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UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

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STATEMENT OF  
ELMER B STAATS, COMPTROLLER GENERAL OF THE UNITED STATES  
BEFORE THE  
SUBCOMMITTEE ON RESEARCH AND DEVELOPMENT  
COMMITTEE ON ARMED SERVICES, UNITED STATES SENATE  
AND THE  
SUBCOMMITTEE ON PRIORITIES AND ECONOMY IN GOVERNMENT  
JOINT ECONOMIC COMMITTEE  
ON  
CONTRACTORS' INDEPENDENT RESEARCH AND DEVELOPMENT

Senator McIntyre, Senator Proxmire, and Members of the  
Subcommittees:

You asked us to appear before you today to present the  
results of our study of contractors' independent research  
and development (IR&D) and bid and proposal (B&P) costs.  
As you know, the study was requested jointly by your chairmen,  
and a report was issued on June 5, 1975.

In March 1970 I testified on IR&D before the Research and  
Development Subcommittee. At that time I stated that the  
extent to which Government agencies should participate in  
contractors' IR&D costs had been a matter of serious concern  
within the executive branch for many years but no satisfactory  
solution had been reached to the many problems involved. I  
expressed the belief that the hearings would prove very helpful.

Now, 5 years later, and in spite of the enactment of  
legislation; increased regulation by the Department of Defense

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(DOD); and studies by the General Accounting Office (GAO), DOD, and the Commission on Government Procurement; a solution satisfactory to all has not been reached. The Government's support of contractors' IR&D and B&P remains a controversial and emotional issue.

We looked upon the request for our latest study to be asking whether expenditures for IR&D and B&P result in benefits to the Government and whether there is a better way to support IR&D and B&P programs than through acceptance of these costs as overhead on Government contracts.

We found that it was not possible for us to determine whether the benefits to the Government from contractors' IR&D efforts are worth the costs incurred by the Government. Agencies such as DOD and the National Aeronautics and Space Administration (NASA) feel that the benefits to their research and development (R&D) missions are worth the costs. Industry believes that the Government benefits by having access to more R&D than it pays for because other customers as well as the contractor also share in the cost.

Critics view the Government's participation as a giveaway. They believe that the Government's cost should be more tightly controlled or eliminated altogether and the R&D obtained by other methods.

In our opinion, the Congress must resolve this issue by a statement of policy on the Government's support or nonsupport of IR&D and B&P.

How the Government pays  
for IR&D and B&P

When a contractor sells a product or service to the Government on a fixed-price, price-competitive basis, it is presumed that a share of the contractor's IR&D and B&P costs is included in the selling price. However, when effective price competition is lacking and a cost-plus or other flexibly priced contract is entered into, the final price is based on actual costs incurred. In a procurement of this type, IR&D and B&P are included as items of indirect cost or overhead and a portion is allocated to the contract price.

DOD and NASA

The major defense and space contractors incur most of the IR&D and B&P costs paid by the Government. The schedule which I would like to submit for the record shows that total IR&D and B&P has grown from \$1.1 billion in 1971 for 84 contractors to \$1.7 billion in 1974 for 90 contractors. During this period the Government accepted on the average about 83 percent of these costs for allocation to all contractor work performed--Government and commercial. Of the amount accepted, the share paid by DOD and NASA combined declined from 70 percent in 1971 to 63 percent in 1974.

Section 203 of Public Law 91-441, enacted October 7, 1970, requires DOD to negotiate advance agreements to establish dollar ceilings on both IR&D and B&P costs with all companies which, during their preceding fiscal year, received more than \$2 million of IR&D and B&P payments from DOD. The law also provides that

the work should have a potential relationship to a military function or operation, and that the IR&D portions of the negotiated advance agreements are to be based on company-submitted plans that are technically evaluated by DOD.

NASA cooperates with DOD in controlling the level of IR&D and B&P expenditures by accepting all advance agreements executed by DOD. The only major difference in their procedures is the result of the statutory requirement that projects accepted by DOD have military relevancy. NASA has had no relevancy requirement placed upon its payments.

#### AEC

The Atomic Energy Commission (AEC), before its functions were assumed by the Energy Research and Development Administration (ERDA), followed a more restrictive policy than that of DOD and NASA.

About 80 percent of AEC's procurement activity was represented by AEC's contracts for the management of Government-owned plants and laboratories under no-risk, cost-type contracts. AEC owned the facilities, provided the materials, and advanced the funds. The generation of new ideas was an integral part of the AEC-financed R&D program and there was no IR&D.

The remaining 20 percent of AEC's business generally was with contractors which performed the contract work in their own facilities without advances of Government funds. AEC accepted a limited amount of IR&D costs incurred by those

contractors to the extent set forth in the contract and to the extent that the projects provided a direct or indirect benefit to the contract work. AEC allowed \$1.9 million for IR&D in 1972, \$1.4 million in 1973, and \$1.6 million in 1974.

AEC required B&P costs to be applicable to the AEC program to be allowed as a contract cost. The contractors' costs of preparing bids or proposals were allocated to the contract as indirect costs and were limited to 1 percent of the direct material (exclusive of capital equipment) and the direct labor costs of the contract work.

#### ERDA

Effective July 29, 1975, ERDA issued a temporary regulation. ERDA's new policy allows IR&D if

- the costs are reasonable and allocable,
- research is allocated to all of the work of the contractor and is of benefit to the ERDA program,  
and
- development is related to product lines or fields of effort in which the Government has contracts and is of benefit to the ERDA program.

ERDA is allowing bidding costs up to a ceiling amount equal to the average annual bidding costs computed from the actual costs for the contractor's 3 most recent years.

#### Other agencies

IR&D and B&P costs are minor in the procurements of agencies other than DOD and NASA. Although the Federal Procurement Regulations allow IR&D and B&P as indirect costs

on cost-reimbursable-type contracts, similar to the DOD and NASA approach, Federal agencies have the option of using these principles or alternative principles. Some agencies, as a policy, do not allow IR&D or B&P because of the nature of the products or services furnished by their contractors.

Studies by GAO

At the request of the Senate Committee on Armed Services, we reported on DOD's implementation of section 203 of Public Law 91-441 for each of the first 3 years that the law was in effect. These reports, issued in 1972-74, were concerned with the effectiveness of DOD's policies and regulations in implementing the restrictions imposed by section 203, recommending improvements in DOD's implementation, and ascertaining the effect of the law and DOD's regulations on defense contractors.

We advised the committee that DOD's implementing guidance was a generally realistic interpretation of the law. Overall, we found DOD's implementation to be quite satisfactory.

I will mention briefly two points regarding the provisions of section 203.

Our studies have found that the relevancy requirement has had no effect on DOD's reimbursement of contractors' costs. Some attempts have been made to screen out as nonrelevant those projects in areas where DOD does not have primary responsibility. However, the large majority of contractors' projects are determined to have a potential military relevancy. The costs of relevant projects have always exceeded the amounts

allocated to DOD contracts; therefore, the cost to DOD for sharing in IR&D programs has not been reduced.

We reported on a second facet of DOD's implementation of section 203--the technical evaluation. We found that many personnel performing these evaluations have minimal or general knowledge of, and interest in, the particular projects they are asked to evaluate. We suggested that DOD consider procedures to assign projects to evaluators more in line with their areas of expertise and that evaluations not be precisely scored for use by negotiators in arriving at contractor ceilings.

We would like to see consideration given to ways to produce a better exchange of information on the results of DOD's IR&D for use by other agencies conducting grant and contract programs in similar areas.

Our report of June 1975 was the result of a more comprehensive study than just DOD's implementation of section 203, although DOD's policies and procedures logically formed the basis for our evaluation.

#### Benefits of IR&D

We were asked to identify "specific developments" made by major defense contractors with respect to the amounts of IR&D received during 1968-72. We interpreted the question to be asking whether the results of IR&D could be identified and quantified on a project-by-project basis, thus providing an output for every dollar and a basis for measuring the benefits versus the cost. Our field staffs made pilot tests at four contractors.

We found that we could not make such an evaluation. For one thing, the time interval between conception of an idea and completion of a specific development is generally many years. DOD, in its attempt to identify reasons for successful development, traced specific systems over a 20-year period. The study showed that the time between predecessor and successor in defense equipment was typically 10 to 20 years.

The National Science Foundation sponsored a recent study which documented significant events during the innovative process for 10 innovations that first came to realization during 1933-66. The average time from conception to realization for the 10 innovations studied was about 19 years.

We initially looked into the feasibility of identifying IR&D benefits by tracing individual projects funded in 1968 to their ultimate use. This approach proved to be impracticable because projects were too numerous and most projects did not, in themselves, become specific developments. Projects are often aimed at advancing technology without a known product application.

We, therefore, decided to evaluate the IR&D programs of the four contractors for a 2-year period on the soundness of the companies' bases for undertaking projects. In other words, since the objective of an IR&D program is to put a company in a position to meet customers' needs, we examined the business reasons for undertaking projects in the test period.

Evidence showed that contractors' IR&D programs were generally related to customers' needs, were undertaken to serve

a Government purpose, or were directed toward meeting agency program goals.

#### Patent and data rights

Government contracts for R&D require contractors to convey certain property rights in whatever new or improved concepts result from the contract effort. DOD and NASA do not require contractors to furnish property rights in inventions or data arising from IR&D. One of the controversial issues of IR&D is the equity of this policy when contractors recover from the Government a major part of the costs of their IR&D programs.

#### DOD policies

DOD believes that its IR&D patent practices are compatible with Government policy. This policy is to promote, insofar as feasible, the commercial exploitation of patents derived from Government-sponsored work, even to the extent of granting exclusive licenses to private companies who will undertake productive exploitation.

We were asked in our study to identify patent applications, issued patents, and patent income resulting from the IR&D programs of major defense contractors. As previously noted, our study was confined to four contractors.

According to information furnished by the contractors, patents arising from IR&D were not numerous and patent income was described as modest, although two of the contractors considered the income figures to be proprietary. One contractor reported no income from patents resulting from work done under IR&D programs during a 6-year period.

A study in 1972 by a DOD working group showed that most companies seldom applied for patents. Fewer than 10 percent of IR&D projects resulted in patent applications. A small number of companies, however, made patent applications on the results of most of their IR&D projects.

#### AEC policies

AEC's regulations provided for AEC to acquire rights to technical data and inventions made or conceived under an IR&D project based upon its percentage share of the total project cost. When AEC's cost participation was less than 20 percent, the agency did not seek patent rights. When AEC's cost participation was between 20 and 75 percent, the contractor was required to give AEC a nonexclusive, irrevocable, paid-up license for AEC purposes and could also be required to submit a complete and detailed technical report.

If AEC's cost participation exceeded 75 percent, the contractor was required to furnish scientific and technical data and to give the Government a nonexclusive, irrevocable, paid-up license for all purposes and the right to grant sub-licenses for all purposes.

When we inquired into this matter before the 1970 hearings, we noted that AEC's participation was consistently under 20 percent and no instance had arisen under which either data or patent rights had been acquired.

AEC said in 1974 that its field offices had identified a small number of instances in which AEC had received licenses, licenses

had been tendered, or contractors had applied for patents where AEC was entitled to rights.

Alternatives to the  
DOD-NASA method

We were asked for alternative recommendations to give the Senate Armed Services Committee a choice of actions which might be adopted. We asked a number of knowledgeable persons with a wide range of views to comment on alternatives to the DOD-NASA system which allows contractors to recover IR&D costs as an overhead or indirect charge to contracts.

We received responses from 18 individuals and one industry association. The individual respondents represented Government, industry, and academia. All had direct working experience with IR&D programs from one or more of these vantage points.

The alternatives included:

A budget line item for R&D now funded as  
IR&D with direct contracting with companies

Those favoring this approach pointed out that:

- The Government would buy only what it needs.
- Relevancy to agency programs would be assured.
- Patent and technical data rights would be obtained by the Government.

Disadvantages were cited as:

- A loss of independence by the contractor in selecting areas of technical effort.
- A loss to the contractor of the flexibility to alter programmed work without the administrative formalities of negotiating a contract change.

--Increased administrative costs because of the problem of allocating the appropriated funds.

--Increased R&D costs to maintain the present level of effort since contractors now share IR&D costs.

Recovery of IR&D as an indirect charge only if there is benefit to the contract

This approach, which was the AEC method, provides the Government with work relevant to its needs, minimizes IR&D costs and gives the Government rights in the results commensurate with its participation. Critics pointed out that AEC's operation was unique for Government agencies and, if applied to other agencies, would discourage long-range IR&D, complicate contractor planning because recovery is determined after-the-fact, and tend to confine industry to its present lines of business.

Recovery of IR&D through overhead by a formula-type approach

These alternatives would determine the reasonableness of contractors' IR&D costs by a more mechanical means, such as broadening the application of DOD's contractor weighted-average share (CWAS) rating; extending to all contractors DOD's formula now applicable to contractors not required to negotiate advance agreements; or accepting as overhead all reasonable costs of contractor cost centers with 50 percent or more fixed-price Government contracts and commercial sales.

Those favoring this type of approach noted the potential for reducing administrative costs and achieving uniform application for all contractors. Opponents commented that ceilings

have been found to be necessary when real competition is lacking, formulas do not recognize changes in the size or technical content of programs, and the Government would lose visibility of contractors' resources and technical results.

#### IR&D allowed as an element of profit

Objections to this approach centered around the difficulty in arriving at a basis for computing the profit factor and assuring the contractor some financial stability from contract to contract and year to year. This approach is seen as simplifying administrative procedures and providing the contractor with incentive to eliminate unproductive work.

#### Removal of most present controls

This alternative would reduce administrative costs by placing more reliance on competitive restraints on spending. Proponents believe that restraints of the marketplace are effective while opponents see IR&D costs increasing and the present controversy over reasonableness continuing.

#### Consensus of experts' opinions

Most respondents favored retaining the DOD-NASA method. Comments included the belief that none of the proposed approaches represented enough of an improvement to warrant a change; that many of the proposals had been considered and rejected in fashioning the present method; and that the present method represented much deliberation and compromise and should not be discarded lightly.

Some of the alternative approaches were considered worthy of further consideration, but no single proposal was supported by more than one or two individuals.

Proposals for an executive  
branch position

In June 1975 the General Services Administration (GSA) provided the Office of Federal Procurement Policy with an interim report on its efforts to develop an executive branch position on the treatment of IR&D and B&P costs. After considering the recommendation of the Commission on Government Procurement, the dissenting positions to the recommendation of the Commission's majority, the report of the interagency task group which considered the Procurement Commission's report, and the views of Federal agencies and the private sector on the task group's position, GSA suggested four alternatives for consideration.

Tests of reasonableness  
and allocability

This alternative would allow equitable allocation of IR&D and B&P to Government contracts subject to general tests of reasonableness and allocability, with advance agreements and dollar ceilings when appropriate, but no Government-wide criteria or tests.

Commission on Government  
Procurement recommendation

The Commission recommended that IR&D and B&P be accepted without question as an overhead item for contractor cost centers with 50 percent or more fixed-priced Government contracts and commercial sales and that other contractors be subject to the present DOD formula; also, that there be a relevancy requirement of potential relationship to the agency function or operation for contractor cost centers with more than 50 percent cost-type contracts. Six Commissioners supported this recommendation.

Interagency task group's  
proposed position

The task group, with DOD as lead agency, considered the Procurement Commission's recommendation and dissenting positions and proposed that the executive branch:

- Adopt ASPR policies and procedures for IR&D and B&P costs as the standard for the executive branch.
- Broaden the relevancy requirement to encompass Government-wide relevancy and amend ASPR and section 203 of Public Law 91-441 accordingly.
- Consider applying CWAS to the IR&D and B&P cost principles of ASPR and the executive branch document which would implement, Government-wide, similar policies and procedures.

Commission on Government Procurement  
dissenting position I

Four of the Commissioners and I opposed the majority recommendation of the Commission because it would relax the controls in use by DOD and thus increase costs.

Need for a congressional policy

Government agencies have been placed in the difficult role of trying to assert the proper degree of control over a program which has as one of its basic principles the maintenance of contractors' independence. The nature of research and development being what it is, the issue has been compounded by the lack of a capability to measure the results of the work. We believe that, if financial support by the Government is to be continued, the Congress should clarify the policy by establishing guidelines setting forth:

- The purpose for which the Government supports IR&D.
- The appropriate amount of this financial support.
- The degree of control to be exercised by the Government over contractors' supported programs.

We continue to support the views represented by dissenting position 1 of the report of the Commission on Government Procurement.

Dissenting position 1 agreed with the majority position in recommending the following:

- Recognize that IR&D and B&P expenditures are in the Nation's best interests to promote competition, advance technology, and foster economic growth.
- Establish a policy recognizing IR&D and B&P efforts as necessary costs of doing business.
- Provide that IR&D and B&P receive uniform treatment, Government-wide, with exceptions treated by the Office of Federal Procurement Policy.

The policy recommended by dissenting position 1 differed from the majority's policy in its other provisions, as follows:

Reasonableness of costs

The Commission majority recommended that contractor cost centers with 50 percent or more fixed-price Government contracts and sales of commercial products and services have their IR&D and B&P costs accepted as an overhead item without question as to amount. For other contractors, the DOD formula should be used to determine the reasonableness of costs.

We found, however, that adoption of the majority recommendation would increase DOD's costs between \$50 and \$100 million annually. In dissenting position 1, we proposed to continue negotiation of advance agreements with contractors who received more than \$2 million in IR&D and B&P during their preceding year, and in all other cases, use the DOD formula for reasonableness.

#### Relevancy

The Procurement Commission majority recommended that only those contractor cost centers with more than 50 percent cost-type contracts should be subject to a test of potential relevance to the agency function or operation. Dissenting position 1 recommended that all allowable projects of contractors receiving more than \$2 million in annual IR&D and B&P payments have a potential relationship.

The interagency task group proposed that ASPR and section 203 of Public Law 91-441 be amended to broaden the relevancy requirement to the Government's interest. In establishing a standard for Government-wide use, the desirability of a requirement of Government-wide relevancy will have to be considered.

#### Access to records

Dissenting position 1 recommended that the Government be given enough access to the contractor's records of its commercial business for determining that IR&D and B&P costs are allowable. The majority position did not include this recommendation, which resulted from a situation we reported to the Congress in December 1974.

In this instance, DOD allowed projects in IR&D for a development which we believed was already required of the contractor by agreements with commercial customers and, therefore, did not meet the ASPR definition of IR&D. Neither we nor DOD were granted access to the contractor's records of commercial business. We recommended that IR&D agreements specifically authorize access to commercial records, not without limitation, but to the extent necessary for Government officials to determine the propriety of questionable charges.

#### Direct contract agreements

Nothing in the provisions of dissenting position 1 was intended to preclude a direct contract agreement for specific R&D projects proposed by a contractor. We believe that the agencies will be able to achieve a reduction in IR&D costs and better control if early in the R&D cycle they make their problems known to industry without stating preconceived solutions. Agencies may then use contracts with short time spans and limited commitments as a means of narrowing down those competing solutions, providing an objective comparison of alternative systems before entering into larger commitments.

In our testimony of 1970 we suggested that the Congress may wish to consider how greater use could be made of direct contracting to obtain contractors' research and development efforts. We suggested exploration of the extent to which agencies could identify development projects of the type now included in IR&D for review and authorization in the same manner as those that are funded from research and development appropriations.

Other provisions

In establishing a Government-wide policy, we suggest that the Congress consider having the Government present one face to industry. That is, with each contractor, have one advance agreement, a joint agency technical review, and a single overhead rate for IR&D and B&P, to ease the administrative burden for both Government agencies and contractors.

We also suggest that the Congress consider the desirability of providing in advance agreements for the Government to receive rights to patents and technical data arising from IR&D. A sliding scale based on agencies' cost participation in the contractor's program, such as AEC had, could be the basis for determining the rights received.

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Gentlemen, this concludes the prepared statement. I will be glad to answer any questions the Subcommittees may have.

IR&D AND B&P COSTS FOR MAJOR CONTRACTORS

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
	----- (000,000 omitted) -----			
Number of contractors:	84	77	83	90
Contractor costs:				
IR&D	\$ 703	\$ 936	\$1,164	\$1,148
B&P	<u>427</u>	<u>469</u>	<u>553</u>	<u>546</u>
TOTAL	<u>\$1,130</u>	<u>\$1,405</u>	<u>\$1,717</u>	<u>\$1,694</u>
Accepted by the Government:				
IR&D	\$567	\$ 725	\$ 896	\$ 901
B&P	<u>390</u>	<u>432</u>	<u>515</u>	<u>504</u>
TOTAL	<u>\$957</u>	<u>\$1,157</u>	<u>\$1,411</u>	<u>\$1,405</u>
Percent accepted:	85	82	82	83
DOD's share:				
IR&D	\$354	\$392	\$441	\$457
B&P	<u>265</u>	<u>306</u>	<u>360</u>	<u>351</u>
TOTAL	<u>\$619</u>	<u>\$698</u>	<u>\$801</u>	<u>\$808</u>
NASA's share:				
IR&D	\$41	\$40	\$40	\$41
B&P	<u>51</u>	<u>50</u>	<u>49</u>	<u>41</u>
TOTAL	<u>\$92</u>	<u>\$90</u>	<u>\$89</u>	<u>\$82</u>
DOD's and NASA's combined share:	\$711	\$788	\$890	\$890
Percent of accepted:	70	67	63	63

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REMARKS: (Continued)

NOTICE OF HEARINGS ON INDEPENDENT RESEARCH AND DEVELOPMENT. Mr. McIntyre. S15650

Mr. McINTYRE. Mr. President, beginning September 17, 1975, at 2 p.m., and continuing on September 24 and 29, open hearings will be held jointly by the Research and Development Subcommittee of the Armed Services Committee and the Priorities and Economy in Government Subcommittee of the Joint Economic Committee on the subject of independent research and development. pS15650(3)

The purpose of these hearings is to examine the results of a 2-year study by the General Accounting Office, of parallel studies by DOD, other Government agencies and industry, which will provide the basis for any appropriate legislative action deemed necessary, including possible changes to the existing provisions of section 203, Public Law 91-441.

These hearings will involve appearances by the Comptroller General, the Cost Accounting Standards Board, the Department of Defense, the National Aeronautics and Space Administration, the Energy Research and Development Administration, the Office of Federal Procurement Policy, several industry associations, and other expert witnesses. These hearings will be held in room 1114, Dirksen Senate Office Building.

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