

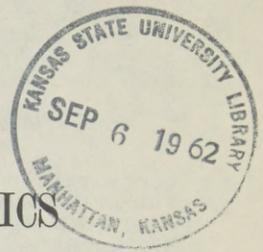
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LIMITATION ON INDIRECT COSTS IN RESEARCH GRANTS

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HEARING BEFORE THE COMMITTEE ON SCIENCE AND ASTRONAUTICS U.S. HOUSE OF REPRESENTATIVES EIGHTY-SEVENTH CONGRESS SECOND SESSION



JULY 30, 1962

[No. 8]

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The following is a list of the names of the persons who have been appointed to the various offices of the State of New York, since the adoption of the Constitution of 1787, to the present time. The names are arranged in alphabetical order, and the date of their appointment is given in parentheses.

LIMITATION ON INDIRECT COSTS IN RESEARCH GRANTS

MONDAY, JULY 30, 1962

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND ASTRONAUTICS,
Washington, D.C.

The committee met at 10 a.m., Hon. George P. Miller (chairman) presiding.

The CHAIRMAN. The committee will be in order.

Monday morning is always a bad day for a committee meeting. But we felt it highly desirable to have one today because of the interest in the limitation on amounts for indirect costs in grants to universities for research that is contained in the independent offices appropriation bill.

We have witnesses from the National Aeronautics and Space Administration and the National Science Foundation.

We will start out with Dr. John Clark, Associate Director and Chief Scientist of the Office of Space Sciences.

Will you proceed, sir?

STATEMENT OF DR. JOHN F. CLARK, CHIEF SCIENTIST AND ASSOCIATE DIRECTOR, OFFICE OF SPACE SCIENCES; ACCOMPANIED BY DR. T. L. K. SMULL, DIRECTOR OF GRANTS AND RESEARCH CONTRACTS, OFFICE OF SPACE SCIENCES, AND RAYMOND EINHORN, DIRECTOR OF AUDITS

Dr. CLARK. I should like first to introduce my colleagues from NASA.

On my left is Dr. Thomas L. K. Smull, who is Director of Grants and Research Contracts, and on my right, Mr. Ray Einhorn, who is Director of Audits of NASA.

I should also like to express Dr. Newell's regrets that he is unable to attend the hearing this morning. This is a subject which is, as you know, rather close to his heart. He is engaged in rather extensive efforts in the Space Science Board summer study of the NASA space sciences program at the University of Iowa at the present time.

I believe Mr. Karth is quite familiar with this study. I have no prepared statement, Mr. Chairman. We are available for any questions that the committee might care to place.

The CHAIRMAN. Do you know the background of this 20 percent that is put into this bill or into the other bills?

Dr. CLARK. Yes, sir.

The CHAIRMAN. Tell us what you will about this.

Dr. CLARK. All right.

The understanding of NASA at the present time of this situation is that we feel that the President's position in his letter of May 23 to the Congress is a reasonable course for the Government as a whole to follow in dealing with the universities. This letter, as you may recall, is in opposition to the imposition of any rigid ceiling in terms of any given percentage.

We feel that a uniform limitation as planned by the Congress will undoubtedly stimulate some revision and standardization of the methods of accounting for costs on the university campuses. It should result in a more specific identification of costs directly chargeable to individual projects. This, NASA understands, is one of the principal objectives which Congress expects the legislation will achieve in connection with the DOD appropriations bill.

We feel that this limitation will probably not achieve any major savings in Federal funds. It is unlikely that there can be a major shift of indirect costs on current Government grants over to a cost-sharing arrangement requiring, of course, the use of non-Federal resources of schools, because if this should become necessary, then we feel the schools will probably conserve their non-Federal funds by taking a smaller amount of Federal grants.

I should point out this certainly would hurt us at this time, when NASA is requesting a rather significant expansion in university effort of the type which is most appropriately supported by means of the grant mechanism.

Our current position with regard to our grant program is that while NASA is reluctant to see this approach taken on the grant problem on a Government-wide basis, we do not contend that our grant relationship to the universities is particularly unique as compared with other agencies in the Government that are supporting such work, such as the Department of Defense and the National Science Foundation.

Some universities may slow up their undertaking new work for NASA until they see how, under this proposed 20-percent limitation, they can finance existing good research on Federal grants, and only experience can demonstrate whether this will have an adverse effect on NASA plans to set up its university research and training effort.

So in summary, under the current circumstances NASA does not recommend that the House Committee on Science and Astronautics seek to make NASA grants an exception to the general limitation if this limitation is otherwise going to be made across the board to all other major Government grant programs.

The CHAIRMAN. Mr. Teague?

Mr. TEAGUE. Dr. Clark, I understand this problem has been worked on over and over through the Bureau of Budget and General Accounting Office since 1940.

Dr. CLARK. Yes.

Mr. TEAGUE. Do you know anything about the history of Circular A-21?

Dr. CLARK. I am not as familiar with the history as Mr. Einhorn, who was with the General Accounting Office at the time this was prepared.

Mr. TEAGUE. Would you discuss it for us?

Mr. EINHORN. Surely.

I was with the General Accounting Office at the time A-21 was developed and I represented the General Accounting Office to a large extent in the sessions with the Bureau of the Budget.

A-21 was developed as a Government-wide endeavor, with all major agencies represented.

The predecessor instruction, you may say, of the Department of Defense, under the Armed Services Procurement Regulation, was based on some arrangements arrived at in about 1947, the so-called Blue Book. This was later incorporated in part 3 of section XV of the Armed Services Procurement Regulation, the cost principles for research grants and contracts with educational institutions.

Other agencies had differing principles and rules, for example, AEC. NASA was rather new then and I suppose it was following Defense rules back in 1958. The National Science Foundation was pretty closely adhering, as I recall, to the procedures of HEW with a note of 15 percent of direct costs. HEW, as you know, had a 15-percent statutory limitation.

The various agencies got together with the Bureau of the Budget in order to develop a uniform set of guidelines.

One of the big problems that existed with respect to the 1947 guidelines was that there had been some horse trades or compromises in the dealings with the universities back in 1947 as to which costs could be considered allowable and which unallowable.

All of these, practically speaking, were in the area of indirect cost, but there was some shading over, because some costs can be treated as direct or indirect. Depending on the accounting practices of the particular institution, it can be one way or the other. It is not a matter of shifting.

One of the big problems back in the 1947 to 1958 days was that certain expenses; for example, the salaries of certain educational officials of the university, such as the dean of men and the registrar, were under the compromise considered applicable to university research work done for the Government.

On the other side of the fence, as though it were a balance wheel, there were some expenses; for example, the salaries of the deans of the particular colleges which were doing the research, that were not considered allocable to the Government research work at the universities. The basis for allocation of indirect costs was a problem area also.

After considerable discussion for a period of, I think, 2 or 3 years, in which the universities participated in great detail, the Government developed, under the leadership of the Bureau of the Budget, a set of principles which made good accounting more applicable, and good accounting principles more applicable to the diversified circumstances, different accounting methods followed by the universities, different types of research work, and different situations in which overhead would be applied.

A good example is, if you were doing research for a project that required an electric furnace, you certainly would not allocate the utilities on the same basis as you would for research which was done in the lab where the amount of current used might be just a normal amount of lights and a little power.

All of these factors were taken into consideration and a set of principles were developed for costing research under grants and contracts with educational institutions.

The Circular A-21 principles are for the determination of costs and are not the principles for the reimbursement of cost.

Once the costs are determined, an agency may decide with the university which part of those costs it will reimburse.

The CHAIRMAN. Let me get that. A-21, you say, is for the determination of costs?

Mr. EINHORN. Yes, sir.

The CHAIRMAN. And not the application of costs between the Government and the institution. This is the place you start the argument.

Mr. EINHORN. You could start there.

The CHAIRMAN. Yes.

Mr. EINHORN. If I may say it the way I said it a moment ago, to make sure it is clear:

Bureau of Budget Circular A-21 is a circular on the method for the determination of costs, including the indirect costs.

It does not prescribe that full costs must be paid. As a matter of fact, one of the basic principles is that cost sharing may be entered into under Bureau of Budget Circular A-21. The university may request less than full overhead or an agency—a buyer, if I may use a somewhat awkward term with respect to research—a buyer may decide not to pay for full overhead and negotiate for something less than full overhead.

The circular did have some principles with respect to other factors. For example, it states you should not have a fee, or profit, buried in the overhead. What should be determined is the actual overhead.

The agencies then went forward in determining how much overhead they would pay under these principles, which were Government-wide, and the big benefit to the universities, although they differ with some in the detail in A-21, is that all agencies were presumably going to use Circular A-21.

There were some exceptions—because of the arrangements which the HEW apparently had with its congressional committee to limit their payment for overhead. I am not intimately familiar with that subject, but familiar enough to say there was a difference there. Other agencies had other differences, too.

In the case of Defense, which was a big user of university facilities, and NASA, and some others, the decision was made to determine overhead in accordance with Circular A-21 and generally to pay the full amount of overhead when requested.

A-21 applies to both contracts and grants. It is not limited to one or the other.

The agencies which participated, I think I have covered pretty well, were all the major agencies plus Bureau of Budget, GAO, and to some extent the Treasury Department.

Mr. TEAGUE. Is it possible for a university to switch from a grant to a contract and this limitation not apply?

Mr. EINHORN. Yes. To give you a short direct answer, yes, it is possible. I would say the only thing that would prevent the shift would be if the buying agency, the Government agency, had so clearly labeled this type of work as being a grant and not a contract, that the university could not do it.

But, yes, it is possible. I can't prove this and I am not trying to make a statement that I can prove, but I think that has happened, and I think it will happen.

Mr. TEAGUE. The university could switch to a contract and forget about the grant even though both sides determine a grant is easier to handle.

Mr. EINHORN. I have to speak for my agency. If my agency thought it was a grant, as NASA's Director of Audits, I hope it would stick to it. If it did not stick to it, it would be part of my job to disclose that they failed to stick to it.

Mr. TEAGUE. It is my understanding that Mr. Webb has had completed a very thorough and careful study of the larger universities and what they can contribute to the space program.

Dr. CLARK. That is correct.

Mr. TEAGUE. It is also my understanding that in the case of NASA, at least, it is a matter of going to the universities and asking them to do the different jobs rather than the university coming to NASA asking to do this work.

Dr. CLARK. It would be difficult to say which is predominant at this point in time. Both are important. I think with NASA the more significant distinction as between the grant and the contract instrument has to do with the nature of the work.

If the nature of the work is primarily the delivery of hardware to meet a specific flight date of a space probe or satellite, ordinarily this must be carefully controlled with scheduled deadlines and maximum costs and it is normally handled in a contract.

In cases where, as in this increased emphasis on participation by a larger segment of the total university community, we are going out to find areas of mutual interest with the university, the grant is often preferable.

It is difficult to say where the impetus comes in the final analysis because in seeking for a common interest we try to take into account the desires both of the agencies and the university.

It would certainly be an oversimplification to say in general the university comes to us for this type of work at this point of time.

Mr. TEAGUE. The point was made on the floor that the Science Foundation follows a policy of allowing 20 percent with a leeway of 5 percent.

Another point made by members of the Appropriations Committee is that in 1957 the National Institutes of Health grants were about \$80 million annually and with this 15-percent limitation in effect, the grants have been increasing annually to the present figure of \$500 million. There has been no intimation it has been detrimental to their program. Would you like to comment on that?

Dr. Brown of the Defense Department testified before the committee there is considerable difference in research that might come under Defense or HEW.

Mr. EINHORN. The universities, I think, have been complaining about the 15-percent limitation. I think that was your second point. I think they have been complaining, how justifiably and how well, I am not certain.

It is true for many, many years universities have lived with the 15-percent limitation in the case of HEW. However, during the

A-21 discussions, many universities objected strenuously, in the representation of the committees they sent up to discuss this with Bureau of Budget, to the 15-percent limitation.

Mr. TEAGUE. There is no evidence their program was hurt in any way, really.

Dr. CLARK. I don't think, as representatives of NASA, we should be asked to comment on this sort of a question with regard to another agency unless we have personal familiarity. I do not.

Mr. TEAGUE. I agree. Mr. Chairman, in order that our hearings may be complete, I would like consent for the President's letter to be placed in the record, also the Bureau of the Budget Circular A-21, and that Dr. Brown's testimony before the Appropriations Subcommittee on this matter likewise be included.

The CHAIRMAN. Without objection it is so ordered.
(The documents referred to follow :)

THE WHITE HOUSE,
May 23, 1962.

Hon. LYNDON B. JOHNSON,
President of the Senate,
Washington, D.C.

Hon. JOHN W. MCCORMACK,
Speaker of the House of Representatives,
Washington, D.C.

DEAR MR. PRESIDENT (DEAR MR. SPEAKER) : I am writing to express my serious concern about the limitation on indirect expenses connected with research grants included in the pending Department of Defense appropriation bill for fiscal 1963. The bill as passed by the House of Representatives would limit the amount which could be included in such grants for indirect expenses to 15 percent of the direct costs of a grant. In my judgment this provision would seriously hamper colleges and universities in the conduct of research supported by the Federal Government.

Progress is applied science and technology upon which the country relies for military strength, medical advances, and the development of our civilian economy is heavily dependent upon the continuous flow of new scientific knowledge. Basic research efforts need to keep pace with our rapidly growing applied scientific activities. Universities and technical institutions have been the principal source of this basic knowledge. About half of all basic research is carried out in academic institutions. The Government has also maintained its own research laboratories and has permitted basic research as an overhead item in many industrial contracts.

In addition to supporting research, grants to universities are vitally important because of the close relationship which research bears to graduate education and to the development of an adequate supply of trained scientists and engineers. During the next decade it will be necessary to increase our scientific research efforts substantially and to increase the number of engineers and scientists. For this we will also depend heavily upon the interest and support of our educational institutions. This spring I sent to the Congress a message on education which stressed the need to increase the Nation's capabilities in the field of higher education, emphasizing that our colleges and universities do not have the financial resources to meet these growing needs. This problem would be aggravated if the cost limitation on research grants were allowed to stand.

These grants are not intended to give general financial support to colleges and universities; rather their purpose is to assist them in carrying out important national programs. In making grants Federal agencies define those costs which are allowable. The indirect costs involved, frequently described as overhead costs, cover such items as plant maintenance, heat and light, and administrative expenses in carrying out federally supported research projects. They represent expense items which must be provided in the budgets of these institutions. They are just as much a part of the cost of research as the salary of the scientist or technician. If the actual cost of these items is greater than a fixed percentage established by the Congress, these institutions must finance the difference.

It is the policy of the executive branch that in no case should grants for research include a profit or fee either as a direct or indirect cost. A Bureau of the Budget circular dated January 7, 1961, establishes for all Government agencies a common basis for determining allowable costs for research sponsored by the Federal Government, applying generally accepted cost accounting principles and practices. A statutory limitation is, therefore, unnecessary if the purpose of the Congress is to prevent windfalls to research institutions.

A flat statutory limitation on the amount which can be paid for overhead or indirect costs is undesirable for the following reasons:

1. An institution, in an effort to meet the statutory limitation, may be forced to draw funds away from other educational or research programs in order to meet the total cost of federally supported research. I do not believe that the Congress intended that this burden be placed on the colleges and universities.

2. A flat rate does not recognize that research projects differ greatly in character and in the nature of their indirect costs. For example, a research activity involving substantial physical facilities such as animal quarters for biological research or particle accelerators requires considerable space or electrical power with consequent high indirect costs. On the other hand, theoretical studies may require little supporting assistance beyond administrative help. Clearly a single inflexible rate for indirect costs would treat unfairly those institutions whose research work is such as to need substantial indirect services.

3. While total costs for a given project may be the same from one institution to another, the allocation between direct and indirect costs can vary widely. This stems from the fact that institutions do not follow common accounting practices. Therefore, it is not surprising that indirect cost rates vary considerably among institutions. I do not believe it is desirable to force these institutions to conform to a common accounting system otherwise inappropriate to their needs. And it does not follow that work done at an institution with a higher indirect cost rate will necessarily result in higher total cost to the Government or that the institution is less efficient than one with a lower rate.

4. The legislative limitation applies only to research grants and does not apply to research contracts. In many cases grants are more appropriate and simpler to administer than contracts. Therefore we encourage the use of grants particularly for basic research where it is not desirable or profitable to exercise the same degree of detailed supervision as in the case of applied research and development for which contracts are normally used. I do not believe it is desirable to turn to the use of contracts in place of grants in order to avoid such a legislative limitation.

A statutory limitation for indirect costs is now in effect for research grants made by the National Institutes of Health and other parts of the Department of Health, Education, and Welfare. The record is clear that this limitation has imposed serious financial difficulties particularly for many of our medical schools. In my health message to the Congress of February 27 of this year I renewed my recommendation of last year "that the current limitation on payment of indirect costs by the National Institutes of Health in connection with research grants to universities and other institutions be removed."

I urge the Congress to remove the limitation in the case of the Department of Health, Education, and Welfare and refrain from establishing a similar limitation in the appropriations to the Department of Defense or other agencies.

Sincerely,

JOHN F. KENNEDY.

CIRCULAR No. A-21

[Revised]

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., January 7, 1961.

To: The heads of executive departments and establishments.

Subject: Principles for determining costs applicable to research and development under grants and contracts with educational institutions.

1. *Purpose.*—This circular provides the basis for a uniform approach to determining the costs applicable to research and development performed by educational institutions under grants from and contracts with the Federal Government. The principles and related policy guides provided herein are designed for Govern-

ment-wide use. All Federal agencies that sponsor research and development work at educational institutions are requested to apply these principles and related policy guides to the fullest extent practicable in determining the amounts to be authorized under grants or contracts for such work and in developing budget estimates therefor.

2. *Policy guides.*—The following general policy guides are provided for the information of the Federal agencies concerned:

(a) Each college and university has its own unique combination of staff, facilities, and experience, and should be encouraged to conduct research in a manner consonant with its academic programs and institutional objectives while fulfilling its contractual responsibilities.

(b) The successful application of these principles requires development of mutual understanding between representatives of universities and of the Federal Government as to their scope, applicability, and interpretation.

(c) The extent of agency and institution participation in the financing of a particular research or development project is properly the subject of negotiation between the particular agency and the educational institution concerned.

(d) It is not intended that the application of these principles should require any significant changes in the generally accepted and established accounting practices of colleges and universities.

3. *Cost principles.*—The principles and standards to be followed in costing Government-sponsored research and development projects conducted by educational institutions are set forth in the attachments, as follows:

(a) Attachment A: Principles for determining applicable costs under research agreements. This document states the general principles to be applied in costing research and in associating indirect costs with particular research agreements. Agencies are requested to promulgate this document without change, where practicable, in order to assure uniformity of approach throughout the Government.

(b) Attachment B: General standards for selected items of cost. This document sets forth standards with respect to the allowability of the particular items of cost listed therein. The need for a continuing review of these standards is recognized; individual agencies may find it necessary to request amendments to these standards from time to time.

4. *Objectives.*—The objective of this circular and its attachments is to provide to educational institutions recognition of their full allocated costs of research under generally accepted cost-accounting principles. Alternative methods are specified as permissible in unusual circumstances or to prevent inequities. No provision for profit or other increment above cost is intended.

5. *Revisions.*—The revisions introduced in the principles as of this date are limited to the following sections of attachments A and B:

Attachment A, page 5, section I-E-4.

Attachment A, page 6, section II-B-1.

Attachment A, page 8, section II-C-2-f.

Attachment A, page 10, section II-D-2.

Attachment B, page 1, section B-1-b.

Attachment B, page 10, section C-39.

By direction of the President:

MAURICE H. STANS, *Director.*

[Attachment A]

CIRCULAR No. A-21

PRINCIPLES FOR DETERMINING APPLICABLE COSTS UNDER RESEARCH AGREEMENTS

I. GENERAL

A. *Purpose and scope*

1. This attachment sets forth the general principles which Federal agencies are requested to follow in determining the allowable costs of research and development performed by educational institutions under grants, cost-reimbursement type contracts, and cost-reimbursement type subcontracts. To the extent costs are applicable, these principles may also be used as a guide for the pricing of fixed-price contracts and subcontracts.

2. It is the intent of these principles to provide Government agencies and educational institutions with a common basis for determining the allowable costs of research sponsored by the Federal Government. Application of these principles should enable agencies and institutions to identify the allowable direct costs of

such research, plus the allocable portion of the allowable indirect costs, less applicable credits. The tests of allowability of costs applied in these principles are reasonableness and allocability under consistently applied generally accepted cost-accounting principles and practices; however, these provisions are subject to any limitations as to types or amounts of costs set forth in the research agreement.

3. These principles do not attempt to identify the circumstances or dictate the extent of agency and institution participation in the financing of a particular research and development project, but rather are confined to the subject of cost determination. Arrangements concerning financial participation are properly the subject of negotiation between the particular agency and the educational institution concerned.

4. These principles should be applied to all Government-sponsored research at an educational institution, including research conducted at locations other than the main campus of the institution.

5. A negotiated fixed amount in lieu of indirect costs may be appropriate in certain instances for offcampus or segregated research projects where (a) research agreements are charged directly for the cost of many of their administrative or housekeeping services, or (b) the cost of benefits derived from an institution's indirect services cannot be readily determined by use of apportionment or allocation bases normally employed, or (c) the costs of apportioning and allocating expenses to research agreements are excessive. The negotiated amount should not exceed a conservative estimate of anticipated indirect costs.

B. Definition of terms

1. For the purposes of this document, the following terms are defined:

(a) Research agreements are agreements to perform federally sponsored research through grants, cost-reimbursement type contracts, cost-reimbursement type subcontracts, and fixed price contracts and subcontracts for research.

(b) Apportionment is the process by which the indirect costs of the institution are assigned to (1) instruction and research, and (2) other institutional activities.

(c) Allocation is the process by which the indirect costs apportioned to instruction and research are distributed to research agreements.

(d) Sponsoring agency means the Federal agency for which the institution is performing research. Its use in this document does not imply a change in concept or intent for those agencies that have traditionally used a grant rather than a contractual instrument.

(e) Original complement means the complement of equipment initially placed in buildings to perform the functions currently being performed in such buildings. If a permanent change in the function of a building takes place, a redetermination of the original complement of equipment may be made at that time to establish a new original complement.

(f) Other institutional activities means all organized activities of an institution not directly related to the instruction and research functions, such as residence halls, dining halls, student hospitals, student unions, intercollegiate athletics, bookstores, faculty housing, student apartments, guesthouses, chapels, theaters, public museums, financial campaigns, and other similar activities or auxiliary enterprises. Also included under this definition is any category of cost treated as "unallowable," provided such category of cost identifies a function or activity to which a portion of the institution's general overhead expenses are properly allocable.

C. Direct costs

1. Direct costs are those identified as having been specifically incurred to perform a particular research agreement. The general types of direct costs are:

(a) Direct salaries and wages, including employee benefit expenses and pension plan costs (see attachment B) to the extent that they are consistently treated by the educational institution as a direct rather than an indirect cost, are those applicable directly to the performance of a research agreement. Such salaries and wages should be charged at the actual rates paid by the institution. Where professional staff paid on a salary basis work directly part time on a research agreement, current and reasonable estimates of time spent may be used in the absence of actual time records.

(b) Direct material costs include raw materials, purchased or supplied from stock, which are directly consumed or expended in the performance of a research agreement, or are otherwise applicable directly to a research agreement.

(c) Other direct costs include other expenses related directly to a particular research agreement or project, including abnormal utility consumption. This may include services purchased from institution service operations, provided such are consistently treated as direct rather than indirect costs and are priced under a recognized method of costing or pricing designed to recover only actual costs and conforming to generally accepted cost-accounting practices consistently followed by the institution. Purchases of equipment will be included under this heading only to the extent expressly provided for in the research agreement or approved pursuant to such agreement.

D. Indirect costs

1. Indirect costs are those which, because of their incurrence for common or joint objectives, are not readily subject to treatment as direct costs of research agreements or other activities. The general types of indirect costs are:

(a) General administration and general expenses are those incurred for the general executive and administrative offices of educational institutions and other expenses of a general character which do not relate solely to any specific division of the institution. Employee benefit expenses and pension plan costs may be included in this category to the extent that they are consistently treated by the educational institution as an indirect rather than a direct cost.

(b) Research administration expenses are those which apply to research administered in whole or in part by a separate organization or an identifiable administrative unit. Examples of work relating to research which is sometimes performed under such organizational arrangement are contract administration, security, purchasing, personnel administration, and editing and publishing of research data.

(c) Operation and maintenance expenses are those incurred for operating and maintaining the institution's physical plant. They include expenses normally incurred by the institution for administration or supervision of the physical plant; janitorial service; repairs and ordinary or normal alterations of buildings, furniture, and equipment; care and maintenance of grounds; utilities; and other expenses customarily associated with the operation, maintenance, preservation and protection of the physical plant.

(d) Library expenses are those incurred for direct operation of the library plus a use allowance for library books. The use allowance shall not exceed 8 cents per volume per year.

(e) Use allowance is a means of compensation for the use of buildings, capital improvements, and equipment over and above the expenses for operation and maintenance when depreciation or other equivalent costs are not considered. The use allowance for buildings and improvements shall be computed at an annual rate not to exceed 2 percent of acquisition cost. The use allowance for equipment shall be computed at an annual rate not exceeding 6 $\frac{2}{3}$ percent of acquisition cost of usable equipment in those cases where the institution maintains current records with respect to such equipment on hand. Where the institution's records reflect only the cost (actual or estimated) of the original complement of equipment, the use allowance shall be computed at an annual rate not exceeding 10 percent of such cost. In those cases where no equipment records are maintained, the institution will justify a reasonable estimate of the acquisition cost of usable equipment which may be used to compute the use allowance at an annual rate not exceeding 6 $\frac{2}{3}$ percent of such estimate. Computation of the use allowance shall exclude the portion of the cost of buildings and equipment paid for out of Federal funds and the cost of grounds.

(f) Indirect departmental expenses are those incurred for departmental administration, such as salaries of deans or heads of colleges, schools, departments or divisions, and related secretarial and other administrative expenses.

E. Applicable costs

1. The cost of a research agreement is comprised of the allowable direct costs incident to its performance, plus the allocable portion of the allowable indirect costs of the institution, less applicable credits.

2. When any types of expense ordinarily treated as indirect costs are charged to a research agreement as direct costs, the costs of similar items applicable to other activities of the institution must be eliminated from indirect costs allocable to the research agreement.

3. Where a particular understanding has been reached regarding specific items of cost to be reimbursed, the research agreement should clearly state such understanding.

4. Attachment B provides standards to be applied in determining the allowability of certain items of cost. Attachment B also identifies certain types of expenditures which relate solely to instruction; such costs of instruction, including applicable overhead, do not enter into the costs of research agreements either as direct costs or indirect costs.

II. DETERMINATION OF INDIRECT COSTS

A. General

1. In determining the indirect costs applicable to federally sponsored research agreements, the allowable indirect costs should first be apportioned equitably between (a) instruction and research activity, and (b) other institutional activities, as provided in paragraph II-B below.

2. The amounts of indirect costs apportioned to instruction and research should then be allocated in an equitable manner to research agreements, as provided in paragraph II-C below.

3. Actual conditions must be taken into account in determining the most suitable method or methods to be used in the apportionment and allocation of indirect costs. The objective should be the selection of a method or methods which will distribute the indirect costs in a fair and equitable manner to the Government research and development work and other work of the institution, giving due consideration to the nature and extent of the use of the institution's facilities by research personnel, academic staff, students, and other personnel or activities, and to the materiality of the amounts involved. The methods used should conform with generally accepted cost accounting practices, provide uniformity of treatment for like cost elements, be applied consistently, and produce equitable results. Any significant change, such as in the nature or extent of Government work or other activities sponsored or conducted by the institution, may require reconsideration of the methods previously in use to determine whether they continue to be equitable.

B. Apportionment

1. Indirect costs shall be apportioned as between (a) instruction and research activities, and (b) other institutional activities as defined in paragraph I-B-1-f above. The apportionment shall be made as follows:

(a) General administration and general expenses, on the basis of total expenditures (exclusive of capital expenditures and use allowances), direct salaries and wages, or other bases appropriate in the circumstances.

(b) Operation and maintenance of the physical plant, if not separately costed, on the basis of total square or cubic footage of the buildings.

(c) Other types of indirect costs normally do not require apportionment. Where they do, an equitable basis for making the apportionment should be selected.

C. Allocation

1. After determination of the total amount of indirect costs applicable to instruction and research activities, such indirect costs shall in turn be allocated between instruction activities and research agreements as described below.

2. The following criteria should be used with such appropriate modifications as will under the circumstances produce reasonably equitable allocation of the indirect costs associated with research agreements:

(a) General administration and general expenses should normally be allocated on the basis of total expenditures (exclusive of capital expenditures and use allowances) if equitable, direct salaries and wages, or other bases appropriate in the circumstances.

(b) Research administration expenses should be allocated to (1) applicable research agreements, and (2) other research benefiting therefrom on the basis of records reflecting the proportion fairly applicable to each or, in the absence of such records, on the basis of a reasonable estimate.

(c) Operation and maintenance expenses should be allocated on a basis that gives primary emphasis to space utilization. The amount allocated may be developed as follows:

(1) Where actual space and related cost records are or can readily be maintained without significant change in the accounting practices, the amount allocated to research agreements should be based on such data.

(2) Where the space and related cost records maintained are not sufficient for purposes of (1) above, a reasonable estimate of the proportion of total space

assigned to research agreements normally will suffice, and this proportion of operation and maintenance expense should be allocated to research agreements. Where it can be established that the cost of maintaining space assigned to research varies significantly from the cost of maintaining other space, appropriate weighting factors may be used to give effect to such variations.

(3) Where more definitive information is not available, either of the following simplified techniques for determining space may be used, as most appropriate:

(a) Reduce the total space identified with instruction and research by the amount of space occupied by undergraduate students, including appropriate portions of classrooms and access and related space. Reduce by the same proportion the amount of maintenance and operation expense that has been apportioned to instruction and research, and then allocate to research agreements on the basis of the relationship that direct salaries and wages of research agreements bears to direct salaries and wages of instruction and research; or

(b) Prepare a reasonable estimate of the average gross space assigned per research worker, and extend to the equivalent annual number of research workers under research agreements. The resulting product should then be related to total space assigned to instruction and research in order to obtain the proportion of space utilized for research agreements. The resulting proportion should then be applied to operation and maintenance expense to obtain the amount allocable to research agreements.

(4) Where it can be demonstrated that an area or volume of space basis of allocation is impractical or inequitable, other bases may be used provided consideration is given to the use of facilities by research personnel and others, including students.

(d) Library expenses should normally be allocated to research agreements on the basis of population including students and other users. Where appropriate, consideration may be given to weighting segments of the population figures as necessary to produce equitable results.

(e) Use allowance for buildings and equipment should, if depreciation or other equivalent costs are not considered, be computed in accordance with paragraph I-D-e. The cost of buildings and equipment used by "other institutional activities" (as defined) should be excluded from any computation of use allowances. If available records permit, use allowances may be specifically allocated in whole or in part to research agreements. In the absence of such usable records, use allowance may be allocated to research agreements on the same basis as that used for allocating operation and maintenance expenses.

(f) Indirect departmental expenses, as defined in paragraph I-D-l-f, which jointly benefit both research agreements and other activities should be allocated between research agreements administered or supervised by the department and other work of the department on any equitable basis, possibly direct salaries and wages, total direct expenditures, or approximate time so devoted. Where equitable results would be obtained, the distribution may be made on a composite base which would include all schools and departments.

3. Indirect costs allocated to research agreements normally should be treated as a common pool. The costs in such common pool should then be distributed to individual research agreements benefiting therefrom on a single rate basis. This rate will be the percentage which the indirect cost pool is of direct salaries and wages of the applicable research agreements. If appropriate, total direct expenditures may be used rather than salaries and wages.

4. It is recognized that in certain cases, due to the nature of the work, the facilities or personnel involved, or other considerations, the application of a single indirect expense rate on research agreements may produce inequitable results to the institution or to the Government. In such cases, it may be necessary to develop two or more indirect expense rates by means of appropriate adjustment to the basic indirect expense rate developed through use of the common pool, or by segregation of the indirect expenses allocated to research agreements into two or more indirect expense pools. In the latter case, the costs in each such pool will be distributed to the specific research agreements benefiting therefrom on the basis of direct wages and salaries or total direct expenditures, as appropriate. Examples of conditions which may justify the development of two or more pools of indirect expense are:

(a) Where the nature of a particular type of overhead cost requires a different basis of allocation to produce equitable results.

(b) Where a research agreement or group of agreements or the facility in which such agreement(s) is performed provides its own services to a significant degree, as may be in the case of a hospital or a segregated or off-campus facility.

(c) Where a research agreement requires significantly different degrees of indirect services from the institution. For example, such conditions may exist where: (1) significant amounts of Government-owned facilities or equipment are provided in lieu of that normally furnished by the institution, (2) a research agreement requires an unusual amount of power or other utilities, (3) the cost of a special library provided in lieu of regular library services is reimbursed by the Government, or (4) construction constitutes a significant portion of the work.

(d) Where it is appropriate to associate certain costs more directly with the activities benefited, such as where the research work is performed on one campus of a multicampus university.

5. Where research is separately administered, in whole or in part, or separate services are provided in lieu of those services normally provided by the institution, the cost of the normal institutional administration or other services replaced thereby shall be excluded from allocation to such research.

D. Overhead determinations acceptable under special circumstances

1. Indirect costs may be claimed at a rate which is anticipated to be less than that which would otherwise be allowable with provision made in the research agreement for adjustment if actual costs subsequently prove to be less than the claimed rate.

2. Where the total direct cost of Government-sponsored research and development work at an institution does not exceed \$250,000 in a year, the use of an abbreviated procedure may be acceptable in the determination of allowable indirect costs. Under this abbreviated procedure, data taken directly from the institution's most recent annual financial report and immediately available supporting information will be utilized as a basis for dividing total expenditures (exclusive of expenditures for capital items and unallowable costs, as defined in attachment B, and expenditures for student aid and for annuity payments) between (a) expenditures applicable to the indirect expense pool, and (b) all other expenditures. The indirect expense pool shall be limited to the following categories of expense:

(1) General administration and general expenses, inclusive of allocable salaries and expenses of deans of schools and department heads. (Where the allocable portion of the salaries and expenses of deans of schools and department heads is not available, a maximum of 20 percent of the total of such salaries and expenses may be included in the indirect expense pool.)

(2) Operation and maintenance expenses.

(3) Library operating expenses.

All categories of expense not specifically cited above will be grouped under "all other expenditures," including the expenses of research, education (including the items cited in paragraphs B.l.a. and B.l.d. of attachment B), and other institutional activities (as defined in I.B.l.f. of attachment A). The indirect expense rate will then be computed as the percentage relationship of the indirect expense pool to all other expenditures (as defined above). If the information required for this abbreviated procedure cannot be obtained from an analysis of the most recent annual financial report and immediately available supporting information, the regular procedure shall be used for the determination of indirect costs.

[Attachment B]

CIRCULAR No. A-21

GENERAL STANDARDS FOR SELECTED ITEMS OF COST

A. Purpose and applicability

1. This attachment provides standards to be applied in determining the allowability of certain items of cost. All Federal agencies that sponsor research and development work at educational institutions should adopt these standards and apply them to the extent deemed practicable in determining costs under grants and contracts for such work.

2. The standards adopted hereunder should apply irrespective of whether a particular item of cost is properly treated as direct cost or indirect cost. Failure to mention a particular item of cost in the standards should not imply that it is either allowable or unallowable; rather determination as to allowability in such case should be based on the treatment or standards provided for similar or related items of cost.

3. In case of discrepancy between the provisions of a specific research agreement and the applicable standards provided, the provisions of the research agreement should govern.

B. Costs applicable to instruction

1. Except as specifically noted, the following types of costs apply only to instruction, and therefore do not enter into the costs of research agreements, either as direct costs or indirect costs, unless specific provision is made therefor in the research agreement :

(a) Commencement and convocation costs.

(b) (See C-39 of this attachment.)

(c) Scholarships, fellowships, tuition, and other forms of student-aid costs. However, in certain cases, such costs may be allocable in part to research agreements under the conditions set forth in paragraph C-35 of this attachment.

(d) Student services costs, including such activities as deans of students, administration of student affairs, registrar, placement offices, student advisers, student health and infirmary services, and such other activities as are identifiable with student services. However, in the case of students actually engaged in work under research agreements, a proportion of student services costs measured by the relationship between hours of work by students on such research work and total student hours including all research time may be allowed as a part of research administration expenses.

C. Allowable and unallowable costs

1. Advertising costs include the cost of advertising media and related technical and administrative costs. Only the following advertising costs are allowable: (a) help-wanted advertising, (b) other advertising necessary for the performance of the research agreement to the extent authorized.

2. Bad debts, including losses (whether actual or estimated) arising from uncollectible accounts and other claims, related collection costs, and related legal costs are unallowable.

3. Capital expenditures are unallowable except as provided for in the research agreement. This includes costs of books, equipment and buildings, as well as repairs which materially increase the value or useful life of such equipment or buildings.

4. Civil defense costs are those incurred in planning for, and the protection of life and property against, the possible effects of enemy attack. Reasonable costs of civil defense measures (including costs in excess of normal plant-protection costs, first-aid training and supplies, firefighting training, posting of additional exit notices and directions, and other approved civil defense measures) undertaken on the institution's premises pursuant to suggestions or requirements of civil defense authorities are allowable when apportioned to all activities of the institution. Capital expenditures for civil defense purposes shall not be allowed, but a use allowance may be permitted in accordance with provisions set forth elsewhere. Costs of local civil defense projects, not on the institution's premises, are unallowable.

5. Communication costs including telephone services, local and long distance telephone calls, telegrams, radiograms, postage, and the like are allowable.

6. Compensation for personal services. Each institution shall maintain control over its salary and wage rates according to its established policy consistently applied, provided, however, that the excess of salary and wage rates paid to personnel working on Government research agreements over salary and wage rates paid to personnel working on the institution's departmental research or other research will not be allowed unless specifically provided in the agreement or approved by the contracting officer. This principle does not prohibit the charging of the full salary of any temporary employee in whose favor a salary differential exists solely by virtue of the nature of his employment in accordance with the regular practice of the institution concerned. Faculty members shall be considered as employed for the period represented by the sum of all semesters and other periods during which they are required to work under the practice of the institution concerned. (Example: Professor of X institution is required to work two semesters of 4½ months each, or a total of 9 months out of the academic year. His compensation is \$5,400. During the summer months, July, August, and September, he works full time on Government research projects in the institution laboratory. Unless the establish practice of the institution relating to summer compensation, not based on Government contract experience, would result in a different com-

putation, his compensation for that period, chargeable by the institution to the Government research agreement, will be \$1,800, computed as follows: $\$5,000 \div 9 = \600 ; $\$600 \times 3 = \$1,800$.

7. Contingency provisions to provide for events the occurrence of which cannot be foretold with certainty as to time, intensity, or with an assurance of their happening, are unallowable.

8. Deans of faculty and graduate schools, or their equivalents, including their staffs and related expenses are allowable.

9. Employee morale, health, and welfare costs and credits, such as house publications, health, or first-aid clinics and/or infirmaries, recreational activities, and employees' counseling services, incurred in accordance with the institution's established practice or custom for the improvement of working conditions, employer-employee relations, employee morale, and employee performance, are allowable. Such costs shall be equitably apportioned to all activities of the institution. Income generated from any of these activities shall be credited to the cost thereof unless such income has been irrevocably set over to employee welfare organization.

10. Entertainment costs including costs of amusement, social activities, entertainment, and incidental costs relating thereto, such as meals, lodging, rentals, transportation, and gratuities, are unallowable.

11. Equipment and other facilities. The cost of equipment or other facilities including books purchased specifically for use on the project, are allowable where such purchases are approved by the sponsoring agency concerned or provided for by the terms of the research agreement.

12. Fines and penalties. Costs resulting from violations of, or failure of the institution to comply with, Federal, State, and local laws and regulations are unallowable except when incurred as a result of compliance with specific provisions of the research agreement, or instructions in writing from the contracting officer.

13. Insurance and indemnification. Insurance includes those types of insurance which the institution is required to carry, or which is approved, under the terms of the research agreement, and any other insurance which the institution maintains in the general conduct of its activities. Indemnification includes securing the institution against liabilities to third persons and other losses not compensated by insurance or otherwise.

(a) Costs of insurance required or approved, and maintained, pursuant to the research agreement, are allowable.

(b) Cost of other insurance maintained by the institution in connection with the general conduct of its activities, are allowable subject to the following limitations:

(1) Types and extent and cost of coverage shall be in accordance with sound institutional practices;

(2) Costs of insurance or of any contributions to any reserve covering the risk of loss of or damage to Government-owned property are allowable except to the extent that the Government shall have required or approved such costs;

(3) Contributions to a reserve for an approved self-insurance program are allowable to the extent that the types of coverage, extent of coverage, and the rates and premiums would have been allowed had insurance been purchased to cover the risks;

(4) Costs of insurance on the lives of officers or trustees are unallowable except where such insurance is part of an employee plan which is not unduly restricted; and

(5) Actual losses which could have been covered by permissible insurance (through an approved self-insurance program or otherwise) are unallowable unless expressly provided for in the research agreement, except: (a) costs incurred because of losses not covered under nominal deductible insurance coverage provided in keeping with sound business practice are allowable; (b) minor losses not covered by insurance, such as spoilage, breakage, and disappearance of small hand tools, which occur in the ordinary course of doing business, are allowable.

14. Interest costs for interest on borrowed capital or temporary use of endowment funds, however represented, are unallowable.

15. Investment counsel and staff costs are unallowable.

16. Labor relations costs incurred in maintaining satisfactory relations between the institution and its employees, including costs of labor management

committees, employees' publications, and other related activities are allowable.

17. Losses on other research agreements or contracts. Any excess of costs over income under any other research agreement or contract of any nature is unallowable. This includes, but is not limited to, the institution's contributed portion by reason of cost-sharing agreements or any under-recoveries through negotiation of flat amounts for overhead.

18. Maintenance and repair costs necessary for the upkeep of property (including Government property unless otherwise provided for) which neither add to the permanent value of the property nor appreciably prolong its intended life but keep it in an efficient operating condition, are allowable.

19. Material costs of purchased materials, supplies, and fabricated parts directly or indirectly related to the research agreement are allowable. Purchases made specifically for the research agreement should be charged thereto at their actual prices after deducting all cash discounts, trade discounts, rebates, and allowances received by the institution. Withdrawals from general stores or stockrooms should be charged at their cost under any recognized method of pricing stores withdrawals conforming to sound accounting practices consistently followed by the institution. Incoming transportation charges are a proper part of material cost. Direct material cost should include only the materials and supplies actually used for the performance of the research agreement, and due credit should be given for any excess materials retained, or returned to vendors. Due credit should be given for all proceeds or value received for any scrap resulting from work under the research agreement. Where Government-donated or furnished material is used in performing the research agreement, such material will be used without charge.

20. Memberships, subscriptions and professional activity costs.

(a) Membership costs of the institution's membership in civic, business, technical, and professional organizations are allowable.

(b) Subscription costs of the institution's subscriptions to civic, business, professional, and technical periodicals are allowable, excepting those obtained for the library for which a use allowance is made.

(c) Meetings and conferences. This item includes cost of meals, transportation, rental of facilities for meetings, and costs incidental thereto, when the primary purpose of the incurrence of such costs is the dissemination of technical information. Such costs are allowable.

21. Patent costs. Costs of preparing disclosures, reports, and other documents required by the research agreement and of searching the art to the extent necessary to make such invention disclosures, are allowable. In accordance with the clauses of the research agreement relating to patents, costs of preparing documents and any other patent costs, in connection with the filing of a patent application where title is conveyed to the Government, are allowable. (See also C-32 below.)

22. Pension plan costs are allowable if in accordance with the established policies of the institution, provided such policies meet the test of reasonableness and the methods of cost allocation are not discriminatory, and provided appropriate adjustments are made for credits or gains arising out of normal and abnormal employee turnover or any other contingencies that can result in forfeitures by employees which inure to the benefit of the institution.

23. Plant security costs including wages, uniforms, and equipment of personnel engaged in plant protection, and necessary expenses to comply with Government security requirements, are allowable.

24. Preresearch agreement costs are those which are incurred prior to the effective date of the research agreement whether or not they would have been allowable thereunder if incurred after such date. Such costs are unallowable unless specifically set forth and identified in the research agreement.

25. Professional services costs—legal, accounting, engineering and other.

(a) Costs of professional services rendered by the members of a particular profession who are not employees of the institution are allowable, subject to (b) and (c) below, when reasonable in relation to the services rendered and when not contingent upon recovery of the costs from the Government. Retainer fees to be allowable must be reasonably supported by evidence of services rendered.

(b) Factors to be considered in determining the allowability of costs in a particular case include:

(1) The past pattern of such costs, particularly in the years prior to the award of Government research agreements;

(2) The impact of Government research agreements on the institution's total activity;

(3) The nature and scope of managerial services expected of the institution's own organizations; and

(4) Whether the proportion of Government work to the institution's total activity is such as to influence the institution in favor of incurring the cost, particularly where the services rendered are not of a continuing nature and have little relationship to work under Government research agreements.

(c) Costs of legal, accounting, and consulting services, and related costs, incurred in connection with organization and reorganization, and the prosecution of claims against the Government, are unallowable. Costs of legal, accounting and consulting services, and related costs, incurred in connection with patent infringement litigation, are unallowable unless otherwise provided for in the research agreement.

26. Profits and losses on disposition of plant, equipment, or other capital assets. Profits or losses of any nature arising from the sale or exchange of plant, equipment, or other capital assets, including sale or exchange of either short- or long-term investments, shall be excluded in computing research agreement costs.

27. Proposal costs are the costs of preparing bids or proposals on potential Government and non-Government research agreements or projects, including the development of engineering data and cost data necessary to support the institution's bids or proposals. Proposal costs of the current accounting period of both successful and unsuccessful bids and proposals normally should be treated as indirect costs and allocated currently to all activities of the institution, and no proposal costs of past accounting periods shall be allocable in the current period to the Government research agreement. However, the institution's established practices may be to treat proposal costs by some other recognized method. Regardless of the method used, the results obtained may be accepted only if found to be reasonable and equitable.

28. Public information services costs such as news releases pertaining to specific research or scientific accomplishment are unallowable unless specifically authorized by the sponsoring agency.

29. Rearrangement and alteration costs. Ordinary or normal rearrangement and alteration costs are allowable. Special arrangement and alteration costs incurred specifically for the project are allowable when such work has been approved in advance by the sponsoring agency concerned.

30. Reconversion costs are those incurred in the restoration or rehabilitation of the institution's facilities to approximately the same condition existing immediately prior to commencement of Government research agreement work, fair wear and tear excepted. Reconversion costs are allowable, only to the extent of the cost of removing Government property and the restoration or rehabilitation costs caused by such removal.

31. Recruiting costs such as "help wanted" advertising, operating costs of an employment office necessary to secure and maintain an adequate staff, travel costs of employees while engaged in recruiting personnel, and travel costs of applicants for interviews for prospective employment are allowable. Where the institution uses employment agencies, costs not in excess of standard commercial rates for such services are also allowable. Costs of special benefits or emoluments offered to prospective employees beyond recognized practices for recruiting such personnel are unallowable.

32. Royalties and other costs for use of patents. Royalties on a patent or amortization of the cost of acquiring a patent or invention or rights thereto, necessary for the proper performance of the research agreement and applicable to tasks or processes thereunder, are allowable unless: (a) the Government has a license or the right to free use of the patent; (b) the patent has been adjudicated to be invalid or has been administratively determined to be invalid; (c) the patent is considered to be unenforceable; or (d) the patent has expired.

33. Severance pay is a payment, in addition to regular salaries and wages, by institutions to employees whose services have been terminated. Severance pay is allowable as a cost only to the extent that it is required by law, employer-employee agreement, established policy that constitutes in effect an implied agreement on the institution's part, or circumstances of the particular employment. Severance payments are divided into two categories as follows:

(a) Those due to normal, recurring turnover. The actual costs of such severance payments shall be regarded as expense applicable to the current fiscal

year and equitably apportioned to the institution's activities during that period.

(b) Those due to abnormal or mass terminations. Abnormal or mass severance pay is of such a conjectural nature that measurement of costs by means of an accrual will not achieve equity to both parties. Thus accruals for this purpose are not allowable. However, the Government recognizes its obligation to participate, to the extent of its fair share, in any specific payment. Thus, allowability will be considered on a case-by-case basis.

34. Special services costs, such as general public relations activities, catalogs, and alumni activities, are unallowable.

35. Staff benefits are allowances and services provided by the institution to its employees as compensation in addition to regular wages and salaries. Costs of such staff benefits are allowable and include vacations, holidays, sick leave, military leave, employee insurance, social security taxes and workmen's compensation insurance. The payment of tuition or remission of tuition for employees and their families are allowable to the extent that such payments or remissions are made under established policies consistently applied.

36. Taxes. In general, taxes which the institution is required to pay and which are paid or accrued in accordance with generally accepted accounting principles, and payments made to local governments in lieu of taxes which are commensurate with the local government services received are allowable, except for:

(a) Taxes from which exemptions are available to the institution directly or which are available to the institution based on an exemption afforded the Government and in the latter case when the sponsoring agency makes available the necessary exemption certificates.

(b) Special assessments on land which represent capital improvements. Any refund of taxes, interest, or penalties, and any payment to the institution of interest thereon, attributable to taxes, interest, or penalties which were allowed as research agreement costs, shall be credited or paid to the Government in the manner directed by the Government provided any interest actually paid or credited to an institution incident to a refund of tax, interest and penalty shall be paid or credited to the Government only to the extent that such interest accrued over the period during which the institution had been reimbursed by the Government for the taxes, interest, and penalties.

37. Transportation costs. Transportation costs include freight, express, cartage, and postage charges relating either to goods purchased, in process, or delivered. These costs are allowable. When such costs can readily be identified with the items involved, they may be direct costed as transportation costs or added to the cost of such items. Where identification with the materials received cannot readily be made, inbound transportation costs may be charged to the appropriate indirect cost accounts if the institution follows a consistent, equitable procedure in this respect. Outbound freight, if reimbursable under the terms of the research agreement, should be treated as a direct cost.

38. Travel costs consist of transportation, lodging, subsistence, and incidental expenses.

(a) Travel costs incurred by institution personnel in a travel status while on specific research business are allowable.

(b) Travel costs incurred in the normal course of overall administration of the institution and applicable to the entire institution are allowable. Such costs shall be equitably apportioned to all work of the institution.

(c) Subsistence and lodging, including tips or similar incidental costs, are allowable either on an actual or per diem basis. The basis selected shall apply to an entire trip and not selected days of the trip.

(d) Costs of personnel movement of a special or mass nature are allowable only when authorized or approved in writing by the sponsoring agency or its authorized representative.

39. Sabbatical leave costs, including leave of absence to employees for performance of graduate work or sabbatical study, travel, or research, are allowable as indirect costs of the period in which paid, provided the institution has a uniform policy on sabbatical leave for persons engaged in instruction and persons engaged in research. Such costs shall be allocated on an equitable basis among all appertaining activities of the institution.

TESTIMONY OF DR. HAROLD BROWN, DIRECTOR, DEFENSE RESEARCH AND ENGINEERING, BEFORE APPROPRIATIONS SUBCOMMITTEE

Mr. MAHON. For a number of years the appropriation bill for the Department of Health, Education, and Welfare has carried a limitation which provides that the indirect cost of research grants shall not exceed 15 percent of the direct cost. A recent study by the committee's investigative staff revealed that the Department of Defense was paying 32.6 percent indirect cost support on grants included in a random sample examined by the investigators. How much money could be saved by the Department of Defense if the Department were limited to payment of a 15-percent indirect cost?

The staff report also pointed out that by paying a flat 15 percent on all contracts the Department of Health, Education, and Welfare eliminated the cost of auditing indirect support costs, and pointed out that the Department of Defense spent some \$300,000 annually on such audits. It would seem that research grants would be similar in both Departments. Why should the Department of Defense exceed the payments made by the Department of Health, Education, and Welfare in this field?

If legislation were written which provided that research grants could not pay indirect cost in excess of 15 percent, should research contracts be similarly limited?

Comment briefly on this, Mr. Secretary, at this point.

Dr. BROWN. To my knowledge the overhead costs range from somewhere like 8 percent to something like 45 percent on Defense Department research grants; that is, grants and contracts.

I think the kind of research done on Defense Department contracts may be sufficiently different from those done on HEW contracts where essentially they take a professor and they support him so that the two situations may not be comparable.

I think the additional flexibility provided to us by allowing us to tailor the overhead allowance to the particular contract has real advantage.

However, I shall be glad to look into the matter more fully and supply a complete answer.

Mr. MAHON. One further question including research contracts in the fixed figure, such as 15 percent. I want you to discuss that as well.

Dr. BROWN. I think that would really create very serious difficulties because each case has to be looked at separately.

(The information follows:)

"The Department of Defense conducts an extensive program of research, development, test, and evaluation work in order to secure the most advanced and effective weapons now and to establish the reservoirs of technical and scientific knowledge upon which to draw for the weapon development of future years. This program is essential to the defense of the Nation. The program is conducted in Government laboratories, and outside in commercial organizations, educational institutions, and scientifically oriented nonprofit organizations.

"Since the goal of our research and development program is the best possible equipment, weapons, and weapons systems, we must seek those firms and institutions which have the best available technical and scientific resources. Competence and a willingness to devote this competence to our work is necessary if the Department is to be assured of the best results at the lowest cost to the Government. The competent contractor or institution will get the work done faster and with better results and this is likely to be less costly in the end.

"Technology is advancing so fast in many fields that the reservoirs of fundamental knowledge are being depleted at a rapid rate. Since educational institutions are the primary source for replenishing these reservoirs, the results of the research performed by these institutions for DOD is most critical to our future advances in technology.

"When research work is performed by educational institutions or other nonprofit organizations, it is usually conducted under cost-reimbursement type contracts or grants depending upon which of these administrative vehicles is best suited under the prevailing circumstances. Cost-reimbursement type contracts are used because they are a better vehicle than a fixed-price contract where the results to be achieved cannot be specified in advance and accordingly maximum ingenuity and inventiveness has to be exercised by the competent contractor. This type of contract is used with educational institutions where the research and development is being performed over a long period and requires guidance and supervision to maximize results desired by the procuring agency. Where

the cost of the desired effort can be measured in advance with reasonable accuracy and where the work will be performed over a relatively short period of time by educational or other nonprofit organizations, a grant may be used in lieu of a contract.

"It is the need for administrative control and scientific direction as well as the nature of the work which governs the selection of the administrative vehicle used. Grants and contracts are frequently performed side by side the same personnel and in the same laboratory areas.

"It is the policy of the DOD to pay all applicable costs irrespective of the type of vehicle used to obtain performance of the desired research except for those cases where it is fully understood and agreed to by both parties that cost sharing is desirable. As will be discussed later on, the applicable costs are determined by considering both the direct and indirect costs under the individual circumstances. Therefore, these costs will vary from institution to institution. Under these circumstances, the Department of Defense most strongly believes that flat indirect cost rates would have the effect of distorting the cost base or would force mandatory cost sharing across the board, and would not be in the best interest of the long-range scientific development program. Cost sharing on a selective basis is highly desirable when the results of work performed provide some special benefit to the contractor, or is otherwise equitable to both parties. On this matter, the General Accounting Office has made the following observations:

"We concur in the basic policy that in supporting research conducted in institutions of higher learning, agencies of the Federal Government if requested, should reimburse these institutions for the indirect costs associated with the direct cost of research supported. We believe that the agencies, within the broad policy and guidelines established governing the programs conducted by them, should determine the avenues of research to be pursued at their expense and believe it only fair that all cost of such research be a proper charge to the activities so conducted, except, of course, to the extent others are interested in such research and equitable arrangements for a sharing of the cost can be agreed upon."

"The concept of a mandatory flat overhead rate limitation overlooks the fundamental cost accounting principle that there is no real difference between direct and indirect costs, except for the manner in which they are allocated to the work benefited by their incurrence. The costs of the material directly used in the work and the salaries of people directly employed on the work can be clearly and readily identified and classified as direct costs. Other materials and labor costs serving some general support purpose are not readily identifiable directly with the work but can be reasonably prorated as indirect costs. Both types of costs (direct and indirect) are made up of such elements as salaries and wages, materials, supplies, and services. A dollar of indirect cost is exactly equal to a dollar of direct cost in terms of outlay. The man who fires the furnace that heats the laboratory in which the researcher performs his work contributes in his way to the research just as surely as does the researcher himself.

"There are no hard and fast rules governing the division of total costs between those to be treated as direct costs and those to be treated as indirect costs. Consequently, the total costs of a contractor with a high overhead rate could very well be less than the total costs of a contractor with a low overhead rate. In the absence of an artificial stimulus such as a mandatory, fixed overhead rate limitation, the logical and economical division of total costs is a matter dependent on such factors as how the contractor is organized, the nature of his business, how he keeps his books and whether the costs were specifically incurred for a particular purpose such as the performance of a contract or grant or whether they were incurred for common or joint objectives not readily subject to treatment as direct costs of a contract or grant or other activities.

"In the case of educational institutions, the Department of Defense follows the policy of measuring the costs of its grants and contracts in accordance with the cost principles issued for that purpose by the Bureau of the Budget (Circular A-21 issued for Government-wide application). These cost principles provide for fair and equitable costing under the particular circumstances prevailing at educational institutions. This includes a logical division of direct and indirect costs flowing from the fund accounting systems employed by educational institutions.

"In regard to the various questions asked by your committee with respect to the imposition of a 15-percent indirect cost limitation, if such a limitation were imposed on the funds used to pay for DOD research performed by educational institutions, the institutions might be said to have three alternatives: (1) Absorb the additional costs, (2) make radical changes in the logical costing pattern (division between direct and indirect costs) in order to get the maximum amount of costs classified as "direct" so they can be reimbursed and increase the base to which the 15-percent rate would apply, or (3) drastically curtail the research activities vital to the defense of the Nation. Actually, in our opinion, the institutions would be forced to curtail DOD research activities because they simply could not afford to absorb the additional indirect costs or install the cost-accounting procedures necessary to change the logical costing pattern.

"In view of the importance of university research to DOD research and development programs as outlined above, curtailment of the university research activity for DOD such as a flat rate would impose, would constitute a serious impediment to the research and development programs vital to the Nation's defense and security.

"It is advantageous to the military not to erode the strength of our educational institutions in their role of developing our national scientific resources. The ability of most educational institutions to share in the support of these increased activities in research is limited since this expansion has grown to the point where only a portion of its cost can be borne adequately by the funds obtained from traditional sources.

"To the extent that the indirect costs in this expanded research program are not reimbursed by the Government, the additional burden thrown on educational institutions would require them to—

"(1) Use unrestricted funds from other sources for this scientific research, thus diverting funds from other activities to science; or

"(2) Restrict the volume of research in science to the level at which they can carry the portion of costs imposed on them.

"If institutions were required to absorb the nonreimbursed indirect costs of military research, they probably would find it necessary to draw upon other unrestricted funds available to them. Obviously, moneys from "restricted" endowments and gifts may not be used for this purpose. Since student fees do not ordinarily meet the costs of instruction, the burden, therefore, must fall on those funds normally used to maintain an institutionwide balance in instruction and research; namely, current income from "unrestricted" gifts and endowments. Any significant drain on this important source of support represents a serious threat to the institution's financial and functional integrity. The difficulty in securing gifts and endowments as sources of income, during the past 15 years, when coupled with the effects of inflation has only served to aggravate the problem.

"The problem of absorbing the indirect costs of research in public institutions is somewhat different but no less pressing. State legislators and citizens expect that State funds will be used first and foremost for student instruction although direct State contributions for research in such fields as agriculture have been substantial and widely approved. While State appropriations may be used to meet some of the nonreimbursed costs of federally supported research, there are real limits on the extent to which this diversion may be permitted by those responsible for the provision of these funds.

"With respect to the question, 'Why should the Department of Defense exceed the payments made by the Department of Health, Education, and Welfare in this field?' the 15-percent limitation attached to public health grants caused one university to make a contribution during 1 year of approximately \$244,000 in order to make up the difference between overhead costs experience and the amount permitted under grant funds. The enlargement of the foregoing policy to include a similar limitation on Department of Defense work at this university as well as others would seriously hamper if not halt much research work vital to the national defense effort. Considerations such as these support the President's request that the limitation be removed from the HEW appropriation.

"To further indicate the effect a 15-percent limitation would have on current Department of Defense research, the following examples are listed to show existing overhead rates stated as a percentage of direct salaries and wages and scope of programs at a few of the many universities engaged in Department of Defense research and development.

INDIRECT COSTS IN RESEARCH GRANTS

"Institution	Nature of research	Current overhead rate (percent)
Massachusetts Institute of Technology	Operations research	51.2
	Program of Polaris guidance systems	
	Electronic physics	
Harvard University	Air defense research	130.1
	Basic research in physics	
	Research and development in acoustics	
Columbia University	Logistic and computer research	38.5
	Medical sciences research	
	Research and development of underwater warfare	
New York University	Study in the field of geophysics	48.0
	Medical sciences research	
	Physics of outer space	
Princeton University	Social sciences research	72.0
	Research and development in air propulsive systems	
	Research and development in aircraft design	
Johns Hopkins	Guided missile research	40.5
	Research in electronics	
	Medical research	
University of Chicago	Operations research	63.0
	Research and development materials for ICBM reentry	
	Nuclear physics	
University of Illinois	Flight dynamics air weather systems	55.0
	Control systems laboratory	
	Research in electronics	
University of Texas	Airborne fire control system	36.0
	Explosives research	
	Oceanographic research	
University of Miami	Physical research in electronics	62.8
University of Maryland	Oceanographic research	40.0
University of California	Medical research	33.0
	Advanced rocket research	
	Research and development in biochemistry	
Cal Tech	Aerodynamics	55.0
	Missile guidance systems	
	Research and development in mine countermeasures	
Georgia Tech	Research and development in weapons control systems	61.0
	Advanced communications research	
	Research radar pulse technique	
University of Kansas	Radio propagation study	48.0
	Basic research in math and physics	
	Battlefield surveillance	
Florida State University	Project Michigan	42.0
	Electronic countermeasures	
	Influenza research	
University of Michigan	Electronic countermeasures	49.0
	Influenza research	
	Influenza research	

* 1 Percentage of total direct costs.

"From the above table of examples it is obvious that many very critical areas of research would be seriously jeopardized if an arbitrary reduction in overhead rates to 15 percent were to be effected. The action would involve a Department of Defense university research program of approximately \$350 million."

Mr. LAIRD. Your statement is the same kind of statement the people in HEW give us, you know. We have had every university president in the country in here practically in the last few weeks.

The point, though, you have some contracts which do not have this range between 8 and 45 percent. You have some contracts paying 130 percent.

Dr. BROWN. Those, I think, would have to be looked at to see whether there were not special circumstances. I think in the case of the Defense Department, the overhead rate will depend on how many other contracts they have not done this way.

Mr. LAIRD. You have some grants. The highest one I was able to find was 113-percent overhead.

Dr. BROWN. Let me say, Mr. Laird, that looks high to me, too. That sounds more like the Defense contractor—

Mr. MAHON. Do some good research work on this and give us the facts. This is a significant matter.

Dr. BROWN. Yes, sir.

Mr. TEAGUE. That is all I have, Mr. Chairman.

The CHAIRMAN. Any questions?

Mr. VAN PELT. No questions.

The CHAIRMAN. Mr. Karth?

Mr. KARTH. Mr. Chairman, what seems to have prompted this sudden interest of the Appropriations Committee in this limitation?

Have abuses been uncovered? If so, are the claims of abuses valid?

Would you care to give us your appreciation on why this sudden limitation?

Dr. CLARK. Mr. Karth, we are not aware of any abuses that have been uncovered.

This is a point that was of interest to me when I was reviewing the Congressional Record for last Thursday when this matter came up.

I did not see any evidence of any abuses having been uncovered there. So in my mind this too remains a question.

Mr. KARTH. So to your knowledge there have been none?

Dr. CLARK. To my knowledge there have been none.

Mr. KARTH. I wonder if the gentlemen with you there would address themselves to the question.

Mr. EINHORN. We have, of course, seen the newspaper stories and read some of the House committee reports with respect to the difficulties that NIH had, but that is all we have done on that. Dr. Clark was addressing himself to what we know about NASA. We have not seen abuses here.

Mr. KARTH. Are you aware of any abuses in any other agencies, or, at least, alleged abuses, and if so, what are they?

Mr. EINHORN. The only abuses that I have seen alleged are those which relate to this commercial firm which received a grant from NIH. I think it was from NIH. Somewhere in HEW.

The CHAIRMAN. You only know that from newspaper reports?

Mr. EINHORN. From published material. Not from my own personal knowledge.

Mr. KARTH. But that was subject to the 15-percent limitation; was it not?

Mr. EINHORN. Yes; it was.

Mr. KARTH. You don't know of any alleged abuses outside of the jurisdiction of HEW where the 15-percent limitation did not apply, do you?

Mr. EINHORN. The National Science Foundation had a 20-percent limitation, which used to be 15 percent. I don't know of any abuses there, if that is your question.

Mr. KARTH. In the determination of costs, as set out in Circular A-21, aren't the guidelines sufficiently rigid, or stringent, to prevent abuses?

Mr. EINHORN. The guidelines are good for the determination of costs.

Mr. KARTH. This whole question involves the determination of costs, does it not?

Mr. EINHORN. Yes, sir. As I understand it, the limitation was not designed to—I know very little about the basis for the 20 percent rather than some other percent—as I understand it that limitation was not designed to do anything but limit the amount of costs that would be paid to a university.

In other words, it would be an encouragement, I suppose, of cost sharing.

Mr. KARTH. Do you know?

Dr. CLARK. No; I don't.

Mr. EINHORN. I don't know anything more than that. I did not think the 20 percent was directed toward abuses.

Mr. KARTH. That is all.

The CHAIRMAN. Mr. Mosher?

Mr. MOSHER. No questions.

The CHAIRMAN. Mr. Casey?

Mr. CASEY. In your grants, what is the highest percentage of indirect cost, approximately?

Dr. CLARK. Dr. Smull.

Dr. SMULL. I do not have, specifically, that figure. These tend to vary. I think there have been overhead determinations based on A-21 which will run between 60 and 70 percent.

Mr. CASEY. Some have run—

Dr. SMULL. Of salaries. This is of salaries, this is percentage of salaries only.

Mr. CASEY. Salaries only?

Dr. SMULL. Yes.

Mr. CASEY. How about the total cost? That would bring it down?

Dr. SMULL. Yes.

Mr. CASEY. The percentage down?

Dr. SMULL. Yes, sir, bring it down appreciably, depending on the nature of the investigation. If it is an experimental investigation, the percentage of total would be quite a bit less.

Mr. CASEY. This limitation that they put on in HEW, has that been on everything, that is to say, has it been applied to total cost of the whole program?

Dr. SMULL. I am not familiar with specific details, but this has been the limitation. The limitation has been on direct cost, as I understand, total direct cost.

Mr. CASEY. So they would not single out salaries and separate that, apply the 20-percent limitation and then disregard the rest of the project?

Dr. SMULL. No, sir.

Mr. CASEY. When they talk about a limitation they are talking about the overall cost, then, is that correct?

Dr. SMULL. That is our understanding; yes.

Mr. CASEY. Based on the overall cost, what is the highest that you recollect, generally? I know you can't be specific without having records. But approximately what is the highest percentage of overall cost that NASA has borne?

Dr. SMULL. I would say this probably would run 30 to 40 percent on a purely theoretical investigation—

Mr. CASEY. Type of project?

Dr. SMULL. Type of project.

Mr. CASEY. That determination would make it vary as to what the percentage of cost would be attributable to the particular project, would it not?

Dr. SMULL. Yes. If you are trying to compare costs as determined by A-21 on the basis of which of the overhead costs are determined

from the direct labor as opposed to a fixed limitation on total direct costs, you would get it.

I don't have this information with me. I can obtain a comparison of this nature for you very easily if you wish.

Dr. CLARK. We have some National Science Foundation representatives in the room. I believe they had a recent study indicating 30 percent was a good average.

Mr. CASEY. It is your opinion, is it not, that to put a hard and fast figure on it on would be shooting in the dark?

Dr. CLARK. Yes, sir, this is our opinion.

Mr. CASEY. Because each project is different from the next one?

Dr. CLARK. Yes, sir.

Mr. CASEY. And the overhead costs would vary depending on the type of project undertaken?

Dr. CLARK. This is correct.

Mr. CASEY. And the amount of personnel and type of equipment required?

Dr. CLARK. Yes, sir.

Dr. SMULL. We believe the approach of the A-21 type of allowable costs is a more rational approach of the problem of determining the indirect costs than a flat percentage because of the variation of types of activity.

Mr. CASEY. With A-21 you have guidelines to determine on each project what would be the reasonable amount of cost involved that the agency should share?

Dr. SMULL. Yes, sir.

Mr. CASEY. This may have been covered. Limiting it to your own agency, have you had any indication of any abuse or overreaching of the agency by any educational institution?

Dr. SMULL. No, sir.

Dr. CLARK. None whatever.

Mr. CASEY. Back to Mr. Teague's question. But is not NASA, being one of the newest agencies in this field, somewhat hard put to find universities that are not already overloaded that can take on some of your projects?

Dr. SMULL. I would say yes, in the explosive growth of NASA's program and the time scales set forward and laid down for NASA to carry out its mission, yes, we are.

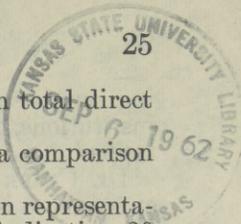
Mr. CASEY. That was the purpose of this survey, to find institutions capable of carrying out your projects that were not loaded down with work for DOD or somebody else; isn't that correct?

Dr. CLARK. Yes. The major effort is to broaden the base of the total competence because of the rapidly expanding growth curve of the total requirements as the programs continued to evolve.

Mr. CASEY. As I understand it, there are some institutions that have never been approached to participate in these programs that have capable staffs, very capable facilities, that could be tapped but that have just not been discovered, so to speak?

Dr. CLARK. That is correct.

Mr. CASEY. It has been a matter where the institutions that have been performing this work are better known and there has been the tendency to go to them with a project, and it is my understanding that Mr. Webb wanted to broaden this base and find other institutions that have not participated, not only for the purpose of increas-



ing our base of scientific development throughout our educational institutions, but also to find institutions whose resources have not been tapped.

Dr. CLARK. That is correct. One must remember in the growth curve there is a learning time. It is a little bit like gearing up for production on a new assembly line for the new models of cars in terms that there are certain aspects of technology which are peculiar to space.

When an institution that is good scientifically wants to start getting the know-how to participate effectively in the space flight program, there is a learning period during which time new skills are required to permit their successful participation in this type of program.

So the reason for going out at this point in time to broaden the base is so that the total availability of trained as well as competent universities will be increased in time so that when required to participate they will be ready to do so immediately.

Mr. CASEY. I believe that is all. Thank you, gentlemen.

The CHAIRMAN. Mr. Mosher?

Mr. MOSHER. No questions.

The CHAIRMAN. Mr. Davis.

Mr. DAVIS. Mr. Chairman, I would like to ask this question: If a university were engaged in a project and somewhere along the line it realized its overhead would exceed a limitation, whether 15 or 20 percent, it would find itself confronted with two alternatives, it seems to me, one would be to halt the project, or to curtail the size of the project or endeavor; while the other would be to subsidize the Federal Government from university funds.

Dr. CLARK. Yes, sir.

Mr. DAVIS. Are you familiar with any instance such as that happening with any Federal project? I realize it probably has not with NASA, but with any other agency?

Dr. CLARK. Of course, it could not with NASA because we have not had such a limitation.

Mr. DAVIS. Yes.

Dr. CLARK. I believe there was such an instance regarding the University of Michigan introduced into the Congressional Record of last Thursday in the House hearings on the Department of Defense appropriation bill, in which the University of Michigan was stating its inability to take on this particular grant, much as they would like to do the work, and citing other instances in which they had refused grants subject to a similar limitation.

There is, of course, a third alternative to the two which you propose. This is to subject themselves to the more stringent requirements of a contractual arrangement so as to avoid any flat limitation of overhead figure.

I suspect that if this were a Government-wide limitation where the university could not go from an agency that had a limitation to one that had not, then this alternate route of going to contracts would become more widespread.

Mr. DAVIS. That is all.

Mr. TEAGUE. There are a number of cases, John, where schools came back and said they would take it if they would agree to terminate the

program any time their indirect costs went above the amount allowed, and the department of Government would not do it.

The CHAIRMAN. Mr. Bell?

Mr. BELL. No questions.

The CHAIRMAN. Mr. Corman.

Mr. CORMAN. What factors determine whether you are going to spend money by contract or by grant, and what would be the advantages of a grant from the point of view of the agency itself?

Dr. CLARK. In general—and I will ask Dr. Smull to give you any detail on this—the contractual arrangement is more suited to the delivery of a specific predictable item.

It might be better to start at the other end and tell you how a space flight experiment may well evolve from a beginning in which a university and NASA desire to get together.

When a university and NASA desire to get together on a program of research, they generally start with a grant in order to permit the university enough flexibility to assign graduate students to the project over a period of time sufficiently long for them to feel some security in completing a graduate program—more than 1 year ordinarily—and to acquire the necessary know-how which is peculiar and particular to the space flight activity, because of the extreme requirements—need for reliability and difficulty in environmental testing, and this sort of thing.

They will investigate those areas in their research field which seem particularly adaptable to flight experimentation.

Generally they will conduct additional laboratory or theoretical research, and make certain they know in detail what other investigators have done up to the present time in this area, and finally make a proposal for flight research. Initially, sounding rockets are employed, and then ordinarily more costly and complex spacecraft—satellites and space probes—are sought.

At this point they may be selected for a flight in one of the major vehicles. Up through this point the grant is administered out of headquarters, because this is a part of our long-range scientific programming activity involving the broadening of the base in this type of activity.

At the point at which they have been selected for a flight, responsibility for integrating their particular flight research project into the remainder of the payload is turned over to a field center, such as the Goddard Space Flight Center at Greenbelt, and the university can then go two ways in their procurement of hardware. They can either let a contract with a commercial hardware manufacturer to their specifications, or in some instances they may decide to do it in their own shops and deliver it as their own contractor.

In either event the word contractor creeps in. This is an area in which they are competing with hardware manufacturers and we feel they should be subject to limitations similar to those applied to the hardware manufacturers when they go into this type of thing.

So the instrument of choice here is a contract which normally can and does specify in detail the environmental specifications which the device must meet, the delivery dates involved, number of units, and so forth.

Mr. CORMAN. Thank you.

That is all.

The CHAIRMAN. Mr. Waggonner.

Mr. WAGGONNER. I don't have a question, Mr. Chairman. I would like to make a comment in passing.

Having spent some time as a member of the State board of education in Louisiana in supervision of State colleges and universities it has been my experience that these people charged with administration of these colleges and universities, some doing research to a greater extent than others, seem to have two sets of figures available as to what their administrative costs are, depending on to whom they are giving those figures.

When they are after money from their respective States their administrative costs usually look rather small, but in cases like this, they have another figure, that is sometimes a good bit larger.

It leads me only to say that I don't believe we can establish a flat fee and be just to all concerned because, certainly circumstances in particular cases do warrant greater expenditures on occasion than in others, and I believe that we will have to find some way to get a good audit system from the General Accounting Office to give everybody their just dues.

The CHAIRMAN. Mr. Fulton.

Mr. FULTON. Glad to have you here.

The problem comes up, when Congress through another committee has approached this question on a 20-percent limitation base, what this committee's proper procedure would be to broaden it to give the various governmental bodies more working room in legitimate cases.

You testified that 30 percent would be a pretty fair average.

Of course, within a 30-percent average you would get people who were under the average and over the average.

Dr. CLARK. Yes, sir.

Mr. FULTON. It would mean pretty much a question of whether it is an arithmetic average or a modal average.

Would you say the modal average, the instance that occurred most times, is under 20 percent or under 30 percent?

Dr. CLARK. I understand the question. I don't know the answer to it. I only recall the percentage.

Mr. FULTON. Could there be an approach so as to change this 20 percent by saying that in the ordinary case without special submission to the agency the limitation shall be 20 percent but that in special cases where specifically approved by the agency and the Bureau of Budget it might go to 30 percent?

I am simply giving a possible alternative in case you run into heavy going on this approach of wiping out the 20-percent figure.

You concede if we take a position opposite than another committee there is a tendency for that committee to justify their 20 percent and stick to it.

Could you live with such an approach?

Dr. CLARK. Well, I have stated that NASA does not feel that it should be an exception to an otherwise across-the-board decision.

Since this is a maximum, not a guaranteed rate, that we are discussing, any increase in this rate, or any use of permissible exceptions with proper controls, would certainly be of assistance. As to whether we could live with it or not, this could only be a relative matter.

Mr. FULTON. I believe my friend Mr. Casey of Texas brought up a proper point, about the number of cases in which the administrative expenses would run over the 20-percent limit.

Could you amplify that, a little bit.

In what proportion of these projects would the administrative expenses run over the 20-percent limit that is now proposed?

Dr. SMULL. I don't have that information.

I think we can supply you with some information as to what our experience has been on the basis of our activity—had it been—had overhead been determined on this on a fixed percentage basis.

Mr. FULTON. Could you supply the number of cases and the size of the problem?

Dr. SMULL. We will supply that information.

A study of a typical block of 50 grants revealed that, based upon the Bureau of the Budget Bulletin A-21, the average overhead rate applied to a direct salaries base, was 44.4 percent. Using the same block of 50 grants, but relating the overhead cost to total direct costs, the average overhead rate was 28.8 percent.

Dr. CLARK. I think it is safe to say it would be the vast majority of cases.

Mr. FULTON. Give us a pro forma setup of what would have occurred in various setups with various universities. I think we should have some examples of that.

I think you could show us how the program has been working and would have worked if this 20-percent limitation had been in existence.

Dr. CLARK. We can do this.

Mr. FULTON. May I finish on this one point.

My feeling has been that we must look at this space program as a national program. Therefore, we want to have as many types of groups of universities and institutions in as many areas as possible participate.

I feel that the U.S. scientific community should not be centered alone in a few areas or spots.

I realize that some geographic areas have been quicker to take up scientific research in this space area that NASA is interested in.

The thing that concerns me is the institutions who want to take part and who are trying to make arrangements with NASA should promptly be able to do so.

I hear of institutions of large size who keep rejecting projects and programs. Certainly those programs should be awarded without any partiality, and these rejected programs should be checked with other institutions to see what they will do.

Not for the purpose of commenting on my own district because neither of these institutions is in my district, but simply because I am from Pennsylvania and know them well, I can give you two local situations.

One, Penn State University, through Eric Walker, president, Ed Keller, a Penn State official, has talked with me about getting more research projects upon which they could do work.

It is a university of some size in the center of Pennsylvania and they have worked space research projects already.

They would like prompt consideration by NASA on further projects to take up the excess people at the doctoral and research level that are now not engaged in space research and on projects which they could be.

My second example is the University of Pittsburgh, where I know well Chancellor Edward Litchfield and went to the school with the vice chancellor, Dr. John Geise, and have discussed with them their problems.

As a matter of fact, I have arranged scholarships for the university. So I am personally interested in it.

The University of Pittsburgh is participating in the new research and development organization, the Oakland corporation that is being set up in Pittsburgh, with all the universities of western Pennsylvania taking part, for the purpose of research and development, and training people in depth in outlying towns and cities and villages. The organization for space and aeronautics research on a broad base over a large geographical area in western Pennsylvania, would mean training people in electronics, physics, chemistry, mathematics, and the allied sciences which would give a base in depth to NASA for the future.

There are 2,200 people of doctoral level in this area of about 3 million people who are not now organized nor being used to any extent in the space program.

I have said at the University of Pittsburgh, "What will you do for the Government, not what we can get the Government to do for you," as the President said in his inaugural address.

I said if you are interested in a space center you should put up a million and a half dollars if you are asking a million and a half from the Government.

The CHAIRMAN. I believe they are in it.

Dr. SMULL. It is under consideration.

The CHAIRMAN. Not all of them have been finally established.

Dr. SMULL. That is right.

Mr. FULTON. My point is this:

I believe that you should require of the local areas and the local universities participation on a basis that they contribute to help the U.S. space program as well. Where that kind of interest is evidenced and indicated, then, regardless of the fact whether it is Pennsylvania, Iowa, West Virginia, they should be given adequate consideration.

My second point is, It is becoming an issue in our area, when NASA sends its teams around to recruit people on the research and development level, and when the large companies that are engaged in NASA research send their teams around to drain our local scientific manpower. We have already had an editorial in our largest morning paper, questioning NASA space programs as to their priority on scientific manpower. This amounts to the taking from local communities at higher prices than local industry paid this cream of their scientific talent. I want to warn you that is not going to be a little issue and that unless NASA likewise has a return so that each local community—not just Pittsburgh—can see that it is a combination effort with local participation in space programs there is going to be real trouble on this program.

I would say, in conclusion, that the National Aeronautics and Space Agency, in Pennsylvania, a State of almost 12 million people, has not 1 single employee of NASA at this time.

We pay over 10 percent of the taxes of the U.S. Government. Our area in western Pennsylvania alone pays \$1,250 million worth of

Federal taxes in a year through our Pittsburgh collector of internal revenue.

Under those circumstances, where we have these 2,200 people of doctoral level that so far have not been organized toward a NASA program, when our local citizens are forming a nonprofit corporation that will have \$250 million worth of research money, I hope that it will not take NASA months to come to the conclusion that it is worth while putting \$1,500,000 into a new space center when our local people donate the same amount to put it into this \$250 million new research complex.

My point is this: Rather than drain these communities of their scientific talent, NASA would get a much broader base if they would help the universities all over the country organize and spread out into little towns and hamlets with educational facilities on these skills that you are going to need in depth in order to be able to screen and develop these scientific young people, who are the outstanding ones through the country.

I think it is a loss to NASA.

Mr. CASEY. Will the gentleman yield?

Mr. FULTON. Yes.

Mr. CASEY. They have been trying to encourage more universities to take interest in the programs because of the fact that there seems to be a limited number, and, as Dr. Clark stated a while ago, you have to get them interested and start building up the program.

The CHAIRMAN. Gentlemen, I know of the interest of this, but I am afraid we have gone a little far afield. We are here to discuss the 20-percent limitation, and we have the National Science Foundation yet to hear.

Mr. TEAGUE. Mr. Chairman, I have two short questions.

Dr. CLARK. May I reply to Mr. Fulton's comment?

The CHAIRMAN. Shortly.

Mr. FULTON. I want to see a broad base program and not for a few institutions. It is not far afield.

Dr. CLARK. I think your points are very well made, Mr. Fulton.

You are describing just the sort of thing that NASA is attempting to do with increasing effectiveness. We recognize that in this whole system of all these consumers of talent the only segment of the community that really produces talent is the university.

We are exceedingly anxious that this production of talent is emphasized and supported. This is the reason for this Ten Square program, for example. And perhaps after the session I could discuss with you some of the things we are doing with Penn State University in its ionospheric research laboratory, where we have some long-range funds supporting graduate studies, and from which we have borrowed on 1 year's leave of absence a man who is at present the chief of ionospheric physics program and will return to the university in even better position to contribute to that region, Mr. Fulton.

The CHAIRMAN. Mr. Teague.

Mr. TEAGUE. Is there any comparison between going to a university for program participation and going to DOD or another agency of the Government?

What do you pay another agency of the Government for doing a job for you?

Is there a fair comparison?

Dr. CLARK. This depends on the individual arrangements.

Mr. TEAGUE. What I was wondering was, could this indirect cost be brought into it?

Dr. CLARK. I think it would be very difficult to do so, Mr. Teague, because ordinarily if we go to another part of the Government this is a mutual consent type thing in which the other part of the Government is also interested.

Frequently their charges on us for the services or the function—whatever it is—will be minimal because of this mutual interest.

Mr. TEAGUE. The second point, Dr. Clark, in the hearings Mr. Mahon pointed out the Defense Department spent \$300,000 annually on audits of these grants.

He intimates this would be done away with if this percentage stays in. If this 20-percent limitation is in there will NASA audit the grants?

Dr. CLARK. I think it would be unlikely to drop the audit, Mr. Teague, because of the variation. It was our understanding that the 20-percent figure was a maximum figure, not a guaranteed figure.

Mr. KARTH. Will the gentleman yield?

In situations like this, Dr. Clark: It has been my experience to find every time you put a limitation on it becomes the minimum rather than the maximum; isn't this true?

Dr. CLARK. Quite possible.

Mr. KARTH. Everybody will charge you 20 percent?

Dr. CLARK. This is certainly possible.

Mr. TEAGUE. Mr. Ford, of the University of Michigan, estimates the same thing—everybody will come in with 20 percent.

Dr. CLARK. I noticed that in the testimony.

The CHAIRMAN. Mr. Riehlman.

Mr. RIEHLMAN. No questions.

Mr. KARTH. One other question, Mr. Chairman.

The CHAIRMAN. Yes.

I want to urge you to hurry.

Mr. KARTH. Dr. Clark, are the universities upon accepting a grant for basic research bound legally to complete the work of this grant whether or not they exceed the limitation? Let's say the limitation was on. Would they be bound to complete this work?

Or when they reach the limitation could they just drop it and we have to reprogram and provide a similar grant to somebody else?

Dr. CLARK. Ordinarily a grant provides for a certain fixed dollar amount to work in a certain area.

Mr. KARTH. When the money was spent they would quit?

Mr. CLARK. If there is no further money forthcoming they may, if they like, quit.

Mr. KARTH. Under a limitation like this the program could actually cost more money; is that correct?

Dr. CLARK. You mean if the university decided to stop work on the grant basis at some point in time because of imposition of a limit?

Mr. KARTH. If they do not feel they should subsidize the Government, for example, and have spent all of the grant money and they have reached the 20-percent limitation on indirect cost, they might fold their tent and quit?

Mr. CLARK. If they feel they could not continue under the grant instrument because they would, in your words, have to subsidize the Government in this regard, and if they feel the contract instrumentality would not be appropriate for the work and decide not to participate, then there can be some lost effort here, yes.

The CHAIRMAN. Thank you very much, gentlemen.

We have about 45 minutes we would like to have Mr. Rosenthal, Dr. Robertson, Mr. Levine come forward, and Mr. Charles Ruttenberg.

STATEMENT OF AARON ROSENTHAL, COMPTROLLER, NATIONAL SCIENCE FOUNDATION; ACCOMPANIED BY DR. RANDAL M. ROBERTSON; OSCAR H. LEVINE, AND CHARLES B. RUTTENBERG

The CHAIRMAN. Who will be the spokesman for the group?

Mr. ROSENTHAL. I will start.

The CHAIRMAN. All right, sir.

Mr. ROSENTHAL. Let me introduce my colleagues.

Dr. Robertson, on my left, Associate Director for Research.

Next to him, Mr. Levine, Chief of the College and University Study Program of the Office of Economic and Statistical Studies.

To my right, Mr. Ruttenberg, Deputy General Counsel.

We have no prepared statement, Mr. Chairman.

I think it might be desirable if I could take a moment to amplify some of the comments made.

The CHAIRMAN. Gentlemen, you have heard the comments made by NASA witnesses. Perhaps you can amplify and supplement the statements previously made.

Mr. ROSENTHAL. There were certain statements made which I am afraid might lead to a misinterpretation of what the indirect cost category is supposed to cover.

I think the implication was left that indirect costs apply only to administrative expenses of the school.

The indirect costs also cover maintenance and operation of the buildings, utilities, janitorial services, and so forth—the use of libraries and common service facilities.

It is more than just the administrative expenses which are normally included in overhead.

The CHAIRMAN. Those vary then with different parts of the country?

Mr. ROSENTHAL. Yes, they do.

The CHAIRMAN. I can see the University of Maine overhead for heating may be much greater than in the University of Miami.

Mr. ROSENTHAL. Exactly. I think it is well to understand that it is not just administrative expenses we are talking about.

These costs include maintenance and operation of the campus as well as some common service activities, such as libraries. In many schools fringe benefits are included as part of the overhead or indirect cost category which, again, cause differences between schools.

The CHAIRMAN. What do you mean by fringe benefits?

Mr. ROSENTHAL. The retirement plan, teachers insurance, health, sabbatical leave costs.

The CHAIRMAN. They vary, of course, by school.

Mr. ROSENTHAL. Yes, and by State.

I should also like to state, while there has been a lot of discussion about cost sharing, it seems to me that we should understand when we talk about cost sharing we are not talking about cost sharing only with respect to the indirect cost category.

If there is to be cost sharing it should be applied to all the costs of project, namely, to the direct costs as well as the indirect costs.

On the point raised in connection with the audit, Mr. Teague, I believe it is fair to say that audit is not only an audit of the indirect costs, but these are audits of the total costs of the project, direct costs—salaries, wages, materials, equipment.

So that even with a fixed overhead rate there would be a requirement for audit.

Mr. TEAGUE. Have you read Mr. Mahon's statement in the Congressional Record where he intimates there would be no audit if you had a flat rate?

Mr. ROSENTHAL. No, sir, I did not see that.

Mr. TEAGUE. Mr. Ford says the same thing.

Mr. ROSENTHAL. I really don't see how that would be possible. I might say in the Foundation now and for a long period of time the Foundation has had a fixed rate, namely, 20 percent, and we do have an audit program and it is a very vital and important part of our activity.

Mr. TEAGUE. Is it 20 percent?

Mr. ROSENTHAL. Our rate right now is 20 percent, yes, sir.

Mr. TEAGUE. Fixed?

Mr. ROSENTHAL. It is fixed.

Mr. TEAGUE. Mr. Mahon said it is 20 percent with a 5-cent leeway either way.

Mr. ROSENTHAL. I don't understand that, sir.

Mr. TEAGUE. On page 13856, July 26, Mr. Mahon said the National Science Foundation follows the policy of allowing 20 percent with a 5-percent leeway for contingencies.

Mr. ROSENTHAL. I don't understand that.

We allow 20 percent of the direct costs of the research as an allowance to the school for all the indirect expenses.

Mr. TEAGUE. Are you saying you don't object to this 20-percent limitation?

Mr. ROSENTHAL. No, sir, I am not saying that.

The Foundation for a long period of time has taken the position that universities should be reimbursed for the full costs of the indirect expenses they have.

We have proposed—we have not been able to sell this viewpoint—if I may tell the committee what the Foundation's position has been on this—we have proposed we accomplish this through the following procedure:

Each school would be allowed either a fixed percentage of cost—and we think this should be about 25 percent, or the indirect rate which has already been negotiated, if the school has a negotiated indirect cost rate. The school would choose between the two at their option.

This would insure that all schools would get the full reimbursement of indirect expenses and would have another benefit, namely, that it would simplify greatly the administration of grants because we in our

contacts with schools have found even where the percentages would vary upward 2 or 3 percent, the administrative costs taking a flat rate, would more than compensate them for this difference, assuming that the flat rate was reasonably close to what their actual rate was.

Mr. TEAGUE. Then, the foundation does not believe circular A-21 has done the job it was intended to do?

Mr. ROSENTHAL. We feel it works very well for contracts, but does not work very well for grants.

Mr. TEAGUE. You never did answer my question concerning the 20 percent. You said you are not recommending the 20 percent.

Are you against the 20 percent being in your appropriation?

Mr. ROSENTHAL. Yes, sir, we are.

Mr. DAVIS. Will the gentleman yield?

Mr. TEAGUE. Yes.

Mr. DAVIS. I would like to ask if the 20-percent limitation is a creature of statute or one of regulation?

Mr. ROSENTHAL. For the forthcoming fiscal year it will be a creature of statute.

Mr. TEAGUE. If this goes through?

Mr. ROSENTHAL. Yes.

Mr. TEAGUE. If the appropriation bill this afternoon goes through?

Mr. DAVIS. If it is a matter of regulation maybe Mr. Mahon is right, you could make an exception if you saw fit.

Mr. ROSENTHAL. There is a 20-percent limitation written into the statute for the 1963 appropriation. There has not been any limitation on the foundation in the past.

The CHAIRMAN. Your appropriation bill has been adopted?

Mr. ROSENTHAL. No, sir, it is up before the House today and tomorrow.

We are in the independent offices bill.

Mr. TEAGUE. To answer Mr. Davis' question, at the moment it is under regulation?

Mr. ROSENTHAL. Yes.

Mr. TEAGUE. After the next few days you expect it to be under statute?

Mr. ROSENTHAL. Yes.

Mr. DAVIS. If that be true, Mr. Mahon may be right, you could make an exception when you saw fit if there was no statute imposition of a 20-percent limitation.

Mr. ROSENTHAL. Mr. Davis recognizes as an executive agency we can only adopt those principles that are permitted to us through the various channels we have to go through, namely, the Bureau of the Budget, and I was trying to explain to the committee the proposals we had made which we felt would treat both the Government and institutions equitably on the subject of indirect costs.

Mr. KARTH. Why did you adopt the 20-percent regulation?

Mr. ROSENTHAL. This was an internal step that we took pending the negotiation of an overall policy which we felt could be implemented throughout the research area.

This was as far as we were permitted to go at the time.

Mr. KARTH. When did you take this 20-percent limitation step?

Mr. ROSENTHAL. In January of 1960.

Mr. KARTH. Have you had any difficulty with it?

Mr. ROSENTHAL. We have had many discussions with universities who are unhappy about the fact they do not get full reimbursement for their costs of research.

Mr. KARTH. Have you had any turndowns as a result of it?

Mr. ROSENTHAL. I cannot say that we have but, again, this is a difficult question to answer, Mr. Karth. I am not trying to avoid it. You recognize we are not in the business of big hardware, such as NASA is.

Our mission is to support science. The support of science involves both research and teachers. These are interrelated in the universities. The universities must conduct research to have a good teaching program. It would be very difficult for a university to turn down research money.

Dr. ROBERTSON. I think there have been cases where a university which would have preferred to come to the Science Foundation for support, because of the broader relationship that can be established, has chosen to go, let's say, to the Department of Defense and hope for a contract for research, feeling that they could not afford to make up the difference in indirect costs between the 20 percent which we would allow and the negotiated rate that the Department of Defense would allow under a contract.

Mr. KARTH. It is a matter of you having to twist a few arms to take your grants rather than them voluntarily looking forward to getting a grant.

Does that pretty well state the situation?

Mr. LEVINE. Carnegie Foundation has been making a series of studies of a number of the larger institutions. Princeton is one of the largest institutions that has been studied, and Harvard is another, and they have recently come out with publications on the subject.

I know the Princeton situation quite well because I spent some time there.

What happens is that in the case of our particular grants—talking about our agency—a grant mechanism initiates with the principal investigator at the institution. We don't go out and buy the principal investigator. He has to submit a proposal to us and this proposal is then screened and either accepted or not.

It is my understanding—and Princeton has indicated so in their study—that quite a number of proposals that would initiate from this particular institution to a governmental agency like ours would perhaps not be acceptable to the administrators in Princeton, since the overhead is quite lower than what Princeton itself thinks is an acceptable rate, and Princeton has indicated to the various departments that submit proposals that if they accept a proposal with a rate less than what they think is acceptable, the particular department has to make up the funds from its own general university funds that were allotted to that particular department, which means that it might slice into their teaching program.

So, there has been quite a bit of evidence indicating that an overhead rate less than what the institutions think is par or full overhead would hurt the quality of their teaching and therefore they may not submit a particular proposal.

This is in answer to your question whether there has been any evidence of turndowns.

Mr. KARTH. Thank you. I think it is a good answer.

Mr. TEAGUE. Did you people participate in the drafting of the President's letter of May 23?

Mr. ROSENTHAL. No, sir.

Mr. FULTON. Your point is there is a difference between grants in the National Science Foundation and the contracts through the Department of Defense or of NASA in respect to the carrying out of these projects?

Mr. LEVINE. Yes, if you mean a grant has to initiate with the principal investigator at the institutional level and then be submitted to the governmental agency rather than going out and buying hardware.

Mr. FULTON. That is one difference.

There is a difference in the 20-percent limitation on administration costs.

Mr. LEVINE. I think, as Mr. Rosenthal pointed out, one should not use the words "administrative costs." This indirect cost is a joint cost which covers the operation and maintenance of the physical plant, administration, use of library, depreciation charge on buildings, and things of that nature.

Mr. FULTON. Is there a difference between the National Foundation grants in that respect and DOD contracts and NASA contracts?

Mr. LEVINE. Yes. In contractual arrangements there is a difference. On a grant basis they should be the same.

In other words, if DOD has a grant and NASA has a grant and we have a grant theoretically they should be the same.

A contractual arrangement is entirely different from the grant mechanism.

Mr. FULTON. Suppose NASA and DOD go in with a contract and NASA is not set up particularly for that type of contract, might not the administrative costs be rather uniformly higher for that type of contract as against the grant of the National Science Foundation?

Mr. LEVINE. In general, it would be, if I understand your question, because—this came up with the NASA people—there have been evidences of an institution finding out that they can do better on a contractual basis than on a grant basis and shifting actually to the contractual arrangement.

I think this question came up earlier.

Mr. FULTON. Within its area of reference, the institution submits its proposal to the National Science Foundation along the lines of doing certain research work; DOD and NASA make contract proposals which may involve higher administrative costs because they are not within the framework of what the university or college wants to do in research and has ready facilities for or programs in being.

Mr. LEVINE. Yes.

Mr. FULTON. Is there such a difference then?

Mr. LEVINE. I would say there is.

Mr. FULTON. So, costs on the NASA contracts for these outside overhead or administrative costs could well be more in the administration of a grant.

Mr. LEVINE. We made a comprehensive study and published the results of this study on indirect costs and covered some 200 institutions, both small and large, and the net result of this was a weighted average of 28 percent.

I think this is one of the reasons that the National Science Foundation has felt that 25 percent would be an acceptable figure for the grant mechanism that we were talking about.

The 28 percent is a composite of both grants and contracts.

The CHAIRMAN. Any other questions?

Mr. Casey.

Mr. CASEY. Who fixed the 20-percent limitation in your organization?

Mr. ROSENTHAL. The 20-percent limitation—perhaps I better explain some of the background.

When the National Science Foundation started it paid a lesser rate than that. This was before there was any mechanism for determination of rates as proposed by Bureau of the Budget Circular A-21. At that time NSF was paying 15 percent.

After Circular A-21 was passed and there were discussions about the implementation, NSF came up with the proposal to adopt the system that I outlined before, namely, negotiated rate or a fixed rate at the option of the school.

Pending resolution of that the Director got authority to raise the rate to 20 percent.

Mr. CASEY. Who gave the Director the authority?

Mr. ROSENTHAL. The Director gets his authority from—in a case like this it would have to be done with the concurrence of the Bureau of the Budget.

Mr. CASEY. I know with concurrence of the Bureau of the Budget, but who actually gave the Director the authority? Was it the Board?

Mr. ROSENTHAL. The Director has the authority under the statute to fix the rate and to take such action as is necessary to accomplish the program.

Mr. CASEY. Was this an opinion of the Director by himself with concurrence of the Bureau of the Budget?

Mr. ROSENTHAL. Well, in such a decision, obviously the staff would participate, the National Science Board would consider this, and the Director then would make the decision as to which way he needed to go.

Mr. LEVINE. We have had a program of continuous study of this indirect cost problem. NASA indicated that this bluebook formula which started back in 1946-47 was under fire over the years, as to whether this was a good set of principles or not, and starting with 1954 the National Science Foundation has been looking into the indirect cost problem.

We came out with a 1954 study and a 1958 study which indicated that the rate would be close to 28 percent even back in those days, and I think one of the guideposts which persuaded the Board and the Director to move from 15 percent to 20 percent was the conclusion reached by the studies we had been conducting.

Mr. CASEY. I was trying to find out who made the decision on 20 percent, when Mr. Rosenthal says he does not like the 20 percent, and I gather from you all that none of you concurred in that 20 percent.

Mr. LEVINE. We had a 15-percent rate. We had paralleled what NIH had. Actually, we had not paralleled NIH. They had an 8-percent figure. We started with a 15 percent. They paralleled us up to 15 percent. Then we had a series of these studies and the studies indicated the rate would be closer to 28 percent.

The Director felt that an interim move would be permissible, and that is moving up to 20 percent, until a very comprehensive study was undertaken, which we have just concluded, and this study, which we have published, indicates that to be 28 percent.

I think, in answer to Mr. Fulton, this is not so much the module figure as it is the weighted average figure or rate for the country as a whole.

At this rate you would have full reimbursement, with no loss to the Government and no gain to the Government, no gain to the school and no loss to the schools.

Mr. CASEY. Did you decide on this 20 percent because you felt that is all you could go above the 15 percent without being subjected to criticism, or did you just pick that figure out of thin air?

How did you arrive at that figure, since you were not governed by statute?

Mr. ROBERTSON. Twenty percent is clearly below, it might be said, the actual rate of any known university.

Mr. CASEY. We have established that.

Mr. ROBERTSON. We selected that at the time before the studies had been completed and the matter fully discussed with the Bureau of the Budget, with the idea that ultimately we would be able to reimburse the universities substantially for full indirect costs by giving them the option described by Mr. Rosenthal.

The CHAIRMAN. Will the gentleman yield?

Mr. CASEY. Surely.

The CHAIRMAN. This 20 percent then was adopted before the studies were completed?

Mr. ROSENTHAL. Yes; the 20 percent was adopted in 1960. The study was just completed in 1962.

Mr. ROBERTSON. There have been continuing studies, but this is a more complete study, on which we hope to base a permanent policy. We feel that there should be a uniform Government-wide policy which everyone can adhere to in a sensible way.

Mr. CASEY. You adopted the 20 percent not knowing what the study would show but feeling that it was more equitable than the 15 percent?

Mr. ROSENTHAL. That is correct.

Mr. CASEY. Since you are not governed by statute I want to make it clear, why you set this 20 percent that you did.

Mr. ROSENTHAL. Yes. May I add, Mr. Casey, if the procedure proposed by the National Science Foundation is adopted, we would hope to have continuing reviews of the 25 percent, to be sure this represents an equitable average nationwide.

Mr. CASEY. I wanted to get to that next. I wanted you to repeat, if you would, as to the formula that you were thinking about, the 25 percent, or—and I did not get the “or”—the option.

Mr. ROSENTHAL. That option is the negotiated rate, the rate that the school has already negotiated, usually with the Defense Department.

Mr. CASEY. And that is usually negotiated in similar cases—

Mr. LEVINE. Under Circular A-21.

Mr. CASEY. If the university said, we will take the flat 25 percent, forget about negotiating, you would give them that option?

Mr. ROSENTHAL. That is correct.

Mr. CASEY. Less bookkeeping, and less conferring with you?

Mr. ROSENTHAL. Yes.

Mr. CASEY. Less papers to fill out.

Mr. ROSENTHAL. Yes.

Mr. CASEY. And less cost to verify.

Mr. ROSENTHAL. Yes.

Mr. CASEY. And less auditing; is that correct?

Mr. ROSENTHAL. Yes, sir.

Mr. CASEY. That is all. Thank you, gentlemen.

The CHAIRMAN. Mr. Fulton.

Mr. FULTON. Referring to your study, could we have the chairman's consent to have you make a summary of your study, your method of approach, coverage, and likewise the preimeters of your study?

Mr. LEVINE. We have a summary. I could pass out copies.

Mr. FULTON. May we have that in the record?

The CHAIRMAN. I would like to see the summary. It will be made a part of the record, without objection.

NATIONAL SCIENCE FOUNDATION



REVIEWS OF DATA ON RESEARCH & DEVELOPMENT

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Indirect Costs of Research and Development in Colleges and Universities, Fiscal Year 1960

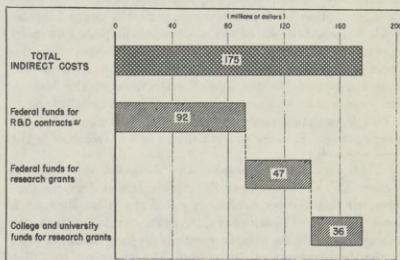
Preliminary

A SIGNIFICANT SEGMENT of the costs of federally sponsored research and development in colleges and universities consists of "indirect expenses" or what has often been described as "overhead." In fiscal year 1962, the total indirect costs of federally sponsored research and development in colleges and universities will amount to an estimated \$175 million. (This amount is computed on the basis of the Bureau of the Budget Circular A-21 as described under *Scope and Method*.) Approximately 47 percent or \$83 million of the estimated \$175 million represents the indirect costs of federally sponsored research grants; the balance covers indirect costs of Federal R&D contracts. Under current Federal practices \$47 million of the \$83 million in indirect costs of research grants will come from the Government and an additional \$36 million represent the necessary contributions of the colleges and universities themselves. (See chart 1.)

A Foundation study of indirect costs determined that in fiscal year 1960 the national weighted average of indirect cost rates of Federal R&D contracts and grants was 28 percent of direct costs for large colleges and universities and 32 percent for small colleges and

universities.¹ Of course, the average does not mean that all institutions are being reimbursed at that rate. In fact, most of the institutions had indirect cost rates differing from the national average. Although these rates vary, to insure full Federal financing on an aggregate basis, it appears that it would be necessary to provide 28 percent of the direct costs, or the national indirect cost rate computed on the basis of Circular A-21.

Chart 1. Indirect costs of federally sponsored research and development in colleges and universities, by source of support, fiscal year 1962 (Based on Bureau of the Budget Circular A-21)



* Generally, the indirect costs of R&D contracts are completely covered by Federal funds, except that slight variations may occur due to negotiation of individual contracts.

¹ See *Scope and Method* for definition of large and small colleges and universities.

Scope and Method

As part of its economic and statistical program, the National Science Foundation conducts studies of colleges and universities to evaluate the resources employed in the conduct of research and development. Such studies serve the interests not only of the Foundation but also of other Federal agencies which are involved in college and university research either by directly sponsoring such research or through their interest in formulation of Federal science policy.

The study reported herein concerns indirect costs of federally sponsored research and development in colleges and universities. Indirect costs are those which, because of their general or supporting nature, cannot be directly assigned to a particular service performed. They include such costs as administrative expenses, plant maintenance, heat and light, allowance for use of buildings and equipment, library expenses, and other allowable indirect costs. Although these costs are not incurred solely as a result of research and development and thus are "joint" with other educational activities of the institutions, they are part of the total costs of research and development. (For further discussion, see *Technical Notes*.)

As previously noted, indirect costs were determined according to Bureau of the Budget Circular A-21, a document which provides the principles and guidelines for the computation of the indirect cost rate of federally sponsored research and development.² The procedures described in this document are those which the Federal agencies having R&D contracts with colleges and universities generally employed during the year of the survey, fiscal year 1960.³

In order that an undue burden not be placed on institutions with relatively small shares of Federal R&D funds, Circular A-21 provides two systems of computation. For large colleges and universities, i.e., those with \$250,000 or more in direct costs, a comprehensive and detailed procedure is generally employed, the results of which are subject to an audit by and negotiation with a Federal agency. This cognizant agency is authorized to negotiate with the institution the rate which shall prevail for all Federal agencies employing the principles of Circular A-21 for indirect costs of research and development.

For institutions with a relatively small volume of Federal research and development, i.e., less than \$250,000 of direct costs, an abbreviated procedure is available under Circular A-21, which makes use of the institution's published financial reports and/or readily accessible internal records. The indirect cost rates computed by this procedure primarily reflect rates appropriate to the overall operations of the institution rather than to research and development exclusively.

This Foundation study is based wholly on data from primary sources. It includes 200 colleges and universities in the

² This document supersedes the formulas set forth in Section XV, Contract Cost Principles, Armed Services Procurement Regulations, commonly called the "Blue Book." A small number of institutions, however, still compute the indirect cost rate for specific research projects initiated prior to the development of Circular A-21, according to "Blue Book" procedures.

³ The principles of Circular A-21 were generally used as the basis for determining contract research indirect costs in 1960. Indirect cost rates of Federal grants in 1960 had generally been established by agencies as a standard flat percentage of total direct costs.

United States and Puerto Rico which were engaged in research and development sponsored by Federal agencies during fiscal year 1960.

The bulk of the Federal contracts and grants for research and development going to all colleges and universities is concentrated in 100 institutions. These 100 large colleges and universities have an established indirect cost rate for federally sponsored contracts.

From each large institution, data were requested separately for two major components, the medical and engineering schools, as well as for the entire institution.

One hundred small colleges and universities were studied on an overall institutional basis, using the abbreviated procedures set forth in Circular A-21, revised January 7, 1961.

For all institutions, the data were requested only for federally sponsored research and development for which Circular A-21 (or the "Blue Book") procedures were appropriate. Data were omitted, for example, from Federal contract research centers in which fixed-price contracts prevail, e.g., the Applied Physics Laboratory under Johns Hopkins University. Also omitted were United States Department of Agriculture funds in agricultural experiment stations, for which Circular A-21 and "Blue Book" principles were also not applicable.

As of March 1962, 93 of the large and 82 of the small institutions had provided usable data. This is 87.5 percent of the institutions studied, and in terms of Federal dollar research expenditures this response is estimated to account for over 95 percent of total federally sponsored research and development in all colleges and universities. Thus, the inclusion of data from nonrespondent institutions would not alter the patterns.

Problem of Uniformity

When an attempt is made to compare indirect cost rates of individual institutions, difficulties arise from the lack of common denominators in both the items to be charged as indirect costs and the items comprising the direct cost base. Each institution has its own characteristic fiscal structure, and, consequently, procedures vary for handling certain allowable costs in the computation of indirect cost rates. Problems of applying uniform statistical methods to a large number of individual variables of cost were great. In this study, it has not been completely possible to rule out or establish controls over the institutional differences in accounting for identical items of costs. A highly selective statistical procedure was necessary if the important recorded items of cost were not to lose significance through scattering.

By means of Circular A-21, one of the most widely used and tangible measures of indirect costs, significant items of costs were identified and a uniform system was established in the schedules for recording these major costs. By adjusting for certain costs such as employee benefits, reasonable common denominators were obtained for both the direct and indirect cost bases.

It should be emphasized at this point that caution must be exercised in making direct comparisons of the levels of R&D indirect cost rates of large versus small schools. Since the method and procedures used in computing the rates for small schools differ from those employed by the large institutions, a number of technical accounting adjustments would be necessary in order to standardize and compare the computations for the two groups of institutions. To this extent, therefore, the indirect cost rates of the small schools cannot be compared directly with those of the large schools.

National Average Indirect Cost Rate

Large Colleges and Universities. In fiscal year 1960, the weighted average indirect cost rate of Federal research and development was 28 percent of direct costs in large colleges and universities, according to the computations based on the principles of Circular A-21. Under these principles, the 28-percent rate or the funds it represents would have been adequate to cover, on an aggregate basis, the computed indirect costs of federally sponsored research and development conducted at colleges and universities. Since rates in individual institutions vary above and below the national average, the 28-percent rate would in some cases provide for more and in other cases less funds than the funds provided for by the overall average.

Table 1 distributes the 93 respondent institutions and their Federal R&D expenditures by classes of indirect cost rates. It is important to note that employee or fringe benefits are included in the direct costs. Further, the classes of indirect cost rates of the different colleges and universities cannot be compared meaningfully for national purposes unless the established rate of each institution, within these classes, is related to the institution's volume of Federal R&D operating expenditures. Thus, a weighting procedure was employed to determine the national average in which the established rate of each institution was related to its volume of Federal R&D operating expenditures.

Table 1 reflects the differences in the level of indirect cost rates prevailing in the various colleges and universities. It is significant that only 8 of the 93 institutions, aggregating 3.3 percent of total Federal R&D funds, each had an indirect cost rate of less than 20 percent of direct costs. Sixty-nine schools each had an indirect cost rate of 25 percent or greater of direct costs. Federal funds for research and development in these schools amounted to \$241 million, or two-thirds of total Federal funds. Among the 16 institutions which had an indirect cost rate from 20 to 24.9 percent of direct costs, 7 were colleges and universities with rates at the upper limit of this range, 24 percent or over.

TABLE 1.—RATES OF INDIRECT COSTS AS PERCENTAGES OF DIRECT COSTS IN 93 LARGE COLLEGES AND UNIVERSITIES, BY CLASS OF INDIRECT COST RATES, FISCAL YEAR 1960

(Based on Bureau of the Budget Circular A-21)*

Indirect cost rates as percentages of direct costs (employee benefits are included as direct costs)	Number of colleges and universities	Federally sponsored R&D operating expenditures (thousands of dollars)	Percent distribution	
			Number of colleges and universities	Federally sponsored R&D operating expenditures
(Weighted average indirect cost rate: 28.2 percent).....	93	\$362,529	100.0	100.0
Less than 18.0.....	3	3,459	3.2	1.0
18.0-19.9.....	5	8,163	5.4	2.3
20.0-22.9.....	5	32,344	5.4	8.9
23.0-23.9.....	4	22,677	4.3	6.3
24.0-24.9.....	7	54,683	7.5	15.1
25.0-29.9.....	31	121,886	33.3	33.6
30.0-34.9.....	20	60,577	21.5	16.7
35.0-39.9.....	10	48,286	10.7	13.3
40.0-44.9.....	6	9,606	6.4	2.6
45.0-49.9.....	1	531	1.1	0.1
50.0 or more.....	1	317	1.1	0.1

* In a few cases, the rate is based on the "Blue Book."

NOTE: Detail may not add to totals because of rounding.

Small Colleges and Universities. As already described, the small colleges and universities, i.e., those having less than \$250,000 in direct costs for federally sponsored research and development, generally had no established indirect cost rates. The schedules used for obtaining data from the small schools recast the abbreviated procedures of Circular A-21 into a common format in order to provide comparable bases for computation of indirect cost rates.

Analysis of the data in table 2 suggests that, within the technical accounting differences indicated previously, the average indirect cost rate of the small colleges and universities can be considered to be greater than the rate existing in the larger colleges and universities. During fiscal year 1960, the overall weighted average of indirect costs of federally sponsored research and development for the 82 small schools amounted to 32 percent of direct costs. Over 90 percent of these institutions computed an indirect cost rate of 25 percent or more.

Sources of Support

The overall indirect cost rates as determined in this survey were influenced considerably by the amount and sources of support. Thus, it is pertinent

in this context to discuss briefly Federal support of research and development at the large and small colleges and universities.

Large Colleges and Universities. During fiscal year 1960, the 93 institutions analyzed in this bulletin spent \$363 million under Federal contracts and grants for research and development. Nearly three-fifths (57 percent) of the funds was designated for contract research; the balance supported grant programs.

As might be expected, about three-fourths of the funds for contracts represent programs of the Department of Defense and a similar proportion of grant funds represents programs of the Department of Health, Education, and Welfare.

From the data in table 3, one can appraise the general effect that a 23-percent rate for indirect costs would have both on the schools and the Federal Government. The large volume of grant funds, received primarily from Federal agencies having an indirect cost rate of less than 23 percent, indicates that in 1960 colleges and universities shared considerably in financing the indirect costs of federally sponsored research grants.

TABLE 2.—RATES OF INDIRECT COSTS AS PERCENTAGES OF DIRECT COSTS IN 82 SMALL COLLEGES AND UNIVERSITIES, BY CLASS OF INDIRECT COST RATES, FISCAL YEAR 1960

(Based on Bureau of the Budget Circular A-21, Abbreviated Procedure)

Indirect cost rates as percentages of direct costs	Number of colleges and universities	Federally sponsored R&D operating expenditures (thousands of dollars)	Percent distribution	
			Number of colleges and universities	Federally sponsored R&D operating expenditures
(Weighted average indirect cost rate: 32.0 percent).....	82	\$14,827	100.0	100.0
Less than 18.0.....	1	162	1.2	1.1
18.0-19.9.....	3	1,849	3.7	12.5
20.0-22.9.....	1	247	1.2	1.7
23.0-23.9.....	1	174	1.2	1.2
24.0-24.9.....				
25.0-29.9.....	15	3,913	18.3	26.4
30.0-34.9.....	13	2,562	15.8	17.3
35.0-39.9.....	23	3,071	28.0	20.7
40.0-44.9.....	9	1,662	11.0	11.2
45.0-49.9.....	11	969	13.4	6.5
50.0 or more.....	5	218	6.1	1.5

NOTE: Detail may not add to totals because of rounding.

TABLE 3.—OPERATING EXPENDITURES FOR SEPARATELY BUDGETED RESEARCH AND DEVELOPMENT IN 93 LARGE COLLEGES AND UNIVERSITIES, BY SOURCE OF FEDERAL SUPPORT FOR CONTRACTS AND GRANTS, FISCAL YEAR 1960

(Dollar amounts in thousands)

Source of support	Amount			Percent distribution		
	Total	Contracts	Grants	Total	Contracts	Grants
Total.....	\$362,529	\$208,109	\$154,420	100.0	100.0	100.0
Atomic Energy Commission.....	39,254	35,761	3,493	10.8	17.2	2.3
Department of Defense.....	154,487	153,829	658	42.6	73.9	0.4
Department of Health, Education, and Welfare.....	114,536	3,920	110,616	31.6	1.9	71.6
National Science Foundation.....	35,864	188	35,676	9.9	0.1	23.1
Other.....	18,388	14,411	3,977	5.1	6.9	2.6

NOTE: Detail may not add to totals because of rounding.

Table 4 shows calculations of the amount of total indirect costs of research grants borne by the Federal Government and by the institutions themselves in 1960 and the estimated amounts for 1962. These calculations suggest that in financing the indirect costs of Federal research grants for 1960, for every one dollar made available for this purpose by the Government, one dollar was made available by the colleges and universities from their own funds. By the use of estimated obligations and the weighted average of 28 percent of direct costs, based on the principles of Circular A-21, the total indirect costs of Federal research grants in fiscal year 1962 can be estimated as amounting to a projected \$83 million. On the basis of current reimbursement practices for research grants, the Federal Government will make available an estimated \$47 million for this purpose. Consequently, unless additional Federal funds are earmarked for indirect costs, colleges and universities will be required to invest \$36 million of their own funds in covering the computed indirect costs of federally sponsored research grants.

Small Colleges and Universities. The grant form of support, rather than the contract form, is used more by the small school than by the large institution. In fiscal year 1960, more than three fourths (76 percent) of Federal R&D funds expended at small institutions represented grants for research. The comparable percentage for large schools was 43 percent. Consequently, the contributions by the

small schools to the indirect costs of research and development probably represent a larger proportion of their total indirect costs of research and development than in the case of the larger institutions. The Department of Health, Education, and Welfare and the National Science Foundation are the principal agencies supporting research at these small colleges and universities through research grants (table 5).

TABLE 4.—INDIRECT COSTS OF FEDERALLY SPONSORED RESEARCH GRANTS, FISCAL YEARS 1960 AND 1962

(Based on Bureau of the Budget Circular A-21 and the 1960 weighted average indirect cost rate, 28 percent)

(Millions of dollars)		
	Estimated indirect costs for research grants, 1960	Estimated indirect costs of research grants planned, 1962 (Federal reimbursement rate based on 1960 agency practices)
Total indirect costs..	\$43 ^a	\$83 ^b
Federal reimbursement.....	22	47
University contribution.....	21	36

^a Based on an estimated total for research grants in colleges and universities of \$198 million.^b Based on a planned total for research grants in colleges and universities of approximately \$380 million.

TABLE 5. OPERATING EXPENDITURES FOR SEPARATELY BUDGETED RESEARCH AND DEVELOPMENT IN 82 SMALL COLLEGES AND UNIVERSITIES, BY SOURCE OF FEDERAL SUPPORT FOR CONTRACTS AND GRANTS, FISCAL YEAR 1960.

Source of support	Amount			Percent distribution		
	Total	Contracts	Grants	Total	Contracts	Grants
Total.....	\$14,827	\$3,533	\$11,294	100.0	100.0	100.0
Atomic Energy Commission.....	1,300	496	804	8.8	14.0	7.1
Department of Defense.....	2,088	1,986	102	14.1	56.2	0.9
Department of Health, Education, and Welfare.....	6,742	235	6,507	45.5	6.6	57.6
National Science Foundation.....	3,645	3,645	24.6	32.3
Other.....	1,052	816	236	7.1	23.1	2.1

NOTE: Detail may not add to totals because of rounding.

Technical Notes

Below are the definitions of direct costs and indirect costs as set forth in Circular A-21 which was used as a basis for the 1960 survey:

Direct costs

Direct costs are those identified as having been specifically incurred to perform a particular research agreement. The general types of direct costs are:

- Direct salaries and wages*, including employee benefit expenses and pension plan costs to the extent that they are consistently treated by the educational institution as a direct rather than an indirect cost, are those applicable directly to the performance of a research agreement. Such salaries and wages should be charged at the actual rates paid by the institution. Where professional staff paid on a salary basis work directly part time on a research agreement, current and reasonable estimates of time spent may be used in the absence of actual time records.
- Direct material costs* include raw materials, purchased or supplied from stock, which are directly consumed or expended in the performance of a research agreement, or are otherwise applicable directly to a research agreement.
- Other direct costs* include other expenses related directly to a particular research agreement or project, including abnormal utility consumption. This may include services purchased from institution service operations, provided such are consistently treated as direct rather than indirect costs and are priced under a recognized method of costing or pricing designed to recover only actual costs and conforming to generally accepted cost accounting practices consistently followed by the institution. Purchases of equipment will be included under this heading only to the extent expressly provided for in the research agreement or approved pursuant to such agreement.

Indirect costs

Indirect costs are those which, because of their incurrence for common or joint objectives, are not readily subject to treatment as are direct costs of research or other activities. The general types of indirect costs are:

- General administration and general expenses* are those incurred for the general executive and administrative offices of educational institutions and other expenses of a general character which do not relate solely to any specific division of the institution. Employee benefit expenses and pension plan costs may be included in this category to the extent that they are consistently treated by the educational institution as an indirect rather than a direct cost.

- Research administration expenses* are those which apply to research administered in whole or in part by a separate organization or an identifiable administrative unit. Examples of work relating to research which is sometimes performed under such organizational arrangement are: contract administration, security, purchasing, personnel administration, and editing and publishing of research data.
- Operation and maintenance expenses* are those incurred for operating and maintaining the institution's physical plant. They include expenses normally incurred by the institution for administration or supervision of the physical plant; janitorial service; repairs and ordinary or normal alterations of buildings, furniture and equipment; care and maintenance of grounds; utilities; and other expenses customarily associated with the operation, maintenance, preservation and protection of the physical plant.
- Library expenses* are those incurred for direct operation of the library plus a use allowance for library books. The use allowance shall not exceed eight cents per volume per year.
- Use allowance* is a means of compensation for the use of buildings, capital improvements, and equipment over and above the expenses for operation and maintenance when depreciation or other equivalent costs are not considered. The use allowance for buildings and improvements shall be computed at an annual rate not to exceed two percent (2%) of acquisition cost. The use allowance for equipment shall be computed at an annual rate not exceeding six and two-thirds percent (6⅔%) of acquisition cost of usable equipment in those cases where the institution maintains current records with respect to such equipment on hand. Where the institution's records reflect only the cost (actual or estimated) of the original complement of equipment, the use allowance shall be computed at an annual rate not exceeding ten percent (10%) of such cost. In those cases where no equipment records are maintained, the institution will justify a reasonable estimate of the acquisition cost of usable equipment which may be used to compute the use allowance at an annual rate not exceeding six and two-thirds percent (6⅔%) of such estimate. Computation of the use allowance shall exclude the portion of the cost of buildings and equipment paid for out of Federal funds and the cost of grounds.
- Indirect departmental expenses* are those incurred for departmental administration, such as salaries of deans or heads of colleges, schools, departments or divisions, and related secretarial and other administrative expenses.

Mr. FULTON. We have spoken of arriving at an average and have talked of the kind of an average it might be, whether it was an arithmetic average, modal average that occurred the most number of times, or a weighted average.

Could you at this point in the record, after the statement we have just asked for, give us your method of arriving at your weighted average?

Mr. LEVINE. Yes.

Mr. FULTON. Setting out how you weighted it and what results you have obtained from the weighting, to show us that this is a figure upon which we could rely—

Mr. LEVINE. Yes.

Mr. FULTON. Please put it in the record.

Mr. LEVINE. Yes. I will try to make it simple, since the mathematics gets a little complex.

We first tried to reduce everything to a uniform amount. We used rates, as Mr. Rosenthal said, that were used under the principles of Circular A-21, the negotiated rates. These rates varied.

We weren't satisfied with the variations just to use them as they were and so we got a break of the items that comprise these particular rates, and lo and behold we found the greatest variation appeared in employee benefits. So that we took employee benefits and put them into the direct-cost basis.

Many schools, in arriving at their rates, had employee benefits in the direct costs, and Circular A-21 permits this.

In other instances they had employee benefits in the indirect cost pool.

Circular A-21 permits this as long as there is consistency. We made sure employee benefits appeared in the direct-cost basis all the way through. That gave us uniformity in our accounting.

Mr. FULTON. That gave you the method. That did not give a correlation of amount.

Mr. LEVINE. No; I come to that.

We took the rate established then and multiplied by the amount of federally sponsored moneys, expenditures, that that particular institution expended during the year 1960, which was the year we were dealing with.

So, we established the rate times the amount of money that they expended. So that if MIT expended \$20 million for federally sponsored money and had a rate of 55 percent against salaries and wages, this was weighted higher than a school, let's say, that had 55 percent against salaries and wages but only expended a million dollars of federally sponsored research.

So we gave not equal weight to each institution. The rates were equal but the weight that was established was the amount of money that the Federal Government was dealing with in that particular institution.

At the end we summed all those up and divided that rate by the number of dollars, federally sponsored dollars expended during that particular year. That came out 28 percent.

In other words, we did not give equal weight to each institution. We weighed each institution by the amount of money that they received from the Federal Government.

Mr. FULTON. With the chairman's permission, if you will, give us several examples of your weighting, so we can get the process of your methods of weighting.

Mr. LEVINE. MIT, for instance—

Mr. FULTON. Just put some examples in.

Mr. LEVINE. Yes.

The following data illustrate the method of computation of the weighted national average indirect cost rate which was based on a study of approximately 200 institutions of higher education, as covered by the National Science Foundation. The illustrative example covers 13 colleges and universities, which as a sample, reflect a wide range of educational structures and characteristics. Included are institutions from varying regions, differing institutional controls (i.e., public or private), and diverse R. & D. programs. The schools listed also reflect a variety of negotiated indirect cost rates which were in effect during 1959-60 and which were based on the principles of Bureau of the Budget Circular A-21.

In accordance with the pledge of confidentiality made to the institutions which participated in the study, the names for the 13 individual colleges and universities have been omitted and code letters substituted.

As indicated in the attached table, the indirect cost rate of each individual school was weighted by its total federally sponsored R. & D. operating expenditures. Thus, an institution with a large volume of federally sponsored research received more "weight" than a school with a small program of research.

Rates of indirect costs as percentages of direct costs, fiscal year 1960

[Based on Bureau of the Budget Circular A-21]

Institution	Total federally sponsored R. & D. operating expenditures	Indirect costs as a percentage of direct costs ¹	Weighting factor (col. 1 × col. 2)
Total.....	\$38,623,592	Percent	\$11,060,093
A.....	4,099,468	25.81	1,058,073
B.....	4,321,072	30.29	1,308,852
C.....	1,897,039	30.90	586,185
D.....	8,763,778	26.90	2,357,456
E.....	6,395,491	29.50	1,886,670
F.....	2,691,329	17.67	475,558
G.....	2,739,402	32.88	900,715
H.....	1,088,332	28.40	309,086
I.....	2,877,841	37.79	1,087,536
J.....	833,745	33.10	275,970
K.....	1,987,605	30.29	602,046
L.....	366,948	16.90	62,014
M.....	561,542	26.70	149,932

$$\text{Weighted average indirect cost rate} = \frac{\text{Weighted dollars}}{\text{Total operating expenditures}} = \frac{\$11,060,093}{\$38,623,592} = 28.6 \text{ percent.}^2$$

¹ Employee benefits are included as direct costs.

² This weighted average of 28.6 percent differs slightly from the 28.2 percent average computed from the study due to the fact that the sample is merely illustrative and is for the purpose of showing how the national weighted average was derived.

The CHAIRMAN. Any other questions.

Mr. CORMAN. This comprehensive study that you made, Doctor, did you see any pattern of distinction between the larger universities and the smaller schools?

Mr. LEVINE. We did separate the hundred largest schools from the hundred smallest, and I guess economically we should not have been surprised, but the smaller schools were higher in this rate than the larger schools. The larger schools being in the game quite a number of years were able to absorb part of the overhead, part of the indirect cost, whereas the smaller schools, starting out from scratch,

could not, and so the smaller school had a higher rate than the MIT's or the Harvards.

Mr. CORMAN. A fixed percentage limitation would be more difficult for the smaller schools to handle than for the larger?

Mr. LEVINE. No, they would actually prefer a fixed rate because most of them would have a great deal of difficulty under Circular A-21 in establishing a rate. They have limited resources at their institution for computing this particular rate. They don't have the accounting skills or the know-how.

Mr. CORMAN. Is it your answer that if there were a fixed rate of 15 percent the schools would prefer that?

Mr. LEVINE. No. I didn't say 15 percent.

Mr. CORMAN. If you can fix the rate high enough.

Mr. LEVINE. As Mr. Fulton said, give them some leeway.

Mr. CORMAN. I am talking about the proposal in this legislation, which is either 15 or 20 percent, depending on which agency.

Mr. LEVINE. If you gave the small school 5 or 10 percent, they would lose, and lose badly.

Mr. CORMAN. They would have more difficulty dealing with this than the larger schools, is that a fair statement?

Mr. LEVINE. Yes.

Mr. CORMAN. I think in considering the possibility of a fixed rate we shouldn't assume the fixed rate will be the figure you have indicated, but rather the proposal on the floor.

I think you would hurt the potential of the smaller school, if you wanted to broaden the base, if you fixed that rate quite low, because they would not absorb costs of research.

The CHAIRMAN. Is there a difference between the publicly owned State universities and private schools?

Mr. LEVINE. Very little difference. I think the designation of State or public versus private has no bearing on the indirect cost question.

The CHAIRMAN. Any other questions?

Mr. KARTH. One question of Mr. Levine.

The same one I asked of the NASA witnesses.

When you enter into a grant with the university or college, are they legally bound to bring this work to a full conclusion, even though the indirect or direct costs exceed the grant, or can they when they spend all of the money that the grant has provided, call it quits and then you probably wind up having spent a lot of money for which you have not been really given a proper consideration?

Mr. LEVINE. I would say they are not legally bound. I would venture the guess in some cases there may be pressures on the principal investigator when he receives a project with a smaller overhead than the university administrators think is acceptable.

Mr. KARTH. Thank you.

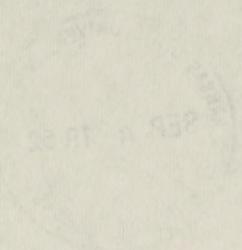
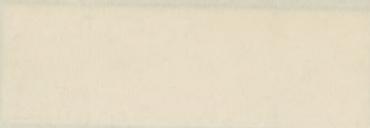
The CHAIRMAN. Any other questions?

I want to thank you gentlemen for being here. We appreciate it. This has given all of us some food for thought. I daresay at the next session of Congress this committee should go into this rather thoroughly to see if we can't establish a rate that will be equitable for the schools and for the Federal Government.

The committee stands adjourned until the call of the Chair.

(Whereupon, at 11:50 a.m., the committee adjourned to meet at the call of the Chair.)

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