, fabricated and tested in a period of 13 months.

Quantity production could begin within two years of the decision to adopt the concept. Retrofitting existing engines could be begun in a like time framework.

### Estimated Cost and Basis for Estimate

The cost of fabricating and testing prototypes would be approximately \$10,000,000 based on proposals received from Battelle Columbus Labs, Detroit Diesel Corporation, Georgia Institute of Technology and Ricardo Consulting Engineers.

Concerning quantity production, a rough judgement of relative cost can be made on a cost-per-pound of manufactured product. On this basis, production cost of the water cooled Entec cycle engine would appear to be less than that of



current engines, since power plant weight would be less than conventional powerplants for the same power output.

Cost of the air cooled version is expected to be even less than its watercooled counterpart since waterpump, radiator, seals, hoses and costly water jackets would be eliminated.

4802

# FAX TRANSMISSION COVER SHEET

\* \* \*

TO: Office of Science & Technology Policy  
FOR: Ms MARIAN NIDA  
FAX NR.: (202) 395-3261  
DATE: 15 Nov 1991

\*\*\*\*\*

FROM: Don Nielsen, MIDWATCH, Inc. \_\_\_\_\_

FAX NR.: (703) 675-1379

NR of PAGES (including this one): 6

MESSAGE: Ms NIDA - Attached letter is pursuant to  
our conversation earlier this week, I hope  
Dr Bromley finds it useful and am prepared  
to provide additional information as needed.  
Thanks for your assistance - Don Nielsen



"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9124861

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

\*\*\*\*\*

FROM: HOFFMAN, Cyrus M.: LOS ALAMOS NATIONAL LABORATORY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/14/91

SUBJECT: A LETTER EXPRESSING HIS CONCERN OVER THE PROPOSED  
DOE BUDGET CUTS IN THE NUCLEAR PHYSICS PROGRAMS.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

\*\*\*\*\*  
COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*  
WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

Please send Dr Hoffman  
Letter A, signed by  
cc to ~~D.A. Bromley~~ DAB  
~~KAB, with~~

OSTP RECEIVED: 11/20/91  
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:

4861  
RECEIVED

91 NOV 20 AIR 10 November 14, 1991

Dr. D. A. Bromley  
Executive Office of the President  
Office of Science and Technology  
Old Executive Office Building, Room 360  
17th and Pennsylvania Ave.  
Washington, DC 20506

OSTP  
MAIL ROOM

Dear Dr. Bromley:

I am writing to express my dismay at the proposed large cuts in the Department of Energy (DOE) budgets for high energy physics and nuclear physics. If implemented, these cuts will wreak enormous harm on the scientific vitality of this nation, create significant, irreparable damage to these fields, and cause serious setbacks in the training of future scientific and technical leaders. In addition, these proposed cuts break implicit agreements made with the scientific communities several years ago.

As you are probably aware, the leverage of a 10% cut in nuclear and particle physics is very large. It would result in significantly larger percentage reduction in accelerator running time, cancellation of ongoing work with accompanying lost, wasted effort, and the defection of scientists and students into fields where funding seems more secure. Surely, this cannot be the goal of this nation's scientific policies. I shall concentrate on one aspect of these consequences below; I expect you will hear from others on other aspects.

Although I am a staff scientist at a national laboratory, I have considerable contact with graduate students and young postdoctoral fellows in nuclear and particle physics. I formerly taught and did research at Princeton University, where I directed the research of several graduate students. While at Los Alamos National Laboratory, I have personally directed the thesis research of over 10 graduate students. I also direct the recruitment of postdoctoral fellows for a large (approximately 15 Ph. D. scientists) research group; at any given time we have 6-7 postdoctoral fellow on board. I can already see the effect of the mere discussions of budget cuts. Several students finishing their theses are now applying for jobs in other fields, in case the proposed cuts in nuclear and particle physics close off the research they are particularly interested in. One postdoc (an American) is seriously considering research abroad; the others are wondering what they will be doing in a couple of years. The clear message is that merely discussing of severe budget cuts has an enormous impact on young scientists.

This nation is concerned about economic competitiveness. While nuclear and particle physics may be pure, unapplied sciences, the role that these fields play in training scientists who assume important roles in more applied area cannot be overstated. Of the graduate students I have trained, one is the President of a leading U.S. manufacturer of ultrasound equipment (Diasonics, Inc.), another is a research director for Schlumberger working on oil-well logging equipment, and a third is a project leader at General Atomic. Severe budget cuts in pure research will cause enormous harm to our scientific training, which will seriously impact the pool of talented, trained scientists available to attack important technical problems. It is important to recognize that students are not like a water faucet that can be turned on and off at will. The deleterious effects of budget cuts will be felt for many years amongst the student population, even if the cuts were reversed the following year.



I urge you to do whatever you can to restore the proposed budget cuts in nuclear and particle physics and to insure that the funding for these fields is put on a secure footing. I recognize that this nation faces severe budget constraints. In that light, one might consider whether billions of dollars spent on a space station and the SSC, without significant foreign contributions, is the wisest way to spend our science dollars. Certainly stifling research in exciting, successful, forefront scientific fields is not sensible.

Very truly yours,

A handwritten signature in blue ink that reads "Cyrus M. Hoffman". The signature is fluid and cursive, with the first name "Cyrus" being more prominent and the last name "Hoffman" following in a similar style.

Cyrus M. Hoffman  
Staff Member  
Los Alamos National Laboratory

THE WHITE HOUSE  
WASHINGTON

February 4, 1992

  
Dear Dr. Hoffman:

Thank you for your letter expressing concern over possible 10% budget reductions for DOE-supported particle and nuclear physics research. We at the Office of Science and Technology Policy (OSTP) shared this concern.

Dr. Karl Erb, OSTP Associate Director for Physical Sciences and Engineering, and I worked closely with DOE and the Office of Management and Budget to explore alternate funding priorities as we prepared the President's FY 1993 budget request. I am pleased that deep reductions in funding proved not to be necessary.

Our next challenge will be to convince Congress to appropriate the funds requested for R&D by the President. Your assistance in this could be pivotal, as Congress will face strong demands to shift funding away from research and into other activities.

Sincerely,



D. Allan Bromley  
The Assistant to the President  
for  
Science and Technology

cc: Karl A. Erb

Dr. Cyrus M. Hoffman  
Staff Member  
Los Alamos National Laboratory  
P.O. Box 1663  
Los Alamos, NM 87545



"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9124854

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

\*\*\*\*\*

FROM: DEMARQUE, Pierre: YALE UNIVERSITY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/14/91

SUBJECT: HE IS FORWARDING A LETTER FROM SABATINO SOFIA  
REGARDING FUNDING FOR HIS SOLAR RESEARCH PROGRAM.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

\*\*\*\*\*  
COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*  
WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/20/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:

YALE UNIVERSITY

CENTER FOR SOLAR AND SPACE  
RESEARCH

P.O. Box 6666  
New Haven, Conn. 06511

TEL. (203) 432-3000  
(203) 432-3024

4854  
RECEIVED

91 NOV 20 A10:00

November 14, 1991  
MAIL ROOM

Dear Allan,

Sabatino has asked me for  
advice. I think that it is very  
important that you should know  
about it.

Best regards,

Pierre Demarque



# Yale University

Center for Solar and Space Research  
P.O. Box 6666  
New Haven, Connecticut 06511

Campus address:  
204 Josiah Willard Gibbs  
260 Whitney Avenue  
Telephone:  
203 432-3000  
203 432-3024

November 14, 1991

Dr. Allan D. Bromley  
Science Adviser to the President  
The White House  
Washington, DC

Dear Allan:

As you may remember, the major area of research that I have been pursuing since coming to Yale, in collaboration with colleagues here and at the NASA /Goddard Space Flight Center, is solar variability on timescales of years to centuries. These timescales are those relevant to climate change.

The seriousness of the threat of carbon dioxide warming of the planet (for a doubling of this quantity different models predict temperature increases ranging from about 1.5 C to 5 C) depends on the relative importance of the greenhouse effect as compared to the other three major external forcings, namely forest cover, aerosols, and solar change. To validate the different models, it is important to run them for the past 130 years over which adequate mean temperature data exist, using actual data for the forcing processes. Unfortunately, of the four external forcing processes, it is now possible to estimate only three, with the solar variability remaining exclusively in the realm of speculation. Current guesses vary from assuming no solar variability, to assuming that solar variability is the main source of climate change, thus reducing the effects of all other processes, as advocated, for example, by the Marshall Institute Report. In the latter case, greenhouse warming would be relatively harmless.

Unfortunately, at the present time, any assumption made about past solar variations is as baseless as any other, since no hard information exists. Fortunately, our work has suggested a procedure, consisting of theoretical work and space measurements, for identifying and calibrating a proxy parameter for solar luminosity, namely the solar diameter, for which information exists for nearly three centuries. This information is certainly adequate to establish meaningful upper limits to the solar variability, and may in fact provide a real record of quality comparable to the other forcing processes.

The work has been supported by NASA for over the last decade. Besides steady progress on the theoretical side, we have designed and successfully test-flown the experiment (called the solar disk sextant) on a stratospheric balloon. Moreover, in recent months this experiment, proposed by an international team including members from Italy, France and the UK in addition to the US, has been pre-selected for two distinct flight opportunities on ESA space missions. However, just at this juncture, NASA has notified us that it will cease to fund the continuation of our work. Unless they change their decision, or we find another sponsor, this work will come to a halt, and the size of the solar forcing will remain a mystery for a long time to come.

We have already spent a large amount of time and energy, and NASA a considerable sum of money, in carrying out this program. The measure of its success to date is very high by any standard we wish to judge it. The data are very much needed. Stopping the program now would be a tremendous waste of resources, and poor planning.

I am sending this note to you to request some advice on how or where to seek the additional required funding. I would like to do this before having to disband the research team, and without missing any of the precious flight opportunities that ESA is offering, which does not leave a great deal of time.

Thank you for your help, and best regards.

Sincerely yours,

A handwritten signature in blue ink, appearing to read 'Sabatino'.

Sabatino Sofia

SS/sd



"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124832  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: CLARK, Bunny C.: OHIO STATE UNIVERSITY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/14/91

SUBJECT: RE: HER CONCERN OVER THE PROPOSED DOE BUDGET CUTS IN  
THE NUCLEAR PHYSICS RESEARCH PROGRAM.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

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SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

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REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/19/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:



Department of Physics

174 West 18th Avenue  
Columbus, OH 43210-1106  
Phone 614-292-5713

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91 NOV 19 A 9: 11

November 14, 1991

OSTP  
MAIL ROOM

Dr. D.A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Avenue  
Washington D.C., 20506

Dear Dr. Bromley:

During the recent meeting of the National Science Foundation Physics Advisory Committee, of which I am a new member, I learned of the crisis in funding for basic science at DOE. Dr. William Happer came to our meeting and explained the various budget scenarios under consideration at that time. A week later, at the Fall meeting of the Division of Nuclear Physics I learned that the Nuclear Science Advisory Committee (NSAC) had been charged with giving advice on Department of Energy budgets which would involve a 10% cut in FY1993 along with decreasing or low growth down year budgets. This appalling prospect causes me to write and ask for assistance in changing the course being taken regarding the funding of basic research at the DOE.

As you know the nuclear scientists from across the country came together in 1989, at the request of the NSF and DOE, to produce a long range plan for nuclear science. This long range plan is now only two years old. To change it at this point would, in my view, be a breach of trust. I realize that the DOE is suffering from the huge problems associated with environmental clean-up among other justifiably high priority tasks, but both the severity and the suddenness of the proposed cuts directed at nuclear physics will cause serious and perhaps irreparable damage to a significant and vital part of the US scientific enterprise. I am particularly concerned about the effects on our graduate programs. It is impossible to absorb cuts of the kind proposed without causing severe dislocations in the careers of young scientists.

Historically, the Department of Energy has played an important and special role in the development and support of nuclear science. This historical role is in grave danger of being destroyed. Surely we must not let this happen to the country.

Thank you for your attention to this crucial matter.

Sincerely,

Bunny C. Clark  
Member, NSF Physics Advisory  
Committee  
Professor of Physics  
Distinguished University Professor

cc: Admiral James Watkins, Secretary of Energy, Department of Energy  
Dr. Walter Massey, Director, National Science Foundation  
Dr. William Happer, Director of Energy Research, Department of Energy



"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124812  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: VARY, James P.: IOWA STATE UNIVERSITY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/13/91

SUBJECT: RE: THE PROPOSED DOE BUDGET CUTS FROM THE NUCLEAR  
PHYSICS PROGRAM FOR FY1993.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

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SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

\*\*\*\*\*  
COPIES TO: PHYSICAL SCIENCES  
D. Allan Bromley

\*\*\*\*\*  
WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/15/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:

IOWA STATE UNIVERSITY  
OF SCIENCE AND TECHNOLOGY

4812  
College of Liberal Arts and Sciences  
Department of Physics and Astronomy  
Ames, Iowa 50011-3160  
515 294-5440  
FAX 515 294-6027  
Bitnet: SL.PHY@ISUMVS

RECEIVED

91 NOV 15

A10:39

November 13, 1991

MAIL ROOM

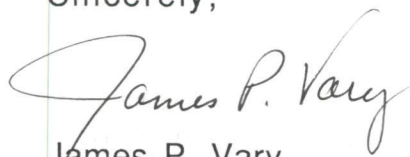
Dr. D.A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Ave.  
Washington DC, 20506

Dear Dr. Bromley:

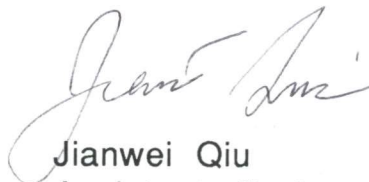
We are writing to appeal the Department of Energy's decision to cut 10% from the Nuclear Physics budget for FY1993. From what Dr. William Happer indicates, this decision is due to the fact that money is needed for the National Energy Strategy and Nuclear Physics is not part of that strategy. The logic here escapes us. It has long been claimed that funding for basic sciences at the Department of Energy, especially Nuclear and High Energy Physics, is a responsibility which it shoulders as a national trust. Is the Department of Energy abrogating its responsibility in the area of basic nuclear science? Surely, one of the nation's greatest needs is an excellent basic research enterprise which produces forefront science for the fountainhead of science and technology in the US. A sudden cut of this magnitude will put US basic nuclear science at serious risk.

While we acknowledge the financial constraints that our nation and the Department of Energy faces, we are most concerned that the Department of Energy's role as principal guardian of this national trust is being compromised.

Sincerely,



James P. Vary  
Professor



Jianwei Qiu  
Assistant Professor



"Document Control"

TYPE: INFORMATION

ORIGINATOR: 02

STATUS C

DOCUMENT NUMBER: 9124810

DIRECTORATE STATUS

\*\*\*\*\*

FROM: GLASHAUSSER, Charles: RUTGERS UNIVERSITY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/13/91

SUBJECT: A LETTER REGARDING THE PROPOSED CUTS IN NUCLEAR  
RESEARCH PROGRAMS BY THE DEPARTMENT OF ENERGY.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:

OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT: 2/3/92

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COPIES TO: PHYSICAL SCIENCES  
D. Allan Bromley

\*\*\*\*\*

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REMARKS: PHONE: EXT:

*KFE reported*

OSTP RECEIVED: 11/15/91  
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

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THE STATE UNIVERSITY OF NEW JERSEY

**RUTGERS**

4810  
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Department of Physics and Astronomy • P.O. Box 849 • Piscataway • New Jersey 08855-0849  
Telex: 703528 • FAX: 908/932-4343

91 NOV 15 A10:39

November 13, 1991

OSTP  
MAIL ROOM

Dr. D. A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Avenues  
Washington, D.C. 20506

Dear Dr. Bromley,

Two years ago, as a member of the Nuclear Science Advisory Committee, I played an important role in setting priorities for nuclear science in the nineties. We struggled to produce a responsible and cost-conscious plan for proceeding with construction of our highest priority new facilities while at the same time providing funds for continuing operation of current facilities with excellent science programs. With considerable help from our colleagues over the entire country, we produced the Long Range Plan document which we presented to the National Science Foundation and the Department of Energy in 1989. It has guided their allocation of funds ever since.

With the recent announcement that a ten percent cut in the DOE budget for nuclear physics in FY1993 was likely, and that budgets for future years were likely to be flat or even decreasing, our community feels gravely threatened. The assumptions of the Long Range Plan, arrived at after arduous discussions with agency representatives, would be grossly violated. Our students, graduate students and postdoctoral fellows, and our young faculty colleagues are particularly concerned, as a bright future turns suddenly bleak. While we recognize the serious fiscal problems now burdening the DOE, we believe it would be a serious mistake for the country at this time to undermine our basic research capability in such dramatic and destructive fashion.

To take a particular example, let me discuss the situation of the Los Alamos Meson Physics Facility (LAMPF) where much of the research of the Intermediate Energy Research Group here at Rutgers has been carried out over the last decade and more. This facility continues to have unique capabilities for nuclear reactions with protons and pions. New equipment brought into operation over the last several years or just now becoming operational (at a cost of many millions of dollars) is unmatched in the world. This equipment is just about over the testing stage and is now ready to be used. I, and my students, postdocs, faculty colleagues, and an international group of my collaborators, have long established plans, plans funded by our grants from the NSF and the DOE, to use this equipment for fundamental studies on spin in nuclei. Yet the budget cuts put LAMPF in imminent danger of closure. Fiscal constraints have already greatly reduced the yearly period during which the accelerator actually runs, and we have already been forced to carry out some of our experiments at foreign accelerators. Closure of LAMPF would mean that essentially all our experiments would take place at foreign laboratories, and some could not be done at all because the capabilities do not exist elsewhere.



This is true for a large number of intermediate energy nuclear physicists-- LAMPF is the major facility in this country and will remain important to us even after CEBAF, the new electron facility in Virginia, is in full operation, three or four years from now. It would be folly to close LAMPF now.

Over the years, nuclear physics has strongly contributed to the technological needs of our nation. Our students have proved highly skilled in a wide variety of demanding industrial occupations. The spinoff from our fundamental research has yielded numerous benefits to society. We feel that the DOE is losing sight of the importance of fundamental research because of the pressure of urgent immediate needs. Please help us maintain our Long Range Plan.

Yours truly,

A handwritten signature in cursive script, appearing to read "Charles".

Charles Glashausser  
Professor of Physics

CG:edr

# STAFFING SHEET

**EXTERNAL COORDINATION:** \_\_\_\_\_

|                 | COMMENTS | DATE |
|-----------------|----------|------|
| DIRECTOR        |          |      |
| GENERAL COUNSEL |          |      |
| EXEC. ASST.     |          |      |

**ACTION REQUESTED:** Jodylyn & Livi, these are the first of many "Love letters" I/DAB to sign. Just send back to me & I will take care of mailing. Thank, Priscilla x7269

[illegible]



THE WHITE HOUSE  
WASHINGTON

February 3, 1992

  
Dear Dr. Glashausser:

Thank you for your letter expressing concern over possible 10% budget reductions for DOE-supported particle and nuclear physics research. We at the Office of Science and Technology Policy (OSTP) shared this concern.

Dr. Karl Erb, OSTP Associate Director for Physical Sciences and Engineering, and I worked closely with DOE and the Office of Management and Budget to explore alternate funding priorities as we prepared the President's FY 1993 budget request. I am pleased that deep reductions in funding proved not to be necessary.

Our next challenge will be to convince Congress to appropriate the funds requested for R&D by the President. Your assistance in this could be pivotal, as Congress will face strong demands to shift funding away from research and into other activities.

Sincerely,



D. Allan Bromley  
The Assistant to the President  
for  
Science and Technology

cc: Karl A. Erb

Professor Charles Glashausser  
Department of Physics and Astronomy  
Rutgers University  
P.O. Box 849  
Piscataway, NJ 08855-0849

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124807  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: BARNES, Dennis: UNIVERSITY OF VIRGINIA

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/13/91

SUBJECT: A LETTER REGARDING SURAS PROPOSAL CONCERNING DOES  
BUDGET CUTS FOR NUCLEAR AND HIGH ENERGY PHYSICS  
PROGRAMS, AND DR. BROMLEY'S ADVICE AND COUNSEL.

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REMARKS: Any counsel that might be offered to Barnes would be welcome.

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November 13, 1991

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The Honorable D. Allan Bromley  
Assistant to the President  
for Science and Technology  
Office of Science and Technology  
Old Executive Office Building  
17th and Pennsylvania Avenue, N.W.  
Washington, D.C. 20500

Dear Allan,

It was a pleasure to see you again Monday night at the NASULGC dinner; your remarks and responses showed all of the insight and adroitness with which you wowed us during the informal preparation preceding your confirmation hearing.

As you observed to me, the CEBAF project seems to be in a comparatively stronger position than ever, in large measure a credit to the skill and commitment of Hermann and his colleagues. I have come to appreciate as never before these accomplishments since I assumed the SURA Vice-Presidency for CEBAF last June.

Your somber characterization of the general funding prospects for nuclear and high energy physics is well recognized by the SURA institutions. Even though CEBAF has fared well recently, we have serious reservations about the DOE's projections for instrumentation and operations of the facility; Wimberly Royster, the Chairman of the SURA Board of Trustees, has written to Dr. Happer about these concerns and requested an opportunity to meet with him soon. You might find the attached letter of interest, and any counsel that you can offer would be very welcome.

SURA President Bill Wallenmeyer wrote you on September 23, 1991, about another SURA research interest, global climate change, and of the difficulties that the Association has encountered in pursuing funding through the established review processes of the agencies. I have heard that the letter may have been interpreted in your office as a funding proposal to the

CEES. If the report is accurate there is a misunderstanding. Bill is really seeking your insight and counsel on getting the SURA proposal fairly considered by the agencies within the intentions of the CEES for the U.S. global change research program.

These are times to test the endurance of even the most energetic and enlightened, and we are reassured by your presence at the helm.

Sincerely,



Dennis W. Barnes,  
SURA Vice President for CEBAF

cc: Dr. Royster  
Dr. Wallenmeyer  
Dr. Grunder



# SURA

SOUTHEASTERN UNIVERSITIES RESEARCH ASSOCIATION, INC.

1709 NEW YORK AVENUE, N.W., SUITE 320

WASHINGTON, D.C. 20006

(202) 347-2810

November 7, 1991

Dr. William Happer  
Director  
Office of Energy Research  
U.S. Department of Energy  
ER-1, 7B-058/FORS  
Washington, DC 20585

Dear Dr. Happer:

On behalf of SURA, I want to thank you for your very candid and thoughtful remarks at the recent Council of Presidents' luncheon. Your comments about CEBAF's status and progress were especially appreciated. For myself, I very much enjoyed meeting you and our discussions during lunch.

We understand very well that a concerted effort by the U.S. R&D communities and the federal agencies is the only effective way to remedy the serious situation in which we find ourselves with respect to the outyear budgets for energy research. We applaud your efforts to find solutions to preserve the best scientific projects and to maintain a strong university basic research program.

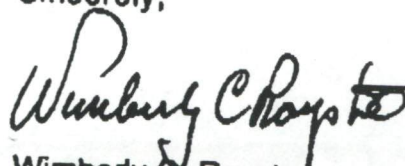
I would like to alert you to the two remaining issues with respect to the CEBAF Project. First, funding for major components of the experimental equipment [including the CEBAF Large Acceptance Spectrometer (CLAS)] is not in the TPC. Furthermore, there is no budget profile guidance for this funding, even though the contract for the CLAS large toroidal magnet was let nine months ago. NSAC has reviewed and endorsed CEBAF's experimental equipment plan, and DOE approved it in June 1990. The lack of budget guidance presents obvious difficulties for CEBAF managers: SURA is especially concerned about the 125 collaborators involved in building this equipment. Of equal concern is the loss of credibility for SURA and the DOE vis-a-vis the commitment of the Italian government (INFN) of \$10M of in-kind contributions to CLAS.

The second issue is the projection for CEBAF's steady state operating costs including the support for the users, minor capital improvements, and the research activities of CEBAF physicists who develop and bring the detectors into operation. We believe that DOE's current projections may be as much as \$20M below our estimate of \$65M (96\$) [REF: Construction Project Data Sheet, Item 12]. The steady state operating budget has been reviewed by a SURA sponsored external review panel over a year ago, and the results of the review have been communicated to the DOE.

I am bringing these issues to you because we have been unable to bring these issues to successful resolution with the staff of the DOE program office. I fully appreciate the complexity and sensitivity of the challenges you face-as evidenced by recent discussions of the SEAB Task Force. In comparison with some of these issues, SURA's/CEBAF's concerns cannot be at the top of your list. However, as Chairman of the SURA Board of Trustees I would like to meet with you at your earliest convenience to be certain that you are fully informed on the unresolved CEBAF issues.

Please be assured that SURA will continue to support your efforts to provide leadership and rationality in the difficult area of establishing scientific research priorities. Thank you again for speaking at the SURA Council of Presidents' luncheon.

Sincerely,



Wimberly C. Royster  
Chairman, Board of Trustees

cc: Dennis W. Barnes, Vice President for CEBAF  
K. Dean Helms, DOE Site Office Manager, CEBAF  
Hermann A. Grunder, Director, CEBAF



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TYPE: INFORMATION DOCUMENT NUMBER: 9124838  
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FROM: WOLFE, David M.: UNIVERSITY OF NEW MEXICO

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/12/91

SUBJECT: RE: HIS CONCERN OVER THE PROPOSED CUTS IN THE DOE  
NUCLEAR PHYSICS PROGRAMS.

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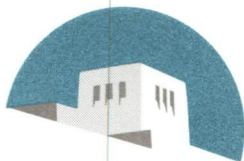
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12 November, 1991

**The University of New Mexico**

Department of Physics and Astronomy  
Albuquerque, NM 87131-1156  
(505) 277-2616  
FAX (505) 277-1520  
e-mail: panda8@carina.unm.edu

Dr. D.A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building, Room 360  
17th and Pennsylvania Avenues  
Washington DC 20506

Dear Dr. Bromley:

I am the Chairman of the Department of Physics and Astronomy and a co-PI on a Grant from the Department of Energy, Division of Medium Energy and Nuclear Physics. In both positions I find myself at the bottom of the "financial totem pole". Our University is operating under a very tight budget ceiling and is undergoing a Reallocation procedure. Thus, the Provost cuts funds to the College of Arts & Sciences, that Dean then cuts funds to the departments, and the buck stops here. There is a great deal of pain associated with these cuts, with the loss of educational and research opportunities by students, staff, and faculty. The same happens with my research grant. The DOE makes cuts, this proceeds down the line... and the PI's have to make do with the net result. That result is loss of research, isolation from the scientific community, loss of students and thus the next generation of scientists, loss of knowledge. This too is terribly painful.

I am informed that the Nuclear Science program at DOE is faced with the possibility of draconian cuts in its research budget. This will have great repercussions in an entire branch of science. Already our group has been unable to support work in both hadron physics and heavy ion physics. This is directly due to budget pressure. The uncertainty in the budget makes the future of LAMPF, of the AGS, and even of KAON look very dim. We are facing a future with the possibility of no hadron physics program at these energies. This is a future which will drive people from the field entirely. The end result of such a policy cannot be healthy for our country. I urge you to help ensure the future of our field!.

Yours truly,

David M Wolfe  
Chairman

xc: Dr. William Happer, DOE  
Prof. C.H. Townes, UCB



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TYPE: INFORMATION

DOCUMENT NUMBER: 9124758

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FROM: HECKER, S.S.: LOS ALAMOS NATIONAL LABORATORY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/12/91

SUBJECT: HE IS PROVIDING DR. BROMLEY WITH A COPY OF HIS  
WRITTEN STATEMENT BEFORE CONGRESS REGARDING THE  
CRITICAL ROLE LOS ALAMOS HAS PLAYED IN HIGH  
PERFORMANCE COMPUTING.

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Los Alamos National Laboratory  
of the University of California

Los Alamos, New Mexico 87545

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November 12, 1991

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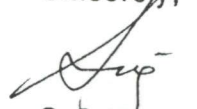
The Honorable D. Allan Bromley  
Science Advisor to the President and  
Director of the Office of Science &  
Technology Policy  
The Old Executive Office Building  
17th Street and Pennsylvania Avenue, NW  
Washington, DC 20506

Dear Dr. Bromley:

I am delighted that you will be able to attend the Supercomputing '91 Conference in Albuquerque on November 19. Your presentation on the national HPCCI should be most timely. As you know Los Alamos has played a critical role in high-performance computing for almost 5 decades. We continue to have a keen interest. I am enclosing a copy of my written statement at a congressional hearing earlier this year plus a concept paper related to the Computer Systems Policy Project (CSPP). I hope you find our ideas interesting.

I look forward to having dinner with you on Monday, Nov. 18. I am also enclosing a copy of a very recent testimony on civilian research and development at Los Alamos. I hope we can discuss some of the topics raised next Monday.

Sincerely,

  
S. S. Hecker  
Director

SSH:dl

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Cy: CRM-4, A150  
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COMMENTS ON  
THE DEPARTMENT OF ENERGY  
HIGH-PERFORMANCE COMPUTING ACT OF 1991 (S. 343)

PREPARED FOR THE ENERGY RESEARCH AND DEVELOPMENT SUBCOMMITTEE  
OF THE  
SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

SIEGFRIED S. HECKER  
DIRECTOR  
LOS ALAMOS NATIONAL LABORATORY

APRIL 11, 1991

Executive Summary

High-performance computing (HPC) is a critical strategic technology vital to the long-term scientific and economic leadership of the United States. The Department of Energy (DOE) and its laboratories have played an important role in developing high-performance computing because of the need to solve complex computational problems stemming from demanding DOE applications. This experience places the DOE laboratories in an excellent position to help keep the United States at the leading edge of computing.

The pervasive importance and dynamic nature of the computing field suggests that DOE's overall response should be integrated within a larger, coordinated Federal government effort. A special feature, if not the focal point of the DOE initiative, should be the establishment and support of a few centers of excellence that shape the frontiers of this strategic technology. The centers should feature extensive interactions between computing manufacturers and center researchers who define and develop the computational environment for future demanding applications. At the Los Alamos National Laboratory, we have performed this role historically. Recent experience with our Advanced Computing Laboratory demonstrates that we continue to play this role today in the application of massively parallel machines. Featuring early production high-performance computers, the centers of excellence would build the computational environment essential to the advancement of the state of the art in problem solving. Such an environment includes: massive data storage and retrieval, ultrahigh-speed graphics, advanced numerical algorithms, software, networks and interfaces, and user-friendly terminals. The latest innovations will be incorporated not only through the computer manufacturer interface, but also via close ties with academia.

A second major feature of the centers should be the dissemination of this problem-solving capability to a greater fraction of society. To compete with and complement the increasing power of stand-alone (personal) computers, the interface between the user and the high-performance environment must be made as transparent as possible; that is, it should be accessible with the touch of a mouse. The most important element of the expanded user community has to be U.S. industry, but it should be followed by businesses, schools, local communities, and eventually households.

The centers of excellence should be collaborative (with universities and industry as noted) and they should be distributed, comprised of a lead institution, several principal participants, and a number of affiliated organizations. Finally, because of the rapidly changing environment, the DOE should have maximum flexibility in establishing and adapting the centers to changing times and requirements.



I will discuss three matters in my remarks today. First, I will review some of the reasons why I support the concept of a coordinated national effort in high-performance computing (HPC). Second, as an example of the important role that the Department of Energy (DOE) and its national laboratories are already playing in HPC, I will review the HPC efforts at Los Alamos National Laboratory. Finally, I will suggest how the DOE role in a coordinated national effort can be enhanced.

### The Need for a National High-Performance Computing Initiative

I believe that there is no end in sight to the revolution we call the computer age. Better performance will enable scientists and engineers to solve increasingly complex problems. High-performance computing has yet to make its greatest impact on business, industry, and on our everyday lives.

The technology supporting high-performance computing has grown rapidly. Over the past forty years, some applications have enjoyed an increase in computing speed of ten billion, or ten orders of magnitude. This increase has come in almost equal parts from advances in computer hardware and from more sophisticated software and numerical algorithms. In the past few years, it has become increasingly apparent that new algorithms and massively parallel computer architectures offer the greatest potential for dramatic performance improvements. With increased speed has come the recognition of other significant requirements for large-scale computing:

- Real-time visualization,
- High-speed networking to provide convenient and powerful computing capability at your desk,
- Software tools to facilitate writing sophisticated scientific computer programs,
- High-performance data storage, retrieval, and analysis.

In testimony before this Committee last year and in response to follow-up questions for the record, I argued that high-performance computing is a critical strategic technology that contributes to U.S. military and economic strength and benefits the quality of life, and, therefore, is of such pervasive importance to the United States as to demand continued strong leadership. Such leadership, I stressed, could only be maintained with enhanced funding levels and greater interagency coordination. I emphasized the critical need to establish a few centers of excellence (which I called Collaborative R&D Centers) in HPC that keep the United States at the leading edge of high performance computing. Such centers would meld the experience and expertise resident at DOE laboratories with that at universities and U.S. industry. The centers would be an excellent vehicle to help provide more useful supercomputing capability to a greater fraction of our society. This approach is in general agreement with the Federal High-Performance Computing and Communications (HPCC) Program and S. 343.

As pointed out in S. 343, the DOE is an agency with great depth of knowledge in and dependence upon all aspects of high-performance computing and communications. HPC is, however, such a fast moving, technically demanding, and broad field that no single agency should be expected to play the lead role. Indeed, substantial progress in this field requires the coordinated efforts of several government agencies, agencies that have both extensive HPC experience as well as mission-specific computing requirements.

It is most important that high-performance computing requirements be driven by applications. Such applications include the demanding requirements of U.S. industry and the mission requirements of Federal agencies. (For example, the challenging problem of nuclear weapons design has driven and defined HPC requirements for decades.)



Among the most demanding applications today are the "Grand Challenge" problems. These consist of fundamental problems whose solution is critical to national needs and include: modeling of global climate-change; understanding turbulence, pollution dispersal and combustion; designing new molecules, pharmaceuticals, and materials; determining molecular, atomic and nuclear structure; mapping the human genome and understanding biological structure; etc. Tackling these applications requires the most advanced computational and communications resources - a high-performance computational environment that must be continually updated to include a combination of the most powerful number-crunching capabilities, rapid and efficient data storage and retrieval, visualization and analysis techniques, and high-speed networks.

An interagency format is appropriate for this program because each agency has its own particular areas of focus, interest, and strength. For example, the National Science Foundation continues to support very innovative basic research in computational science and computing concepts. The Defense Advanced Research Projects Agency (DARPA) has helped to pioneer new hardware and software for massively parallel processing. The Department of Energy and NASA have been instrumental in using the latest generation high-performance computers to solve demanding mission-oriented problems. The DOE, through several of its laboratories, has been instrumental in developing a high-performance computing environment that makes this possible. An important part of that environment is a high-speed network - DOE's Energy Sciences Network (ESNET), which connects its laboratories with universities across the nation.

The DOE has mission-oriented needs which will require multigigabit per second single-application access to a national network. In contrast, the National Science Foundation is interested in supporting a broader user community but at much lower individual rates. Consequently, a national network will have to address a variety of requirements and users. Therefore, this capability must be planned, implemented, and managed in the national interest as a cooperative venture, rather than by any one particular agency.

Increased U.S. industrial competitiveness must be a fundamental goal of any national-level effort in HPC. This is an explicitly stated goal of the Federal HPCC program and, in my opinion, should also be specifically mentioned in S. 343. The current business climate does not encourage corporate America to invest sufficiently in enabling technologies for which the payoff is long term and less immediately oriented toward marketable products. For the United States to continue to hold a primary position in the international economic community, it will be important to develop a forward-looking strategy with respect to the use of computers for research, for advanced simulations, and for engineering design. We believe that the S. 343 concept of national centers of excellence will provide an excellent vehicle for working with industry in demonstrating the value of modern computational resources, developing desired industrial expertise, and providing appropriate technology for solving industrial applied problems.

### Los Alamos Role In HPC

Supercomputing originated with the "Los Alamos problem," as predicting the performance of the first atomic bomb was called during the Manhattan Project. We actually designed and built one of the world's first large-scale electronic computers, the MANIAC. Over the past 40 years, we have worked with leading supercomputer manufacturers - including IBM, Control Data Corporation, Cray Research, Inc. (CRI), and most recently Thinking Machines Corporation (TMC).

Our role has been that of a sophisticated user with the goal of maximizing the productivity of the individual. In that capacity, we often develop new software and algorithms to solve



complex problems. And occasionally we even develop new hardware.

In 1976 Seymour Cray brought his first Cray-1 to Los Alamos without software and with no operating system. We helped him bring it on line for large-scale problems. At last year's hearing, John Rollwagen, Chairman and CEO of Cray Research Inc., put the role of DOE and Los Alamos in perspective with his comment, "Cray would not exist if it were not for DOE and Los Alamos."

Today, Los Alamos is the most powerful scientific computing center in the world with the equivalent Cray power of about 50 of the original Cray-1 computers plus the two largest Connection Machines ever produced, serving more than 8,000 users throughout the nation via a national computing network. But it is our own computationally intensive applications, starting with the complexity of designing nuclear weapons and now including a wide range of programs critical to emerging national and global challenges such as energy, environmental, and economic concerns, that require us to remain at the leading edge of computing technology.

#### Recent Progress at Los Alamos - The Advanced Computing Laboratory

In 1988, Los Alamos established the Advanced Computing Laboratory (ACL). It has been a catalyst for leading-edge research in the technologies that comprise an HPC environment. The current focus is on demanding applications using the second-generation Thinking Machine Corporation's (TMC) Connection Machine which has 65,536 processors, 8 gigabytes of memory, 4 frame buffers and monitors, a high-performance parallel interface (HIPPI), and a 20-gigabyte data storage system.

Over the past two years Los Alamos and TMC have demonstrated that many of today's greatest computational challenges can be met with the massively parallel processing approach afforded by the Connection Machine. Los Alamos researchers are now routinely solving scientific and technological problems beyond our reach just a year or two ago. A few examples follow.

Novel numerical algorithms have been developed at Los Alamos which are almost perfectly suited for the massively parallel architecture of the CM-2. For the first time anywhere, using the synergism of computing resources and the resident expertise at Los Alamos in computer science and mathematics, we have been able to successfully simulate very complex, small-scale fluid flow through porous media such as sandstone and other oil-bearing rock.

Today, Mobil, Chevron, and Amoco are working with us in research collaborations using this computational technology to interpret experimental data gathered to enhance oil recovery. In a recent letter, E.W. Jones, President of Chevron Oil Field Research Company, complemented the effort by stating:

"Through our interaction with LANL's researchers, the Advanced Computing Laboratory, and the Numerical Computing Laboratory, we were able to successfully test run a reservoir simulation model with over two million grid points using LANL's Connection Machine recently. This size of reservoir model is about two orders of magnitude larger than those typically used in the oil industry. With this new capability, we will greatly improve the geologic definition of the reservoir models, which recent research has shown to be vital in predicting reservoir performance."

In the area of global climate change and in collaboration with the National Center for Atmospheric Research and the Naval Postgraduate School, Los Alamos has developed a global ocean model significantly more accurate than previous models. The significance is that



scientists are now realizing the greater importance of ocean flows and ocean eddy currents to the overall global climate system. Again, this model was an outgrowth of the combination of theoretical expertise in oceanography and expertise in using the attributes of the massively parallel Connection Machine; this effort resulted in the first implementation of a global ocean circulation model on a massively parallel computer. It is only with the parallel architecture of the Connection Machine and its large memory that this more accurate model was possible.

Los Alamos is also actively involved in global change studies with other University of California institutions. The main thrust of this project is to perform research contributing to the development of an advanced, coupled atmosphere-ocean climate model that takes advantage of high-performance computing. To date, this work has been done principally on our top-of-the-line Cray Y/MPs. The project is a three-way collaboration with Los Alamos, the Scripps Institution of Oceanography, and the Lawrence Livermore National Laboratory; the project has been expanded to include all nine of the University of California campuses - a fact which reflects both the success of the project and the increasing interest in global climate change. Graduate and postdoctoral students play a significant role in this research.

Assuring the safety of the nation's nuclear stockpile is one of the key responsibilities of the DOE nuclear weapons program. Fulfilling this responsibility requires the extensive use of computer modeling to simulate the behavior of nuclear weapons components in possible accident environments. The complexity of such scenarios, involving difficult three-dimensional geometries, complicated physical phenomena, and great sensitivity to small changes, has always placed extreme demands on available simulation capability. Recent advances in parallel computer architectures and the development of innovative numerical techniques have now provided a new level of capability for three-dimensional simulations of nuclear weapons safety issues. A most important component to this capability has been the expertise of Los Alamos scientists in the development of the free-Lagrange hydrodynamics method and its implementation on the Connection Machine.

These examples demonstrate our continuing role in shaping the leading edge in high-performance computing applications. Adding his support is Danny Hillis, Founding Scientist of TMC, who in recognizing the continuing critical role played by Los Alamos asserts: "Los Alamos has, by taking a leadership role in the application of parallel supercomputers, proved to the scientific community that the Thinking Machines approach to high performance computing is applicable to a wide variety of real world applications."

But supercomputers themselves do not represent the only area in which Los Alamos has close ties to the computing industry. The High-Performance Parallel Interface (HIPPI) was conceived and designed at Los Alamos to satisfy our requirements for very high-speed networking, including communications between supercomputers and real-time visualization of scientific computations. This innovation is becoming an industry standard, with more than sixty computing vendors showing interest; almost two dozen different manufacturers are already building HIPPI-based equipment. These include CRI, IBM, TMC, Ultra Network Technologies, Network Systems Corporation, IPITEK, and Broadband Communications Products.

The recent developments discussed above allow large amounts of data (for example, the results of a computer simulation) to be transferred through a network in a reasonable time. However, an obstacle that still remains in supporting grand-challenge applications is to provide data storage capabilities that allow the massive amount of data generated to be stored in a timely and reliable manner, and that allow the data to be easily retrieved for analysis and display. Such a high-performance data system will be the successor to the Common File System, a Los Alamos designed and implemented system now marketed by General Atomic. Even as efficient, fast, and successful as the Common File System is, some current applications generate so much data that it can take several hours just to store the data plus several more hours to retrieve it



for use in another calculation. IBM will be a major industrial collaborator in this new project.

Progress was also made in several of the other objectives for centers of excellence. Los Alamos continues to work closely with universities to bring the latest innovations to bear on solving demanding computational problems. We are proud to be a part of the NSF Science and Technology Center for Research on Parallel Computation. Charter members are Rice University (lead), Caltech, Los Alamos, and Argonne. The Center's goal, to make parallel computation truly usable, and the Los Alamos goals for HPC are truly synergistic. Our participation in this collaboration provides the Laboratory with access to innovative software to incorporate in our high-performance computing environment and provides the Center with a unique, full-scale testbed for the tools developed as part of that research effort.

Last year I proposed that centers of excellence sponsor graduate research assistantships in computational science to increase support for students in this important field. The Scientific Computing Staff at DOE has just established such a Computational Science Graduate Fellowship Program through Oak Ridge Associated Universities. The response has been overwhelming with 400 applicants for the 22 positions created in FY91.

Last year's hearing highlighted the need for greater utilization of HPC by U.S. industry. This theme was echoed in the Frontiers in Supercomputing II Conference (held in Los Alamos in August 1990 and cosponsored by Los Alamos, the National Security Agency, DOE, NASA, NSF, and DARPA).

We at Los Alamos have launched several initiatives to enhance industrial participation. In November 1990, Los Alamos and Cray Research Incorporated jointly sponsored a two-day applications symposium. The main purpose of this workshop was to develop a broad-spectrum collaboration between the two organizations. Five initial collaborative projects of interest to both parties have resulted to date:

- Automotive engine combustion code development
- Integrated simulation tool
- High-resolution global climate modeling
- Computational chemistry
- Computational electromagnetics in ultra high-speed electronics design

Nine additional areas of potential collaboration have been identified. In addition, cooperative projects have been initiated with CRI in advanced networking, massively parallel processors, and supercomputing education.

We propose to use this basic approach, suitably modified for each interaction, to generate broad collaborations between Los Alamos and industry. For example, together with a researcher from DuPont who is working in our Advanced Computing Laboratory for two years, we have been actively pursuing a DuPont/Los Alamos symposium. A host of other industrial collaborations is also being pursued.

Educational outreach is a most important aspect of bringing useful high-performance computing to a greater fraction of society. Last year Los Alamos, Sandia, New Mexico Technet and several private sector companies initiated a special experiment we call the New Mexico Supercomputing Challenge. This is an academic-year long competition that provides teams of high school students throughout New Mexico with the opportunity to become involved in computational science projects using high-performance computers. The purpose of this Challenge is to expose students and teachers to the tools and mechanisms to solve difficult problems typically not possible in high school classes. The enthusiastic response from New Mexico schools - 235 students and 55 teachers in 65 teams from 40 schools in the first



Challenge alone – demonstrates significant interest, motivation, and untapped potential for science education at the high school level. We would like to expand this program under the aegis of the Federal HPCC program to other states next year.

### Potential for an Enhanced DOE Role

The future computing environment will continue to evolve in unforeseen ways in response to new requirements and opportunities. The Federal HPCC initiative correctly points out that many Federal agencies must contribute and that their efforts must be coordinated with U.S. industry, universities, and national laboratories. I will concentrate only on a potential DOE role since that is the focus of S. 343.

The DOE continues to require the application of leading-edge high-performance computing for its mission requirements in defense, energy, environment, and basic research along with grand-challenge scientific problems. Consequently, I believe that the DOE's principal focus should be to help *shape the leading edge of high-performance computing*. As already pointed out, Los Alamos has always played a strong role in this area. We have accomplished this in the past almost entirely with the financial support of the nuclear weapons program. That is no longer appropriate, nor possible today, since our contributions now cover a much broader spectrum, ranging from the human genome project to enhanced oil recovery.

In addition, the DOE can contribute significantly to putting a more useful computing capability into the hands of U.S. business, industry, and a broader segment of society. A computing environment that is friendly and available to large segments of our population would likely change the entire fabric of American life. Business decisions and operations already depend largely on computing, but complete connectivity and access to national data bases with powerful computers and high-speed networks would increase their productivity and hence the nation's international competitiveness. Access to data bases could influence daily decisions that vary from health care and diagnosis to automobile repair. The DOE laboratories have developed an extremely productive collaborative relationship with U.S. computing manufacturers that would serve as a starting point. In addition, they have also established a groundwork of educational initiatives that reach out to students early in their careers.

### Recommendation

Both of these objectives are incorporated into the concept that I presented to this committee last year, the Collaborative Research and Development Centers for HPC. Similar "centers of excellence" are featured in the Federal HPCC program and referred to as High-Performance Computing Research Centers. I remain convinced that "centers of excellence" for HPC should be the cornerstone of the DOE's response to the Federal initiative. The Department should also support the science associated with grand-challenge problems and bring greater computing capabilities to all of its researchers through advances in hardware, software, and networks.

#### The Centers Concept

Centers of excellence at DOE laboratories would continue to shape the leading edge of computing and promote greater access to useful HPC capabilities. The objectives of the centers should be to:

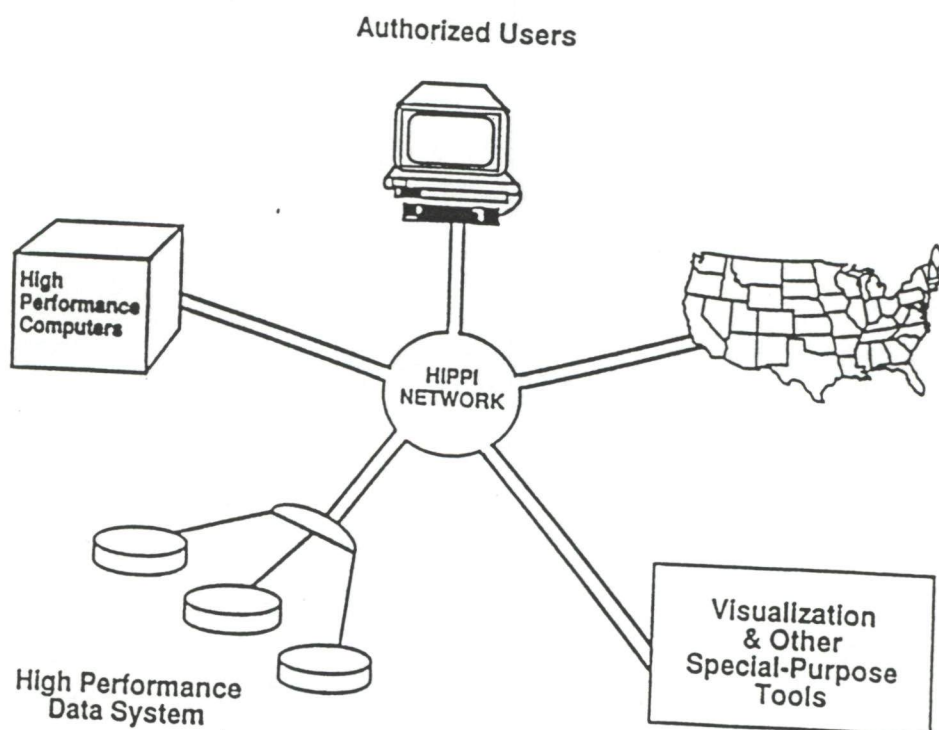
1. Collaborate with computing manufacturers to develop the high-performance computing environment of the future (including high-speed communications and protocols) by solving demanding grand-challenge problems;

2. Collaborate with academia to continue to bring the latest innovations into this environment and to offer a training ground for students;
3. Develop an industrial user program to encourage greater use of HPC capabilities for industrial design, manufacturing, process enhancement, and business applications;
4. Develop a general user program designed to provide user-friendly computing through networks to local communities for business, secondary schools, and universities; and
5. Develop enabling technologies for high-performance computing in conjunction with U.S. industry and with other Federal agencies such as DARPA.

#### DOE Centers of Excellence for HPC

The accomplishments at Los Alamos this past year demonstrate that the Advanced Computing Laboratory can serve as a model for DOE centers of excellence. The principal focus of the centers of excellence should be to keep the United States at the leading edge to solve increasingly demanding problems of science and technology. This can be best accomplished through extensive interactions with computing manufacturers and by solving grand-challenge and other demanding mission-oriented problems. Solutions to these problems continue to demand a computational environment considerably beyond the capabilities that exist today.

In the future, we envision a high-performance computing environment that distributes the individual components, including massive computing capabilities; systems and applications software developed for specific architectures; data systems that enable the storage, retrieval and analysis of staggering amounts of data, all tied together with a high-speed network. These pieces will be integrated into a single, logical environment that permits the researcher to easily manage the problem across the disparate elements. The basic components of this environment are shown in the figure below.





The high cost of the next-generation hardware and the extensive people resources required will dictate that only a few such centers of excellence continue to define the leading edge. The centers would not only continue to push the frontiers of this computational environment by incorporating the latest hardware or advances in software, but also make the interface between the user and this environment as seamless or transparent as possible. A goal should be to make the power of a supercomputer accessible through the touch of a mouse on a desktop. This way, high-performance systems will continue to provide a high-end alternative to increasingly powerful stand-alone (personal) computers.

Developing the computation environment of the future will require effort on all five objectives listed above for centers of excellence. However, effort should be focused immediately on the first objective: collaborating with computer manufacturers to develop the HPC environment of the future by solving demanding grand-challenge and mission-oriented problems. As we pointed out last year, this will require:

- Challenging computer performance and computing tools with demanding applications.
- Identifying requirements for suppliers and inventors.
- Testing this new computational environment, integrating new architectures, software, and visualization.
- Developing software, hardware, algorithms, etc., in collaboration with high-performance computing manufacturers.
- Helping develop and test new distributed networking systems.
- Disseminating knowledge and experience gained to others.

I believe that the centers of excellence will be most effective as collaborative and distributed centers comprised of a lead institution, several principal participants, and a number of affiliated organizations; a center of excellence is in effect a team of several organizations. While individual sites will make important contributions, the geographically distributed nature of the national computing resource must be key in the organization of the center itself. Thus, high-end use of networking and other technologies by a center of excellence to effect distributed computing will play an important role in the broader goal of developing efficient and distributed massively-parallel computing over a large geographical area.

Centers should be established at a few leading institutions, those that currently have outstanding computing facilities, significant grand-challenge and mission-oriented problem-solving programs, and track-records of working successfully with computing manufacturers as well as U.S. industry, in general. Since computational science is such a rapidly moving field it would be wise to provide the DOE with the maximum flexibility in establishing and operating its centers.

Thank you for the opportunity to share my views on the future of high-performance computing and the role that DOE and its laboratories can play.

# COMPUTER SYSTEMS INDUSTRY INITIATIVE (CSII) A CONCEPT PAPER

Los Alamos National Laboratory  
August 23, 1991

## The Initiative:

A major collaboration between the DOE laboratories and the computer systems industry to develop new hardware, software, and networking capabilities for U.S. industry.

## Background:

The Computer Systems Policy Project (a group of CEOs from 11 computer systems companies) identified the federal laboratories as an underutilized resource for collaboration in computer systems R&D. Through interactions with OMB (Richard Darman), the CSPP targeted the DOE laboratories to explore collaboration. Following a six-month study, the CSPP decided on June 7, 1991, to pursue formal collaboration with the DOE and its laboratories.

The DOE has developed an action plan for its part of the Federal High-Performance Computing and Communications Initiative (HPCCI) in conjunction with the FCCSET interagency process. The DOE plan is aimed principally at its laboratories and universities, although it encourages interaction with industry.

## Industry Collaboration:

### Technical Aspects

The range of potential scientific and technical collaborations is very broad – it encompasses hardware, software, and networking. The following provide a few examples of important potential laboratory/industry collaboration (some of which are already under way):

- High-performance network communications
- Data storage and retrieval technology
- Computer security
- Software and applications technology
- Microelectronics and ultrashort wavelength photolithography
- Advanced materials and manufacturing processes
- Human interfaces and visualization

### Business Arrangements

Design the business interface to be a CRADA mechanism patterned after the 1989 NCTTA. Establish a DOE/Laboratories working group to develop with CSPP model CRADAs and model Joint Work Statements that respond to the needs of the industry. The objective should be to cut the red tape and time required for one or more companies to complete CRADAs with one or more



### Funding

laboratories. Intellectual property rights issues and information protection should be handled similarly.

The computer systems industry initiative CRADAs must be funded. The DOE should seek major increments to its HPCCI program or a complementary program to fund the DOE laboratories to participate with computer systems industry partners (and not limited to just CSPP members).

Right now, there is considerable confusion and uncertainty about CRADA funding. Many in OMB and DOE expect funding to occur as spin-offs from existing programs. However, to make a significant impact in computing systems R&D, CRADAs will need significant funding support.

The CSPP effort will have a very high visibility. It has strong backing at the highest levels of government and industry. Furthermore, some of the DOE laboratories have a lot to offer since high-performance computing, modeling, electronics, and materials are among their core competencies. Hence, we propose that DOE launch a large – say \$30 million – effort in this area for FY1993. It could be an initiative of the Secretary of Energy, OMB, and the CSPP.

This initiative would supplement the currently planned DOE effort in the HPCCI planned for FY1993 which is aimed more in the direction of computing applications to grand challenge problems as well as developing the computational environment of the future.

### Management:

The DOE would manage the federal portion of the initiative. We believe that it would be managed best by an aggressive program management office that has a strong technology transfer charter – either in the Office of Energy Research or Defense Programs.

This initiative should augment and not be in place of the current plans that DOE has as its part of the national HPCCI.

DOE Headquarters must play a strong role in helping to clear the hurdles for the computer systems industry to develop a clean business interface with the laboratories. This includes helping to develop the "model" joint work statements and "model" CRADAs. The actual implementation of CRADAs with the laboratories should be accomplished at the DOE field offices to provide the most expeditious process possible.

CRADAs should be developed on a "free market basis." Industry should be encouraged to work with whatever DOE

laboratories have the necessary expertise and attitude. An industrial advisory committee should help DOE to set up proper selection criteria and processes. Such an advisory committee should also periodically assess the quality and direction of the program.

The bottom line should be – no industrial partner, no funding. We would advise allowing for a sliding scale of industry cost sharing. Overall, the goal should be 50 percent. However, some of the higher-risk research, especially with small companies, may require greater government support at the outset. As the ideas move closer to market realization, the industry share should increase.

Pre-CRADA funding would also be desirable in some cases to develop Laboratory ideas sufficiently to determine if there is industrial interest. This could be accomplished through a competitive program run by the DOE program manager (the funds would be taken from the overall CSII). Or laboratories with operational CRADAs could be allowed to use a small fraction of their CRADA funds for this type of pre-CRADA technology maturation effort.

#### Benefits:

The CSII proposed here would provide significant incentive to encourage the computer systems industry to leverage their research expenditures with the large investment the federal government is making in computation research at the DOE laboratories.

Such collaborations could help make the U.S. computer systems industry more competitive in the international marketplace. This initiative should also accomplish a stated CSPP goal: to increase the federal investment in computer systems R&D.

The initiative would help some of the DOE laboratories retain one of their most critical core technologies – high-performance computing and modeling, which, in turn, would have great benefits for their federal missions in defense, energy, and basic research.

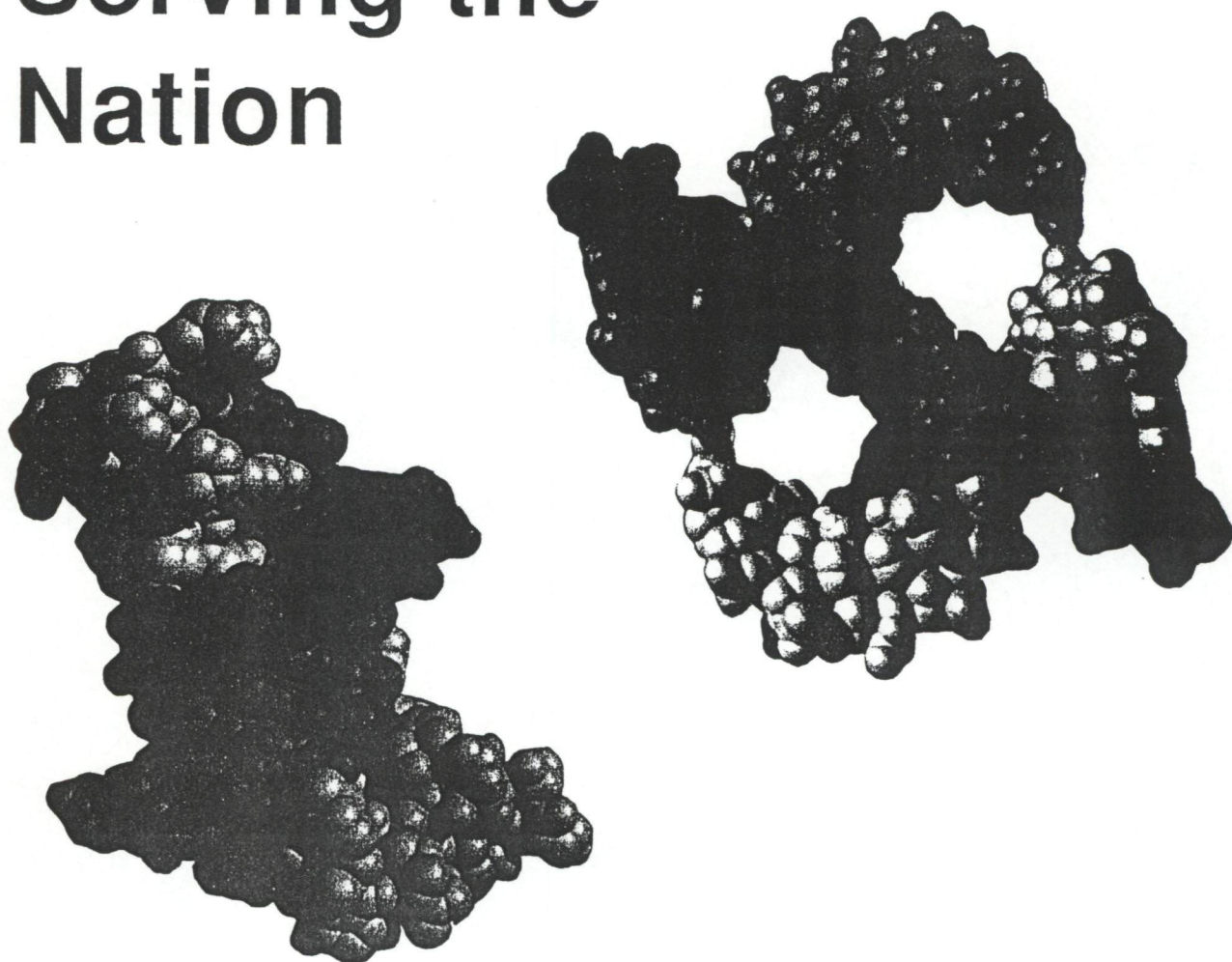


LA-UR-91-3350

October 1991

Los Alamos:

**Science  
Serving the  
Nation**



October 1991

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124829  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: DIETERLE, Byron D.: UNIVERSITY OF NEW MEXICO

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/12/91

SUBJECT: RE: HIS CONCERN OVER THE PROPOSED DOE CUTS IN THE  
NUCLEAR SCIENCE BUDGET.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

\*\*\*\*\*  
COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES  
INTERNATIONAL/POLICY

\*\*\*\*\*  
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REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/19/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:





The University of New Mexico

Department of Physics and Astronomy  
Albuquerque, NM 87131-1156  
(505) 277-2616  
FAX (505) 277-1520  
e-mail: panda8@carina.unm.edu

4829  
RECEIVED

91 NOV 19 A 9:10

OSTP  
MAIL ROOM

November 12, 1991

Dr. D. A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Ave.  
Washington, DC 20506

Dear Sir:

A DOE cut of 10% in the Nuclear Science budget will be disastrous for the future of cutting edge research. At our university the effects will be felt immediately and irreversibly. Our budget (already bare bones) will be eliminated and students will go away and courses will not be taught in the discipline. Younger physicists at post doc level will go into other areas. There will be nobody to work on SSC, RHIC and KAON, the planned machines of the future. There will also be precious little work done in the 10 years before they come on line because LAMPF at Los Alamos and other productive machines will have been turned off.

This nation cannot maintain its scientific excellence if the nuclear science (or high energy physics) program is so stupidly mismanaged that all of the present funds go into cleanup and machines that are 10 years down the road. The new machines were originally proposed assuming new machines were originally proposed assuming there would be a healthy reservoir of talent to use them. I doubt very much that this will be the case in the present scenario.

I urge you to

- 1 - Increase the budget for Nuclear Science
- 2 - Mandate that present accelerators such as LAMPF, which has no competitors that are running be kept running until improve facilities replace them

Sincerely,

Byron D. Dieterle  
Prof. of Physics

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124880  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: ALTMAN, Sydney ET AL: YALE UNIVERSITY

TO: HAPPER, William

DATE OF  
CORRESPONDENCE: 11/11/91

SUBJECT: RE: THEIR CONCERN OVER THE PROPOSED DOE BUDGET CUTS  
IN THE NUCLEAR PHYSICS PROGRAM.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

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OSTP RECEIVED: 11/22/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:



4880

November 11, 1991

Dr. William Happer, Director  
Office of Energy Research  
Department of Energy  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585

RECEIVED

91 NOV 22 P 3: 43

Dear Dr. Happer:

OSTP  
MAIL ROOM

We the undersigned members of the scientific community are deeply concerned about the seriously damaging effects of the sudden and precipitous actions taken recently by DOE on the funding of the two vital basic research programs, Nuclear Physics and Particle Physics. We are alarmed by what has taken place in the decision-making process of these two national research programs of which DOE is the present custodian.

Our understanding is that on September 19-20 the Secretary of Energy Advisory Board Task Force on Energy Research Priorities, chaired by C. H. Townes, met in Washington, D.C. to consider scientific priorities for a number of fields, based on a nearly flat budget scenario. A draft report was made available for public comment through October 31, 1991. This draft contains scientific recommendations calling for consultation with the Nuclear Physics and High Energy Physics communities. However, before the deadline for comments, the DOE called a meeting of the Nuclear Science Advisory Committee (NSAC) for October 23rd to discuss the scenario that for Fiscal '93 there would be an approximately 10% reduction (effectively 15% when cost-of-living increases are counted) from the FY-92 budget. The Townes Committee had not been alerted to the possibility of so abrupt and so sharp a cut. Then, on October 28-29 the High Energy Physics Advisory Panel (HEPAP) was also convened with the same budgetary-reduction scenario for High Energy Physics research, excluding SSC. In addition, contrary to the usual practice, parts of both the NSAC and HEPAP meetings were not open to the public.

A drastic cut of this magnitude clearly would have a calamitous impact on these fields both immediately and long term, destructive to our national leadership in science and discouraging to our young people planning to work in these important areas. Especially damaging to the credibility of the DOE is the significant difference in the budgetary charges given to the Townes Committee and to NSAC and HEPAP. The inconsistency between these charges and the reason for it have not been explained to the community; this



in turn will cast serious doubt on the planning process of the DOE's research program among its own best scientists.

In order for us to maintain leadership in advanced science and technology, it is necessary to have a vital, forward-looking and rational national policy on basic research. A responsible management program obviously entails planning on time scales relevant to the activity under consideration. For most basic research areas, including Nuclear Physics and Particle Physics, that time scale has to be about three to five years. It is set by the technical considerations of building and conducting experiments as well as by the educational needs of graduate students and postdoctoral training. We are mindful of the present budgetary stress. This means each new change and new initiative will require even greater care and more attention. It is crucial that we do not lose the confidence of the very best of our young researchers and talented students. Our long-term national interest must be our first priority, and it is essential that we preserve openness in our scientific decision-making process.

Sincerely,

The signatures of the following are on file:

- Sidney Altman, Professor, Department of Biology, Yale U.  
(Nobel Prize in Chemistry, 1989)
- Val Fitch, Professor, Department of Physics, Princeton U.  
(Nobel Prize in Physics, 1980)
- William A. Fowler, Professor, Div. Phys., Math. & Astronomy, Caltech  
(Nobel Prize in Physics, 1983)
- Sheldon Lee Glashow, Professor, Department of Physics, Harvard U.  
(Nobel Prize in Physics, 1979)
- Maurice Goldhaber, Director Emeritus, Brookhaven National Lab.  
(Wolf Prize in Physics, 1991)
- Ernest Henley, Professor, Department of Physics, U. of Washington  
(President-Elect, American Physical Society)
- Leon M. Lederman, Professor, Department of Physics, U. of Chicago  
(Nobel Prize in Physics, 1988)
- T. D. Lee, Professor, Department of Physics, Columbia U.  
(Nobel Prize in Physics, 1957)
- Melvin Schwartz, Associate Director, Brookhaven National Lab.  
(Nobel Prize in Physics, 1988)
- A. J. Stewart Smith, Professor, Department of Physics, Princeton U.  
(Chair, Division Particles and Fields, American Physical Soc.)
- Victor F. Weisskopf, Institute Professor Emeritus, M.I.T.  
(National Medal of Science, 1979)

cc Dr. D. Allan Bromley, Ass't to the President for Sci. and Tech.  
Admiral James D. Watkins, Secretary of Energy



**ADDITIONAL SIGNATURES  
(ON FILE)**

Stephen Adler  
Masayuki Asakawa  
Maged Atiya  
Terry Awes  
Andrew Bacher  
C. Baktash  
Zvi Bar-Yam  
Rene Bellwied  
Robert Bent  
Bernhard Blattel  
Edward J. Bleser  
Peter Bond  
C. Bottcher  
Bennet B. Brabson  
Paul Brady  
Wilfred J. Braithwaite  
Peter Braun-Munzinger  
H. C. Britt  
Hugh N. Brown  
Gerry Bunce  
Alan S. Carroll  
Jim Carroll  
Johannes Claus  
W. E. Cleland  
James B. Costales  
John G. Cramer  
Ray R. Crittenden  
Gordon T. Danby  
Gabor David  
David J. Dean  
R. Debbe  
George F. Dell  
Guy E. Diebold  
John P. Dowd  
Alex Dzierba  
George Fai  
Horst Foelsche  
K. J. Foley  
John David Fox  
James Frank



Sun-Yiu Fung  
W. Garczynski  
Chris Gardner  
Sean Gavin  
John Gillespie  
M. Gonin  
Howard A. Gordon  
Senta V. Greene  
Santosh Kumar Gupta  
Wlodek Guryu  
Miklos Gyulassy  
John Haggerty  
Timothy J. Hallman  
Ole Hansen  
Hahn Harald  
John W. Harris  
Mike Harrison  
Xiaochun He  
R. C. Hwa  
P. L. Jain  
Walter L. Kehoe  
Wolfhard Kern  
Wolker Koch  
Kazuyoshi Kurita  
Donald M. Lazarus  
S. Y. Lee  
Michael LeVine  
Robert Lindebosch  
D. Lissauer  
Jun Liu  
Timothy Londergan  
Derek I. Lowenstein  
Thomas Ludlam  
Malcolm Macfarlane  
Charles Maguire  
Tetsuo Matsui  
Larry McLerran  
David E. Miller  
Janko Milutinovic  
Ronen Mir  
Jeffery T. Mitchell  
William Morse  
Bruce Moskowitz



William N. Murray  
Stephen V. Musolino  
Shoji Nagamiya  
M. N. Nainboudiri  
Hermann Nann  
Tapan Nayak  
Felix Obenshein  
Edward J. O'Brien  
John W. Olness  
P. C. Pan  
Yang Pang  
George Parzen  
Gus Petitt  
R. D. Pisarski  
K. Prelec  
Serban Protopopescu  
David Rahm  
L. G. Ratner  
R. Ronald Rau  
Louis P. Remsberg  
Mark Rhoades-Brown  
Thomas Roser  
John J. Russell  
David Rust  
Surender Saini  
Craig Sangster  
Martin Sarabura  
Thomas J. Schlagel  
Chia C. Shih  
Paul T. Smith  
John Stachel  
Stephen Steadman  
George Stephans  
Alan J. Stevens  
Hiroyoshi Sukurai  
John P. Sullivan  
John Szymanski  
Yoshiyuki Takahashi  
Helio Takai  
M. J. Tannenbaum  
Scott Teige  
Steven Tepikian  
Jim Thomas



Mark L. Tincknell  
Thomas A. Trainor  
N. S. Umar  
Xin-nian Wang  
H. E. Wegner  
Jie Wei  
Gerd M. Welke  
Robert Welsh  
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Chen-Yon Wong  
Kim Woodle  
Wu-Tsung Weng  
Peter Yanni  
Glenn R. Young  
W. A. Zajc



"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9124736

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

\*\*\*\*\*

FROM: ALTMAN, Sidney: YALE UNIVERSITY

TO: DR. WILLIAM HAPPER

DATE OF  
CORRESPONDENCE: 11/11/91

SUBJECT: HE IS FORWARDING A COPY OF A LETTER TO DR. HAPPER  
REGARDING RECENT ACTIONS BY THE DEPARTMENT OF ENERGY  
AFFECTING NUCLEAR AND PARTICLE PHYSICS RESEARCH.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
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DATE COMPLETED: DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*  
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REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/12/91  
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:



4736

November 11, 1991

Dr. William Happer, Director  
Office of Energy Research  
Department of Energy  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585

RECEIVED

91 NOV 12 P 5: 01

OFFICE OF THE  
DIRECTOR

Dear Dr. Happer:

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Sincerely,

The signatures of the following are on file:

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(Nobel Prize in Chemistry, 1989)
- Val Fitch, Professor, Department of Physics, Princeton U.  
(Nobel Prize in Physics, 1980)
- Sheldon Lee Glashow, Professor, Department of Physics, Harvard U.  
(Nobel Prize in Physics, 1979)
- Maurice Goldhaber, Director Emeritus, Brookhaven National Lab.  
(Wolf Prize in Physics, 1991)
- Ernest Henley, Professor, Department of Physics, U. of Washington  
(President-Elect, American Physical Society)
- Leon M. Lederman, Professor, Department of Physics, U. of Chicago  
(Nobel Prize in Physics, 1988)
- T. D. Lee, Professor, Department of Physics, Columbia U.  
(Nobel Prize in Physics, 1957)
- Melvin Schwartz, Associate Director, Brookhaven National Lab.  
(Nobel Prize in Physics, 1988)
- A. J. Stewart Smith, Professor, Department of Physics, Princeton U.  
(Chair, Division Particles and Fields, American Physical Soc.)

cc ✓ Dr. D. Allan Bromley, Assistant to the President  
for Science and Technology  
Admiral James D. Watkins, Secretary of Energy

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9125051  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: HECKMAN, Gary

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/10/91

SUBJECT: RE: HIS VIEWS ON THE POSSIBLE MOVE OF THE AIR FORCE  
LABORATORY IN CAMBRIDGE MASSACHUSETTS TO BECOME PART  
OF THE PHILLIPS LABORATORY.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:

OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

\*\*\*\*\*

COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*

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PHONE: EXT:  
REMARKS: WE HAVE ALREADY RECEIVED A COPY OF THIS LETTER BEFORE. IT IS  
DOCUMENT #9125005.

OSTP RECEIVED: 12/06/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:



5051  
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6239 Baseline Road  
Boulder, CO 80303  
November 10, 1991

91 DEC 6 AIO: 31

Dr. D. Allan Bromley  
Assistant to the President for Science and Technology  
Office of Science and Technology Policy - Room 360  
Old Executive Office Building  
17th Street and Pennsylvania Avenue, NW  
Washington, D.C. 20506

MAIL ROOM

Dear Dr. Bromley;

In my job as the head of a group with responsibility for providing space weather forecasts to meet both defense and civilian national needs, I have had a rare opportunity to observe and use research from both the Department of Defense and civilian communities such as NASA. I have found the work of the Air Force Laboratories in Cambridge, MA, now becoming part of the Phillips Laboratories, to be unique and especially valuable to the nation and to the Department of Defense. With their ability to be a part of the world of basic research and to combine that into applied development, the staff off the laboratory have contributed to the practical state of space environment forecasting in such a way that would have waited another 15-20 years for such advances to be made otherwise.

The staff of the laboratories have unique knowledge of Air Force and DoD missions that cut across commands and fields of operation but are common to them all. The too-rapid change of this group into a mission-specific laboratory environment such as the Phillips Labs will result in a resultant loss of this inter-mission expertise and the ability of the Cambridge staff to stay current with the wider scope of Air Force missions.

I urge a slowing of the move and integration of the Cambridge-based group to continue the current value to the Air Force. Future mission development in the Laboratory environment can more efficiently integrate this expertise on a well-planned, economical, phased basis as the need develops without the high expense and sudden loss of general capability that will result from a rapid move.

Sincerely



Gary Heckman  
Space Scientist

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9125005  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: HECKMAN, Gary

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/10/91

SUBJECT: RE: THE MOVE OF THE AIR FORCE LABORATORIES IN  
CAMBRIDGE MASSACHUSETTS TO BECOME PART OF THE  
PHILLIPS LABORATORIES.

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

\*\*\*\*\*  
COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*  
WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

OSTP RECEIVED: 12/04/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:



5005  
RECEIVED

6239 Baseline Road  
Boulder, CO 80303  
November 10, 1991

91 DEC 4 A 9:46

Dr. D. Allan Bromley  
Assistant to the President for Science and Technology  
Office of Science and Technology Policy - Room 360  
Old Executive Office Building  
17th Street and Pennsylvania Avenue, NW  
Washington, D.C. 20506

Dear Dr. Bromley;

In my job as the head of a group with responsibility for providing space weather forecasts to meet both defense and civilian national needs, I have had a rare opportunity to observe and use research from both the Department of Defense and civilian communities such as NASA. I have found the work of the Air Force Laboratories in Cambridge, MA, now becoming part of the Phillips Laboratories, to be unique and especially valuable to the nation and to the Department of Defense. With their ability to be a part of the world of basic research and to combine that into applied development, the staff off the laboratory have contributed to the practical state of space environment forecasting in such a way that would have waited another 15-20 years for such advances to be made otherwise.

The staff of the laboratories have unique knowledge of Air Force and DoD missions that cut across commands and fields of operation but are common to them all. The too-rapid change of this group into a mission-specific laboratory environment such as the Phillips Labs will result in a resultant loss of this inter-mission expertise and the ability of the Cambridge staff to stay current with the wider scope of Air Force missions.

I urge a slowing of the move and integration of the Cambridge-based group to continue the current value to the Air Force. Future mission development in the Laboratory environment can more efficiently integrate this expertise on a well-planned, economical, phased basis as the need develops without the high expense and sudden loss of general capability that will result from a rapid move.

Sincerely



Gary Heckman  
Space Scientist

"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9124754

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

\*\*\*\*\*

FROM: GREEN, A.A.: CLINTON P. ANDERSON MESON PHYSICS FACILITY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/07/91

SUBJECT: RE: HIS CONCERN OVER THE PROPOSED DOE BUDGET FOR  
NUCLEAR PHYSICS RESEARCH.

\*\*\*\*\*

DIRECTORATE  
ASSIGNED:

STAFF  
ASSIGNED:

ACTION  
REQUIRED:

STAFF  
ACTION:

\*\*\*\*\*

SENDER'S DUE DATE:

OSTP DUE DATE:  
DATE COMPLETED:

STAFF DUE DATE  
DATE COMPLETED/DEPT:

\*\*\*\*\*

COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*

WHITE HOUSE TRACKING #:

CONTACT PERSON:  
PHONE:

EXT:

REMARKS:

OSTP RECEIVED: 11/12/91  
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:





4754

Allan Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
17th and Pennsylvania Avenue, N.W.  
Washington, D.C.  
20506

RECEIVED

7 November 1991.

91 NOV 12 P 4: 59

OFFICE OF THE  
DIRECTOR

Dear Sir

I write to you on a matter of great concern to me and many of the scientific community: the budget for nuclear physics research.

At the present time severe restraints are being placed on the ability of the nuclear physics programs under the auspices of the Department of Energy to be productive. To date the United States has assumed a leadership role in this type of research. Constant funding for the next few years is inadequate to allow this role to be maintained; reduced budgets may be catastrophic.

Many laboratories and programs are operating on shoe-string budgets. This has caused many well-trained people to seek employment outside the scientific field. This is a serious waste of expertise. With these very tight budgets, the people remaining in the field cannot perform the leading-edge research. The future of American science is threatened by such restraints since the visibility of the above two effects discourages new people from entering the field. To reverse this trend will be more costly than preventing it.

Without requiring a larger budget for the Department of Energy, I propose the following. A modest fractional reduction in the enormous budget assigned to the Super-conducting Super Collider (SSC) will not seriously retard that program yet free up adequate funds for returning the nuclear physics programs at universities and national laboratories to the prominent position they held five years ago.

Summarizing, the nuclear physics community is in a fragile and difficult financial situation which is best repaired rather than rebuilt years down the road. I look to you as a member of the our community to examine this matter more closely and point out the pitfalls of the present policy.

Yours sincerely



A A Green  
MS H841  
Los Alamos National Laboratory  
Los Alamos NM  
87545

"Document Control"

INFORMATION

DOCUMENT NUMBER: 9124754

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

FROM: GREEN, A.A.: CLINTON P. ANDERSON MESON PHYSICS FACILITY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/07/91

SUBJECT: RE: HIS CONCERN OVER THE PROPOSED DOE BUDGET FOR  
NUCLEAR PHYSICS RESEARCH.

*Previous letter from  
Dr. Green*

DIRECTORATE  
ASSIGNED: STAFF  
ASSIGNED:

ACTION  
REQUIRED: STAFF  
ACTION:

OSTP DUE DATE: SENDER'S DUE DATE:  
DATE COMPLETED: STAFF DUE DATE  
DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/12/91  
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:

*Handwritten signatures and notes:*  
Karl S.  
We can use standard  
letter from  
Bingham



47  
Allan Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
17th and Pennsylvania Avenue, N.W.  
Washington, D.C.  
20506

RECEIVED

7 November 1991.

91 NOV 12 P 4: 59

OFFICE OF THE  
DIRECTOR

Dear Sir

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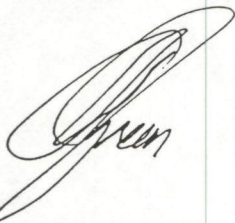
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Without requiring a larger budget for the Department of Energy, I propose the following. A modest fractional reduction in the enormous budget assigned to the Super-conducting Super Collider (SSC) will not seriously retard that program yet free up adequate funds for returning the nuclear physics programs at universities and national laboratories to the prominent position they held five years ago.

Summarizing, the nuclear physics community is in a fragile and difficult financial situation which is best repaired rather than rebuilt years down the road. I look to you as a member of the our community to examine this matter more closely and point out the pitfalls of the present policy.

Yours sincerely



A A Green  
MS H841  
Los Alamos National Laboratory  
Los Alamos NM  
87545

THE WHITE HOUSE  
WASHINGTON

February 10, 1992

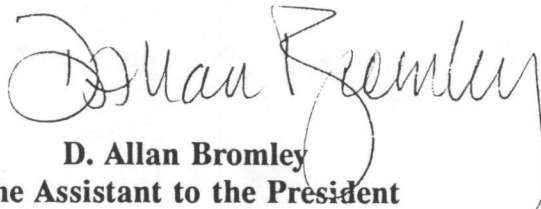
Dear Dr. Green:

Thank you for your letter expressing concern over possible 10% budget reductions for DOE-supported particle and nuclear physics research. We at the Office of Science and Technology Policy (OSTP) shared this concern.

Dr. Karl Erb, OSTP Associate Director for Physical Sciences and Engineering, and I worked closely with DOE and the Office of Management and Budget to explore alternate funding priorities as we prepared the President's FY 1993 budget request. I am pleased that deep reductions in funding proved not to be necessary.

Our next challenge will be to convince Congress to appropriate the funds requested for R&D by the President. Your assistance in this could be pivotal, as Congress will face strong demands to shift funding away from research and into other activities.

Sincerely yours,



D. Allan Bromley  
The Assistant to the President  
for  
Science and Technology

cc: Karl A. Erb

Dr. A.A. Green  
MS H841  
Los Alamos National Laboratory  
Los Alamos, NM 87545



# STAFFING SHEET

### EXTERNAL COORDINATION:

|                 | COMMENTS | DATE |
|-----------------|----------|------|
| DIRECTOR        |          |      |
| GENERAL COUNSEL |          |      |
| EXEC. ASST.     |          |      |

**ACTION REQUESTED:**

[illegible]



THE WHITE HOUSE  
WASHINGTON

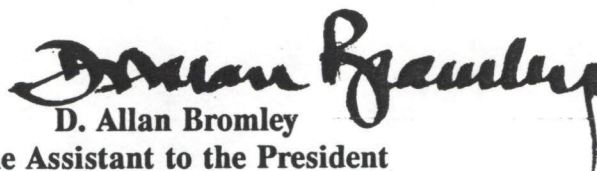
May 14, 1992

Dear Dr. Green:

Thank you for your last letter concerning the President's 1993 budget for DOE-supported particle and nuclear physics research. As indicated in my previous letter the action on the 1993 budget is now on the Congressional side. Concerning your inquiry on what actions you can personally take beyond contacting your local Congressman, you may also wish to contact the Senators from New Mexico and their staff, as well as the staffs of the various House and Senate Committees which deal with the DOE appropriations. In doing so, I urge you to focus your comments on the broader issues of research and the general health of science as indicated in your letter.

With respect to funding for fiscal year 1994, the development of budgets within various agencies of the U. S. government has begun. We will be monitoring these budgets as they develop, again looking to maintaining an overall healthy scientific base for the U. S. research effort.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "D. Allan Bromley", with a stylized, flowing script.

D. Allan Bromley  
The Assistant to the President  
for  
Science and Technology

Dr. A. A. Green  
MS H841  
Los Alamos National Laboratory  
Los Alamos, NM 87545



"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9124744

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

\*\*\*\*\*

FROM: SUGIHARA, Thomas T.: AMERICAN CHEMICAL SOCIETY

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/07/91

SUBJECT: HE IS WRITING TO ASK DR. BROMLEY'S SUPPORT TO AVERT  
THE DAMAGE THAT IS LIKELY TO OCCUR IF THE DOE  
NUCLEAR PHYSICS BUDGET SUFFERS A TEN PERCENT  
DECREASE IN FY 1993.

\*\*\*\*\*

DIRECTORATE  
ASSIGNED:

STAFF  
ASSIGNED:

ACTION  
REQUIRED:

STAFF  
ACTION:

\*\*\*\*\*

SENDER'S DUE DATE:

OSTP DUE DATE:

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*

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EXT:

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OSTP RECEIVED: 11/12/91  
FILE: P-PHYSICAL SCIENCES

DEPT RECEIVED:

CENTRAL FILES:





## DIVISION OF NUCLEAR CHEMISTRY AND TECHNOLOGY

*American Chemical Society*

November 7, 1991

91 NOV 12 P 5:00

OFFICE OF THE  
DIRECTOR

Chairman, 1991

THOMAS T. SUGIHARA

MS L-353, P.O. Box 808

Lawrence Livermore National Laboratory

Livermore, California 94550

Phone (415) 423-8351

FAX (415) 423-7040

SUGIHARA@CMS1.LLNL.GOV

Vice Chairman, 1991

STEVEN W. YATES

Dept. of Chemistry, University of Kentucky

Lexington, Kentucky 40506-0055

Phone (606) 257-7085

FAX (606) 258-1069

YATES@UKCC.UKY.EDU.BITNET

Vice-Chairman-Elect, 1991

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INC-DO, MS-J519

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Los Alamos, New Mexico 87545

Phone (505) 667-5338

FAX (505) 667-2964

075191@INCDP3.LANL.GOV

Secretary, 1990-92

LESTER R. MORSS

Chemistry Division, Building 200

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FAX (708) 972-4470

MORSS@ANLCHM.BITNET

Treasurer, 1990-92

DAVID J. PRUETT

P.O. Box 2008, Building 4501

Oak Ridge National Laboratory

Oak Ridge, Tennessee 37831-6223

Phone (615) 576-2771

FAX (615) 574-6796

FJP@ORNLSTC.BITNET

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Dr. D. A. Bromley  
Executive Office of the President  
Office of Science and Technology Policy  
Old Executive Office Building  
Room 360, 17th and Pennsylvania Avenue  
Washington, DC 20506

Dear Allan:

I am writing on behalf of the Division of Nuclear Chemistry and Technology (DNCT) of the American Chemical Society (ACS) to ask your support to avert the damage that is likely to occur if the DOE nuclear physics budget suffers a ten percent decrease in FY1993 and a no-growth or low-growth future. These cuts will, both directly and indirectly, affect many DNCT members and will clearly cause great harm to the nuclear science effort in the United States.

The DNCT has about one thousand members in areas ranging from radiopharmaceuticals and accelerator applications of chemistry to nuclear reactions, nuclear structure, and other research areas closely related to nuclear physics. Our members frequently collaborate with nuclear physics colleagues, and we are fully contributing members in the nuclear science effort in this country. Budget decisions affecting the nuclear physics community are very much our concerns as well.

A little more than two years ago, the Nuclear Science Advisory Committee, with input from the nuclear science community, formulated a long-range plan. The resulting blueprint, which incorporated many financial constraints and required considerable sacrifice, was a model of responsible planning and was endorsed by the community. The recent precipitous budget cuts at the DOE now endanger this carefully crafted plan and threaten the health of nuclear science. While the possible consequences for the quality of research in this country are dire, those who will bear the greatest burden of the proposed cuts are students and young researchers. Moreover, nuclear science will emerge as an unattractive field for future generations of students. The possible losses on all fronts are great, and every effort should be made to avert this calamity.



November 7, 1991

It is difficult to understand these sudden and seemingly unwarranted cuts in the DOE nuclear physics budget, and we, like many others, must question whether the SSC is being built at the expense of the basic science program. As nuclear chemists, we strongly believe an active program in nuclear physics is important to the scientific and technological health of this country. We join in opposing the sudden and severe budget cuts proposed for the nuclear physics effort in this country.

My best personal regards to you. Your many friends in the nuclear science community stand ready to assist you if you should need us.

Sincerely,



Thomas T. Sugihara  
Chairman, DNCT/ACS

cc: Dr. William Happer  
Dr. David A. Sanchez

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9124738  
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS  
\*\*\*\*\*

FROM: GIBBONS, John H.: OFFICE OF TECHNOLOGY ASSESMENT

TO: DR. D.A. BROMLEY

DATE OF  
CORRESPONDENCE: 11/06/91

SUBJECT: HE IS PROVIDING A COPY OF OTA'S BACKGROUND PAPER ON  
"THE 1992 WORLD ADMINISTRATIVE RADIO CONFERENCE:  
ISSUES FOR U.S. INTERNATIONAL SPECTRUM POLICY".

\*\*\*\*\*  
DIRECTORATE STAFF  
ASSIGNED: ASSIGNED:

ACTION STAFF  
REQUIRED: ACTION:

\*\*\*\*\*  
SENDER'S DUE DATE:  
OSTP DUE DATE: STAFF DUE DATE  
DATE COMPLETED: DATE COMPLETED/DEPT:

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COPIES TO: D. Allan Bromley  
PHYSICAL SCIENCES

\*\*\*\*\*  
WHITE HOUSE TRACKING #: CONTACT PERSON:  
REMARKS: PHONE: EXT:

OSTP RECEIVED: 11/12/91 DEPT RECEIVED:  
FILE: P-PHYSICAL SCIENCES  
CENTRAL FILES:



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AMO HOUGHTON, NEW YORK

JOHN H. GIBBONS

Congress of the United States  
OFFICE OF TECHNOLOGY ASSESSMENT  
WASHINGTON, DC 20510-8025

November 6, 1991

RECEIVED  
91 NOV 12 P 5:01  
OFFICE OF THE  
DIRECTOR

The Honorable D. Allan Bromley  
Assistant to the President for  
Science and Technology  
Director, Office of Science and  
Technology Policy  
360 Old Executive Office Bldg.  
Washington, DC 20506

Dear Allan:

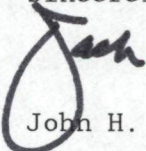
I am pleased to enclose OTA's Background Paper on *The 1992 World Administrative Radio Conference: Issues for U.S. International Spectrum Policy*.

The Background Paper examines U.S. preparations for the 1992 World Administrative Radio Conference (WARC-92) to be held in Spain in February 1992. WARC-92 will attempt to reassign radio frequencies internationally in order to take advantage of new radio-based technologies and applications, such as digital audio broadcasting, high definition television, and personal communications services, while still accommodating the needs of existing users and services. The impacts of this realignment will be felt throughout the U.S. economy and around the world, and the agreements reached at WARC-92 will influence the development of radio-based systems and services well into the next century.

The Paper also examines the implications of the WARC preparation process in the larger context of U.S. international radiocommunication policymaking. As the world's political, economic, and technological environment changes, the United States will be forced to adapt its international radiocommunication policy efforts in order to retain its competitive position and traditional leadership in spectrum policymaking. However, the present fragmented domestic structure for radiocommunication policymaking may impede the development of a broad long-term vision for future radio-based technologies and services.

I hope you will find the paper useful and informative.

Sincerely,

  
John H. Gibbons

Enclosure:  
Background Paper



# The 1992 World Administrative Radio Conference

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Issues for  
U.S. International  
Spectrum  
Policy



CONGRESS OF THE UNITED STATES  
OFFICE OF TECHNOLOGY ASSESSMENT