

AN ANALYSIS OF
INDEPENDENT RESEARCH AND DEVELOPMENT/BID AND PROPOSAL
(IR&D/ B&P)

March 1975

The IR&D Task Force
of
The Defense Science Board

Office of the Director of Defense Research and Engineering
Washington, D. C. 20301





OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D. C. 20301

30 April 1975

MEMORANDUM FOR SECRETARY OF DEFENSE

THROUGH: DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

The Defense Science Board's Task Force on Independent Research and Development (IR&D) has completed its study of IR&D considering the rationale for supporting IR&D, the administration of the IR&D Program by the Department of Defense and the alternatives for the contractor recovery of IR&D costs. The final report on the study is hereby submitted. The conclusions and recommendations of the Task Force are summarized in the first few pages of the report.

A handwritten signature in cursive script, reading "Solomon J. Buchsbaum", is positioned above the typed name.

Solomon J. Buchsbaum
Chairman
Defense Science Board

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OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D. C. 20301

18 April 1975

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Report of the Task Force on Independent R&D

Submitted herewith is the report of the Defense Science Board Task Force on Independent Research & Development. The Task Force supports the national policy of dependency primarily upon industrial suppliers for goods and services and emphasizes strongly that the exercise of an independent research and development effort by the potential contractors is a necessary condition for promoting competition and making progress.

The Task Force believes that much of the confusion surrounding the Defense Department funding of Independent Research and Development (IR&D) and Bid and Proposal (B&P) expense is associated with a misunderstanding of their roles. The Task Force has devoted considerable attention to this problem and has attempted to point out that the support of contractors' Competitive Technical Effort (CTE), which collectively describes IR&D and B&P, is necessary to achieve maximum returns to the Government.

We find no significant deficiencies in the present system but do believe that simplifications and improvements can be made such that the burden on the Department and the contractor can be reduced while still obtaining the benefits of technical information exchange, planning and competition.

The Task Force has discussed its conclusions and recommendations with the IR&D Policy Council.

Gerald F. Tape
Gerald F. Tape
Chairman, Task Force on
Independent R&D

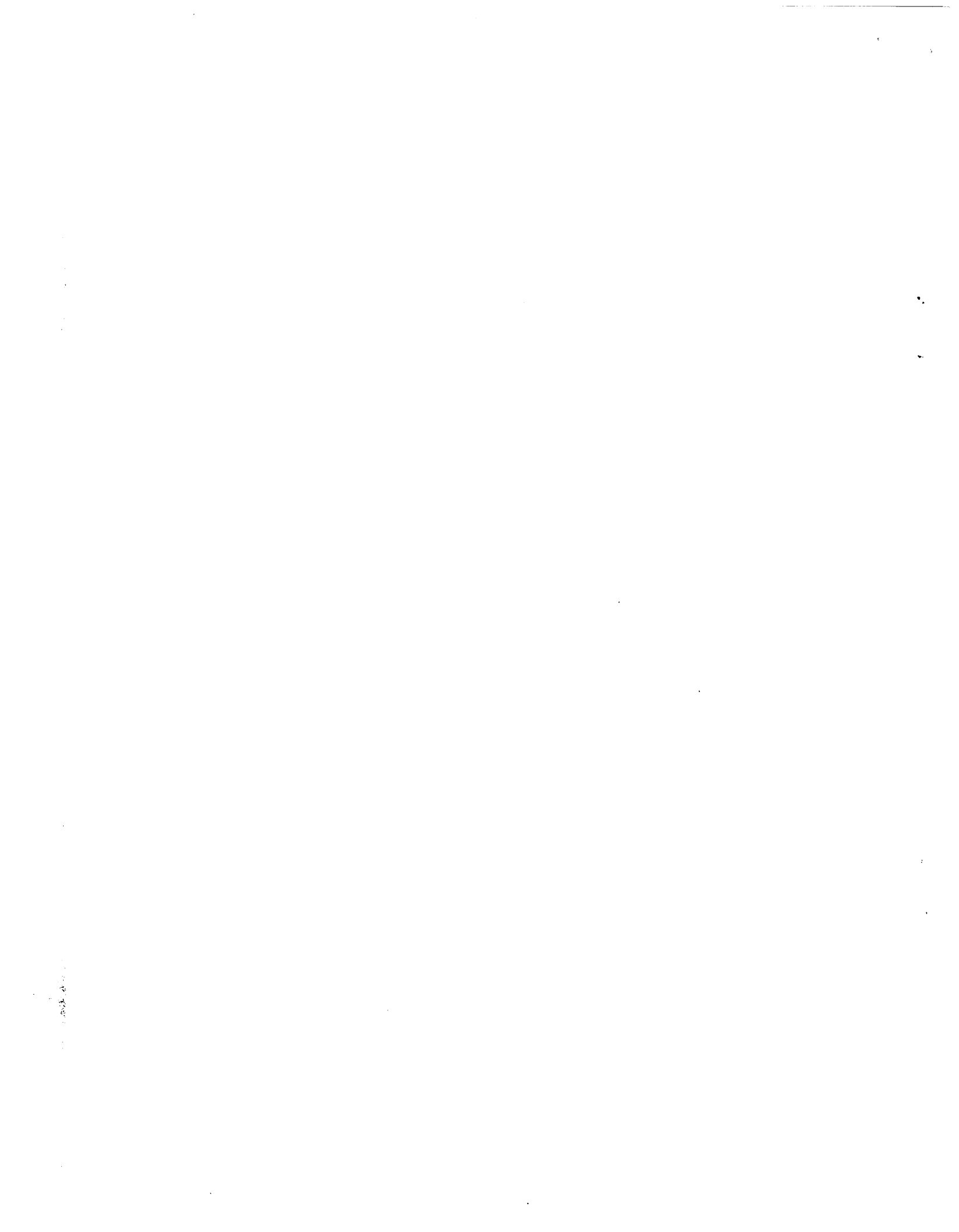


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EXECUTIVE SUMMARY

The Task Force concurs in the national policy that requires the Department of Defense to rely primarily on competition to select sources for developing and producing its military hardware and for providing it with needed services. The Task Force believes that the DoD's own best interests are served in this way. It also believes that DoD reimbursement of independent Competitive Technical Effort (CTE) - the combination of Independent Research and Development (IR&D) and Bid and Proposal (B&P) - is necessarily implied by such a policy. Finally, it believes that the CTE allowance is basically a method of compensation for past costs incurred by the contractor in preparing himself to compete technically and pricewise for the contracts against which the allowances are charged. Prior approval of the content and relevancy of CTE activities is, therefore, not really appropriate.

Specifically, since much of the benefit of competition flows to the government, the Task Force recommends that:

- the DoD reimburse, through overhead, defense contractors for CTE in the amount considered necessary to maintain a truly competitive environment among DoD's industrial sources of supply;
- the amount of CTE authorized be determined to the greatest extent possible automatically on the basis of commercial market place experience or negotiated on the basis of simple formula and guidelines changeable by DoD periodically as conditions dictate;
- the DoD IR&D Policy Council provide guidance as to the level of CTE reimbursement by setting CTE policy and guidelines, and reviewing CTE goals and results at regular intervals;
- the DoD not attempt to manage, direct, or require prior approval of the substance of CTE programs; however, continue technical exchanges for the benefit of contractor and DoD;
- DoD reduce the tendency to be more restrictive than the agency-wide intent of the law in defining relevancy, by issuing instructions

that assure that relevancy tests are not limited by the narrow interests of reviewing specialists. In any consideration of future changes, DoD should support the view that it is in the Government's greater interest that there be no tests for relevancy applied to CTE, or, at a minimum, that such tests be for Government-wide benefits, not simply for individual agency benefits; and

- the DoD promote the use of inter-agency coordinated CTE policy and procedures to the extent other agencies depend on competitive sources of supply in the way DoD does, but not support a central agency for CTE administration.

In utilizing the term CTE in this report to describe collectively IR&D and B&P, the Task Force does not intend that the present systems be rewritten to replace the terms IR&D and B&P.

As a final note, while the Task Force believes that the DoD should support a strong CTE among its contractors, it recognizes that CTE is only one aspect, though an important one, of the large and complicated question of how best to establish and maintain a competitive industry to serve DoD needs. It therefore warns against attempting to solve the whole problem through control of CTE, an attempt that is not only unlikely to succeed, but which may lessen the contribution CTE itself makes.

A more detailed listing of the Task Force's Conclusions and Recommendations is provided on the next two pages.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- I. The major benefits from IR&D are derived principally from the "I"; namely, the independence of choice and execution by the contractor.
- II. CTE (IR&D/B&P) is a legitimate cost of doing business and is logically an overhead expense.
- III. The treatment of CTE expense and the test for reasonableness should be closely coupled to commercial practice and as free from technical audit judgment as possible.

Recommendations

1. Competitive Technical Effort (CTE), independently conducted by a contractor, must be accepted as an essential component in the maintenance of a competitive industrial base responsive to DoD needs.
2. CTE must be considered in conjunction with direct contract/grant R&D and in-house R&D; each has a role to play in maintaining the Nation's technological base and capability.
3. Treatment of CTE expense, including burden but not G&A, as an overhead cost element should be continued.
4. The DoD should employ to the greatest extent possible competitive market place controls over contractor IR&D/B&P (CTE) and less judgmental pre and post audit-type controls. In doing so, subjective tests for reasonableness would be replaced where applicable by objective criteria as illustrated by the CWAS concept.
5. The DoD IR&D Policy Council should exert greater control at the policy level, reviewing CTE trends and needs, establishing guidance for reimbursement and implementation, etc. This effort should concentrate on minimizing the number of negotiated agreements, in providing crisp guidance and

procedures to shorten the negotiating periods of advance agreements and in expediting implementation at the field level. Negotiators should be encouraged to refer unusual situations to the Service Policy Councils for specific guidance.

IV. Government controls on CTE in the absence of direct and continuing market pressures on contractor costs should seek to achieve an optimum balance between protecting the Government's interest and encouraging the greatest freedom in the exercise of the CTE resource.

All agencies of the government should support CTE to the extent that the contractors involved are a part of a pool of competitive suppliers.

6. Relevancy requirements ultimately should be eliminated in their entirety or, as a minimum, the narrow agency relevancy requirement be broadened to one of government-wide relevancy. In the meantime, DoD should reduce the internal tendency to be more restrictive than the agency-wide intent of the law.
7. Effective technical exchanges between the contractor and appropriate DoD personnel are important and should continue to be encouraged, but not for the purpose of prejudging IR&D programs.
8. Where other government agencies rely on competitive sources in a manner similar to DoD, DoD should encourage CTE policies and procedures that recognize CTE as a necessary business expense.

An Analysis of Independent Research and
Development/Bid and Proposal

INTRODUCTION

The issue of reimbursement of contractors' independent research and development and bid and proposal costs (IR&D and B&P) has had a long history within the DoD and the government generally. The debate has usually centered around amount, specific relationship to individual contracts, control and financing. An added consideration for the government as a whole and a concern expressed by many contractors has been the lack of uniformity in treatment from agency to agency.

The Defense Science Board (DSB) Task Force on IR&D has reviewed the extensive work done by others both inside and outside of the government in the examination of IR&D policies and procedures. Discussions were held with members of an industry Tri-Association study group; with the IR&D Directors from several defense industry firms; with senior representatives of government agencies, such as DoD, AEC, NASA, SBA, GAO; and finally with representatives of small contractors, some working exclusively in the commercial market place, some working almost exclusively for the government, and others with mixed product lines.

The Task Force was asked not to start de novo but to reassess the fundamentals concerning IR&D/B&P with specific emphasis on:

1. the various objectives and uses of IR&D/B&P from the viewpoints of both the government and industry, and
2. alternate means for satisfying the various objectives, including analysis and evaluation of methods to be used.

The full charter of the Task Force is included in Appendix 1; the membership of the Task Force is given in Appendix 2.

To avoid misunderstandings, the definitions used by the Task Force are those developed by DOD and are stated in Appendix 3. The major points of the present DoD policy on IR&D/B&P and the general features of its implementation are given in Appendix 4.

RELATED STUDIES

At the request of the Chairmen of two Senate Subcommittees and a member of the House, the General Accounting Office (GAO) has undertaken a study of IR&D/B&P and has submitted a number of questions to the DoD. The basis for the GAO review appears to be a questioning by some Members of Congress as to whether there should be increased government control over that part of a contractor's IR&D/B&P that is reimbursed by the government, whether there should be more emphasis on direct R&D contracting versus IR&D, and whether there should be a budgetary ceiling on the total IR&D supported by DoD. The GAO study is still in progress; however, the GAO has issued a partial report of its investigation (dated 16 Aug 1974).

On the industry side, the Ad Hoc Committee on IR&D/B&P of the Tri-Association (Electronic Industries Association, Aerospace Industries Association and National Security Industrial Association) has completed a study of the subject and has presented a statement of principles and recommendations in a Position Paper dated 22 March 1974. (See Appendix 5 for a listing of specific recommendations.) The following recommendations are pertinent to this discussion:

1. The requirement for potential military relevancy should be eliminated.
2. The requirement for establishing ceilings on IR&D/B&P costs should be eliminated in the interest of encouraging competition and maintaining a strong industrial capability.
3. IR&D/B&P costs are indirect costs, part of overhead, and should not become line items in agency budgets.
4. IR&D/B&P are indirect business expenses and should be fully reimbursed. The government should pay for such costs on the same basis as all other customers.

The Commission on Government Procurement included recommendations on IR&D in its December 1972 report; the majority view, set forth under recommendation B-10, sought to:

1. recognize in cost allowability principles that IR&D and B&P expenditures are in the Nation's best interests to promote competition, to advance technology, and to foster economic growth;

2. establish a policy recognizing IR&D and B&P efforts as necessary costs of doing business and provide for a) uniform Government-wide treatment, b) acceptance of company practice when over 50% of sales are accounted for by firm fixed price Government contracts and commercial products and services, and c) application of relevancy to a potential agency function or operation when contractor cost centers have more than 50% cost-type contracts.

There were dissenting views by some members of the Commission. These included, inter alia, a more encompassing requirement for relevancy, greater access to contractor records in order to determine allowability, and annual agency reporting to the Congress on criteria and magnitude of allowances. An additional dissent noted that other mechanisms to achieve the benefits of IR&D had not been sufficiently explored and further study was necessary. The recommendations of the Commission on Government Procurement are under review by the Executive Branch; a policy position has not been established.

Other principal documents reviewed by the Task Force included "A Review of IR&D" dated February 1974, prepared by a DoD Working Group on the Nature, Objectives and Effects of the Independent Research and Development Program, and a staff report to the Commission on Government Procurement entitled "Independent Research and Development Special Project No. 1" by James E. Carpenter. A bibliography of the more significant documents considered by the Task Force is given in Appendix 6.

No attempt has been made to present individual points of view nor to distill the essence of the various discussions or studies. The Task Force has, however, as a result of all of its discussions and deliberations, reached certain conclusions and offers recommendations which are later set forth.

COSTS AND TRENDS

The costs associated with IR&D/B&P programs of major DoD contractors since 1964 are given in Appendix 7. The contractors included are estimated to account for more than 85% of all IR&D/B&P (and in earlier years OTE) expenditures recovered in DoD contracts. It must be noted that many changes have taken place that make trend comparisons difficult. For example: (1) A requirement for reporting burdened dollars

was introduced (this did not take place at one time and the actual figures for a number of years are a mixture of burdened and unburdened dollars); (2) the base of contractors reported on changed from year to year (while a large number of companies are in the base through the entire time period, the remaining part of the data base varies considerably from year to year); (3) the DCAA current rules for companies to be reported is different in the last years than in the initial years; (4) OTE costs reported separately in earlier years have in later years been included for the most part in IR&D reporting.

From Appendix 7 it will be noted that for 1974, 90 major defense contractors incurred total costs of \$1,694 million. Through advance agreements with the larger contractors and by application of a formula for others, the DoD considered as "acceptable", cost of \$1,405 million. Since these contractors also have non-DoD contracts, the DoD portion, allocated on the basis of sales, was \$808 million, about 57% of the total acceptable. It should be emphasized that under the present DoD policy, essentially all of these expenditures, \$779 million out of the \$808 million, were covered by advance agreements. The comparable figures for IR&D only were \$445 million out of \$457 million.

IR&D/B&P - THE TASK FORCE APPRAISAL

The Need for Independent Technical Effort in Contractors' Organizations

Every successful organization must have the ability to survive in the competitive market place. This applies to the U.S. Government in its continuing effort to maintain a world leadership role, to provide for the Nation's security, and to satisfy the needs of its citizens. The U.S. Government provides a framework within which elements of its society can operate but leaves much of the actual responsibility for meeting these needs to the private market place. The necessary continuing technical advances therefore, result principally from the individual initiative of those interested in and having a responsibility for education, research, development, production and provision of services. From long experience, we have found that the most innovative and productive ideas stem from grass roots initiatives by those individuals and organizations that recognize and understand what needs to be done and what can be done.

All organizations, and especially those whose continuing success is dependent upon more advanced technologies, must carry out research and development in order to remain aware of and to make advances in the state of the art, generate new products or new techniques to meet ever-changing needs, reduce costs, etc. In other words, they

must remain competitive. This applies to universities in generating new knowledge and in training students, to Government laboratories in fulfilling their commitments to their respective agencies, and to industry in supplying products and services for both the public and private sectors.

R&D of the highest quality is necessary for the preservation of our National security since we must be prepared to cope with potential adversaries who continue to demonstrate their full commitment to advanced and ever-improving military systems. The question is how best to obtain the necessary R&D to satisfy U.S. needs. A part of the answer is that we must take advantage of all possibilities, ranging from that which is controlled and directed by the customer, i.e., the Government, to that which encourages the greatest possible independence and initiative by the supplier.

Virtually everyone the Task Force talked to, as well as the Task Force members themselves, believe that IR&D/B&P plays a role in meeting DoD needs that is at least highly important if not absolutely necessary. Yet it is clear from the history of IR&D and the voluminous documentation made available to the Task Force that IR&D has been almost continuously subject to serious challenge. The challenges have usually been about one or another aspect of the procedures for handling IR&D and how independent it should be rather than whether or not IR&D should exist. Since, however, there did not seem to be anything seriously wrong with existing procedures, the Task Force came to the conclusion that the real trouble may lie in the lack of a generally-agreed upon, or perhaps understood, rationale for IR&D for which a consistent set of procedures could be applied. It became clear that without agreement on why DoD supports IR&D and what it hopes to accomplish by so doing, the misunderstandings would remain.

The Task Force, therefore, discussed this problem at some length and has defined a rationale which it believes goes to the heart of the issue.

A Rationale for IR&D/B&P

The two fundamental questions concerning Government support of IR&D/B&P are:

- Why should the Government reimburse expenditures for IR&D/B&P?

- If there are sound reasons for such reimbursement, what rules should be used to allocate the funds available for it among competing claimants?

The answers commonly given to the first question include objectives such as to increase knowledge, to improve technology, to explore and test innovative ideas and concepts, to retain key staff, etc. These are all worthy objectives and they contribute to the health of the defense community. Since they are generally stated in industry-benefiting terms, the question naturally arises: Since they are beneficial to industry, why shouldn't companies use their "own money" to pay for them rather than expecting the Government to do so? And, even if beneficial to industry, what makes them beneficial to the Government?

The answer commonly given to the second question generally takes the form of a statement that work of this sort is a necessary cost of a firm's doing business, and, therefore, should be paid for by any customer -- including the Government. While this is valid, under the present method for reimbursing IR&D/B&P expenditures confusion arises since the Government seems to be paying the costs of preparing for and acquiring future work as part of the expense of current, sometimes unrelated contracts. This raises questions such as: Why should the Government invest in a company's future work? And how can the Government be sure that the money invested is actually spent in work from which it can benefit?

Why should the Government support IR&D/B&P?

The Government has decided as a matter of National policy that the Department of Defense and other Government agencies should rely primarily on competition to select sources for developing and producing its military hardware and providing them with needed services. The Task Force believes that this policy is fundamentally sound. Competitive procurement, whether of a formal or informal nature, will in the long run be more efficient and economical, result in higher quality, and be more flexibility responsive to DoD's changing needs.

This policy has a price, however. The price includes assuring the continued existence of sufficient number of organizations qualified to meet DoD needs so that a truly competitive environment can exist. Furthermore,

these organizations must be sufficiently staffed with qualified and knowledgeable people that they can do the jobs required. The cost of conducting the actual competitions must also be met. To the private organizations involved in the competitions, this cost is the expense of preparing quality proposals, with all the underlying technical and administrative activities that such proposals require. To the Government, the cost is that of informing industry of its needs, managing the competition, evaluating the proposals and selecting the performer. These costs are not small. They are, in fact, substantial; but they are considered to be more than justified by the savings accruing to the Government from effective competition as well as technology growth inherent from such competition.

Since the ultimate benefits of such competition accrue to the Government, it is the Government which must pay for the cost of them. Part of such cost is what is commonly called IR&D/B&P -- the technical activities of the competitive companies including research, development, design, demonstration, proposal writing, etc., i.e., all those activities required for them to engage in real competition. As a result, such activities might better be described as Competitive Technical Effort - CTE.

Thus, the answer to the first fundamental question -- why the Government should reimburse the costs of IR&D/B&P -- is that it must do so to help gain the benefits of competition, benefits which are the essence of a free enterprise system. It should be emphasized that if the Government is unwilling to pay in some fashion for the price of such competition, then the competitive atmosphere will weaken as some organizations withdraw from the arena and others cease to make significant investments in the competition, thereby resulting in proposals that are inadequately supported or technically unimaginative. In either case, the DoD would be left in a position in which it would not have real choices, but would have to make its source selections on the basis of less appropriate criteria, such as, for example, whose turn is next.

DoD like the AEC and NASA does, of course, satisfy some of its needs through the use of organizations which are essentially "chosen instruments" in various areas, selected to compete for specific programs and paid to do so as a part of their contractual relationships with the Government. These include in-house laboratories, GOCO (Government-owned

contractor-operated) organizations and FCRC's (federal contract research centers). But, while important to DoD and other Government agencies to be able to provide this type of tailored competition for special needs, this approach is not the solution to their obtaining the vast bulk of the goods and services they need annually.

How should the Government pay for Competitive Technical Effort?

A private contractor must have made an investment in CTE for him to have obtained a competitive contract. The Government should, therefore, permit the contractor to recover prior CTE costs as a part of each such contract. The Government should recognize that CTE costs are company-initiated costs, made under company control for the purpose of being able to satisfy Government needs in a competitive manner. The Government should also recognize that it is really compensating a contractor for his investment only if he has been successful in obtaining a contract. In fact, it should be clear that the Government will reimburse only successful contractors and not those whose prior CTE was not good enough to satisfy some Government need.

Successful competitors will wish to use CTE monies recovered on contracts in a variety of ways, all being investments in the future, that is, directed at increasing the contractor's ability to obtain new contracts. The choices are up to them. It is also up to them to decide what contracts -- and, in fact, what customers -- they wish to go after, and to decide how to allocate the money in their various CTE activities. They can invest more if they are hopeful that this will pay off; they can invest less if they are pessimistic. The essential point is that recovered CTE monies provide an opportunity to invest in ways determined by the company to enable it to engage effectively in valid competitions.

If a company is successful on the average in competitions, such investments will pay off; if a company is unsuccessful on the average, CTE investments will fail to pay off. "On the average" is stressed because, to stay in business, contractors must recover their CTE costs on unsuccessful as well as on successful bids. If, for example, the Government would like three bidders on the average, then the average contractor will achieve one success out of three tries and must recover CTE costs expended on the two failures as well as CTE costs related to his one success.

With the exceptions noted in the following discussion, the present DoD procedures for reimbursing CTE costs are believed to recognize the factors discussed in the previous paragraphs.

Possible Procedures

Having established that CTE is the price that the Government must pay to maintain competitive sources of supply and that the payments should be considered as reimbursements for past expenditures, there remains the problem of how to size, allocate, and control Government CTE reimbursements.

The simplest and most ideal solution to this problem is also the one most consistent with the stated philosophy - successful contractors would be allowed to recover CTE costs through charges to overhead up to a maximum determined by a simple formula.

The formula would be determined at the highest level in DoD, probably by the IR&D Policy Council, and would be based on a considered, periodic judgment of the needed level of competitive activity. Allocation among contractors would be based primarily on this formula but deviations therefrom deemed desirable by contract negotiators would be possible as a result of review by appropriate authority. Such deviations might recognize magnitude of total contractor effort, unusual year to year fluctuations or other special circumstances.

Since reimbursements would be for past independent technical activities (which were, by definition, successful or the contractor would have no contracts against which to recover them), there could be little question of relevancy, or content, or quality. Thus, no IR&D planning documents would be required and no technical evaluations of such plans would be called for. New CTE activities would be truly independent and contractors would recover their costs only if they ultimately bore fruit in new contracts. Normal pressures on contractors to find out what the DoD wants and to tell DoD of their capabilities would be depended on to force the needed information interchange.

The question arises: Suppose the contractor, for whatever reasons, does not apply his new CTE in a fashion that leads to effective competition for new Government work? There are two answers to this question. The first is that

it is really his money; and if he wastes it, it is his mistake. The second is that, if he wastes it, he will fail to win future contracts, his contract level will fall and the DoD reimbursement for CTE will likewise fall. In the long run, the system would thus be self-correcting.

The Task Force does not, however, recommend that DoD embrace this ideal CTE procedure completely, despite its attractive consistency and simplicity. The Task Force recognizes the special nature of the DoD's relationship with its major contractors and hence that IR&D/B&P reimbursements in a given case do not always result as fully and directly from competitive technical effort as ideally envisioned. It also recognizes the Government's duty to oversee the expenditure of taxpayer money, even if such oversight reduces effectiveness and increases costs to some extent; and it is aware of the existence of a considerable body of pertinent law, regulations and precedent. Most importantly, the Task Force recognizes that there are varying degrees of competition involved in DoD procurements. Competition covers a broad spectrum from formal price competitions for commercial shelf-items at one extreme, through informal competitions for design ideas and capabilities, to chosen instruments of long duration at the other extreme. These variations in competition and the differing degrees of cost control consciousness that these variations may invoke, need to be recognized and dealt with, even at the expense of some increase in the complexity of IR&D/B&P procedures.

Finally, the Task Force recognizes that DoD has a need to keep close track of the CTE process, in order both to assure itself that CTE is playing its proper role in the larger matter of maintaining DoD's competitive sources of supply and to provide informed judgment to future CTE policy decisions.

The Task Force had neither the time nor sufficient detailed knowledge to conduct an adequate study of the procedural aspects of the problem. It, therefore, presents the suggested procedure more as an illustration of what it believes is needed than as a definite set of recommendations. The Task Force suggests a simplified version of the existing DoD procedure along the following lines:

1. The contractor-determined CTE overhead charge should be accepted where competition and continuing cost consciousness can be clearly demonstrated, i.e., where cost centers are dominated by competitive, firm, fixed-price contracts either Government or non-Government.

The goal should be to remove as many contractors from more detailed consideration as is reasonable based on an adequate competition/cost conscious environment. The criterion ought therefore to be easily understood and readily accepted as opposed to covering all possible special circumstances.

2. Where this situation does not exist, contractors (cost centers) should be divided into two classes:

a. Small (DoD reimbursed CTE less than \$2.0 million) - use a formula set by the IR&D Policy Council. Exceptions either up or down would be allowed with justification and appropriate approval.

b. Large (DoD reimbursed CTE greater than \$2.0 million) - negotiate a dollar ceiling, consistent with standards developed and promulgated by the IR&D Policy Council.

3. Technical reviews should be kept to a reasonable level. Company brochures should be kept simple and used primarily for conveying information; and overhead costs associated with present reviews, which are probably too high for both government and contractors, should be reduced. The Task Force also believes that visits to contractors should be primarily to review past and on-going activities rather than future plans and that visiting groups should be made up primarily of those government people who are working in the fields to be covered and who want to go for their own information. Finally, the Task Force believes that reliable evaluations of quality are unlikely to result from the limited time that government scientists can apply to the review of brochures or to quick visits and therefore questions the desirability of computing an evaluation score to be used in negotiating the CTE level. The self-correcting nature of the overall system, as mentioned above, seems to be the best guarantee of quality.

4. The Task Force understands that, however undesirable it may be, the law requires a test for "a potential relationship to a military function or operation" and that it is therefore not within the discretion of the DoD to omit such a test. Further, the Task Force notes that Service procurement managers are all understandably tempted to lock in their suppliers to their own interests when they can. The Task Force believes that the DoD should resist this temptation and take a broad view of the Government interest. As a result, the DoD definition of relevancy should be clearly

stated -- and the instructions, procedures and forms used designed -- to assure that the test is at least DoD-wide and not limited to the parochial interests of reviewing specialists. Furthermore, narrow interpretations should be avoided by contract officers.

5. The IR&D Policy Council should play a strong role in determining CTE policy, establishing the relationship of IR&D/B&P to the defense environment, setting formulas, and in reviewing overall results. Such a role is needed to assure proper DoD awareness and control of this large and important Government investment.

Alternate Recovery Methods

The Task Force was asked to consider alternate methods for reimbursing or financing CTE (IR&D/B&P). It concluded that the present procedure of reimbursement as an item of indirect expense should be continued. *Alternate methods considered included funding as a direct cost, from profits, and through tax credits. Comments on these rejected alternatives follow:

- Direct cost reimbursement places CTE in the same category as direct research contracting and subjects it to all of the same judgments and controls at the many Government levels involved. In short, all of the advantages of independence in R&D are lost without any compensating benefits.

- Financing from profits would provide the independence sought for CTE, namely, complete company control. One difficulty is that present fee structures would have to be revised significantly upwards to allow for the necessary CTE funding (perhaps 3-5% after taxes). An upward revision of fee structure does not seem likely. A second difficulty is that the Government and Industry under the present arrangement conduct a considerable amount of technical interchange. This might be diluted under complete company control and result in limitations on the dissemination of technology.

- From time to time there have been proposals to permit IR&D-type costs to be recovered in whole or part as tax credits. IR&D cost recovery is only part

* Toward the end of its work, the Task Force was made aware of the GAO's list of 14 possible alternatives. In the opinion of the Task Force, these are not independent alternatives but variations within the categories that had already been considered.

of a larger program of tax credit incentive problems which must be solved. Since the tax credit route would probably not eliminate some test of reasonableness which is also necessary under the overhead allocation procedure, the latter is preferable.

CONCLUSIONS AND RECOMMENDATIONS

General

The Task Force concurs in the policy that requires the Department of Defense to rely primarily on competition to select sources for developing and producing its military hardware and for providing it with needed services. Therefore, the conclusions and recommendations which follow address the question of how best to maintain a highly competitive industry, especially in fields of advanced technology that are of greater importance to the military than to the civilian market.

The Task Force believes that the Government should encourage a strong contractor Competitive Technical Effort - CTE (IR&D/B&P). At the same time, it recognizes that CTE is but one aspect, albeit an important one, of the large and complicated question of establishing and maintaining a competitive industry to serve DoD needs. The Task Force warns against attempting to solve the whole problem through control of CTE, an attempt that is not only unlikely to succeed but may lessen the contribution CTE itself may make.

The present system of implementation by the DoD is generally satisfactory. The following recommendations are made in part to emphasize various important features of CTE and in part to propose improvements such as administrative simplification, greater reliance on market place type controls, greater decision authority remaining with performers, etc.

Conclusion I. The major benefits from IR&D are derived principally from the "I", namely, the independence of choice and execution by the contractor.

Direct contracting (including grants) for research and development is most useful when end objectives or fields of research are clearly specified. Government specialists then play an important role in selection and direction. The selection process is complex and the response time, which must include budgetary consideration and planning, is long.

Direct contracting will and should remain the principal method for controlling the major allocation of R&D resources. With the wide variety of projects to be accomplished, different performers can be employed as appropriate, e.g., academic, not-for-profit, Government in-house, and industrial institutions.

The benefits from Independent R&D stem principally from the contractor's flexibility in decision making and execution of the work. Those with the deepest technical involvement are encouraged to innovate. Research and development decisions as to what, how, who and when are made where the work is done. Immediate judgments by peers permit more rapid and imaginative responses.

Additionally, the present procurement process depends heavily on guaranteed success, that is, previous extensive R&D, testing, evaluation, etc. Exploratory and conceptual research, component development and early testing through IR&D provide a better base from which DoD decisions for follow-on R&D or fabrication contract effort can be made.

All in all, IR&D is a major component of the contractor's Competitive Technical Effort. It provides him with both the expertise and knowledge with which to respond promptly and responsively as well as to propose new innovative concepts.

Recommendation 1.

Competitive Technical Effort (CTE), independently conducted by a contractor, must be accepted as an essential component in the maintenance of a competitive industrial base response to DoD needs.

Recommendation 2.

CTE must be considered in conjunction with direct contract/grant R&D and in-house R&D; each has a role to play in maintaining the Nation's technological base and capability.

Conclusion II. CTE (IR&D/B&P) is a legitimate cost of doing business and is logically an overhead expense.

All organizations, especially those engaged in advanced technology programs, must support strong programs of CTE. It is a cost of remaining competitive and must be recovered either as a reimbursable cost or, if not allowable, from profits.

Recovery from profit would certainly provide the independence sought for CTE, namely, complete company control. The difficulty is that the present DoD fee structure would have to be revised upwards to allow for the necessary CTE funding (perhaps 3-5% after taxes) if gross profits from Government work were not to drop below present levels; such upward revision of fee structure does not seem likely. Yet to remain in business, a company must be profitable, and if it finds doing business with DoD is not profitable it will seek other customers where it can remain profitable.

Treating CTE as a direct cost places it in the same category as direct research contracting and subjects it to all of the same Governmental judgments and controls while losing all of the advantages of independence.

In the final analysis, CTE is an incurred cost having a bearing on the company's (or cost center's) total effort especially as that effort influences its future business. Since such work is not necessarily associated directly with an on-going product line, it should be expensed as an overhead cost and distributed in accordance with accepted accounting principles.

Recommendation 3.

Treatment of CTE expense, including burden but not G&A, as an overhead cost element should be continued.

Conclusion III. The treatment of CTE expense and the test for reasonableness should be closely coupled to commercial practice and as free from technical audit judgment as possible.

Given that CTE is a necessary business expense, the question then centers on how much CTE is necessary. When buying a commercial product at a catalogue or shelf

price, the amount of CTE expense included is not in question since it is included in the total price arrived at through market place forces. For a firm fixed price contract based on competition, the element of CTE expense is also in the firm fixed price and is therefore subject to cost control. The question of "how much" arises when the contract negotiated is sole source or cost-type and the Government negotiator is looking for a test of reasonableness.

Since the Task Force recommends that CTE be treated as an overhead expense, the problem is then one of negotiating an acceptable overhead allowance of which CTE is but one component. The present DoD-ASPR system recognizes this and also that CTE deserves special attention, especially for the larger contractors. Thus for a CTE annual cost of less than \$2.0 million per contractor, general overhead negotiating principles are followed with formula guidance on CTE for the negotiator. For contractors with larger CTE expense, dollar limits based on technical quality and relevancy tests are negotiated in advance.

Experience to date indicates that most high-technology defense contractors find it desirable if not necessary to spend more for CTE than the Government is prepared to reimburse. While this factor must be taken into account in the evaluation of reasonableness, it would be unrealistic to expect full reimbursement of CTE costs in those instances where there are few, if any, market controls on those costs.

The Task Force recognizes that many advantages are to be gained through simplification of the tests for reasonableness. This could be automatically accomplished by making as much procurement as possible competitive firm fixed price. Next, where strong and continuing competitive cost pressures exist on a company's allocation of its own resources, the company's own decisions can be utilized for negotiated Government contracts as well. In short, every effort should be made to accept the pressures of competition and continuing cost consciousness as automatic tests for reasonableness where they exist.

In an earlier section of this report, entitled "Possible Procedures", the Task Force has offered a suggested procedure which in its opinion would provide for simplification, greater independence for some contractors, controls for DoD in the most sensitive areas, and exchange of technical information.

Recommendation 4.

The DoD should employ to the greatest extent possible competitive market place controls over contractor IR&D/B&P (CTE) and less judgmental pre and post audit-type controls. In doing so, subjective tests for reasonableness would be replaced where applicable by objective criteria, as illustrated by the CWAS concept.

Recommendation 5.

The DoD IR&D Policy Council should exert greater control at the policy level, reviewing CTE trends and needs, establishing guidance for reimbursement and implementation, etc. This effort should concentrate on minimizing the number of negotiated agreements, in providing crisp guidance and procedures to shorten the negotiating periods for advance agreements and in expediting implementation at the field level. Negotiators should be encouraged to refer unusual situations to the Service Policy Councils for specific guidance.

Conclusions IV. Government controls on CTE in the absence of direct and continuing market pressures on contractor costs should seek to achieve an optimum balance between protecting the Government's interest and encouraging the greatest freedom in the exercise of the CTE resource.

The principal Government controls in effect today are on those contractors whose CTE expense is in excess of \$2.0 million. The requirement for an advance agreement based on technical quality, potential military relationship and reasonableness consumes considerable effort on the part of both contractor and Government and does impact on the contractor's independence in pursuing his R&D program. On the other hand, some exchange of technical information at the planning stage and at appropriate achievement stages is beneficial to both parties.

The Task Force finds that benefits from the technical reviews accrue to the Government through exchange of information and in the early disclosure of new directions and results. Similarly, the company benefits from guidance on priorities, duplications and evaluations. The Task Force believes, however, that industry's application of

CTE is best influenced by DoD through DoD's making known its future needs and intentions and not by judging in advance what CTE should be done to satisfy these needs. Therefore, current procedures may entail greater than necessary effort. More attention should be paid to the technical interests of those who participate. Review teams should be composed of those who will really contribute and benefit from such exchanges.

IR&D, almost by definition, should not be subject to a relevancy test. If, however, relevancy tests continue to be required, the Task Force fails to see why single agency relevancy should be applied, when the Government as a whole should benefit if possible from IR&D conducted by all Government contractors. Therefore, tests for relevancy, if necessary, should be general tests made by those who have a broad appreciation of relationships rather than by those seeking contributions to narrowly defined objectives.

Recommendation 6.

Relevancy requirements ultimately should be eliminated in their entirety or, as a minimum, the narrow agency relevancy requirement be broadened to one of Government-wide relevancy. In the meantime, DoD should reduce the internal tendency to be more restrictive than the agency-wide intent of the law.

Recommendation 7.

Effective technical exchanges between the contractor and appropriate DoD personnel are important and should continue to be encouraged, but not for the purpose of prejudging IR&D programs.

Conclusion V: All agencies of the Government should support CTE to the extent that the contractors involved are a part of a pool of competitive suppliers.

The purpose of a contractor's CTE is to permit him to supply, and the Government to obtain, the best product possible in terms of performance and cost. Since such competition is of benefit to the Government, the policies and procedures applied should be as consistent Government-wide as is possible. It is recognized that for various

reasons there may be valid agency to agency differences. Thus, while the Task Force believes that there should be uniformity in the treatment of CTE among agencies having similar objectives and relationships with their suppliers, it sees the necessity for a clear understanding of the role CTE plays in helping a particular agency to accomplish its objectives and to maintain its supplier relationships before such uniformity is mandated. In any case, creating a central agency to administer CTE will not help.

Recommendation 8.

Where other Government agencies rely on competitive sources in a manner similar to DoD, DoD should encourage CTE policies and procedures that recognize CTE as a necessary business expense.





OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D. C. 20301

12 April 1974

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Charter of DSB Task Force on IR&D

The letter of 8 November 1973 requested assistance from the DSB in the study of IR&D. As a result of several activities that are under way both in DoD and industry, it now seems clear that the prime thrust of the DSB effort should be the identification and examination of alternative ways to accomplish the various IR&D/B&P objectives, both government and industry.

Several studies currently under way, namely the GAO study and the Tri-Association Industry study, are primarily concerned with improved administration of the current DoD approach to IR&D/B&P allowance. There are many who believe that the current statutes and regulations concerning IR&D/B&P are so constrictive that a fundamental change in the policy may be necessary to preserve the independence and the innovation of the effort. Some hold the view that the single approach to the allowance of IR&D/B&P has never completely satisfied the sometimes conflicting objectives both of government and industry.

I am, therefore, requesting that the DSB Task Force effort be aimed primarily at a reassessment of the fundamentals concerning IR&D/B&P. It should address but not necessarily limit its work to the following tasks.

1. Identify the various objectives and uses of IR&D/B&P both from the government and from the industry viewpoints and assess the criticality of each objective and use. Included would be objectives, such as

- increasing the base of fundamental knowledge;
- advancing the technology of current product areas;
- advancing the technology of future product areas;
- retaining key technical and scientific talent;

- identifying, exploring and developing innovative components/subsystems/systems;
- initiating innovative and responsive proposals.

2. Identify alternative means for satisfying each objective as developed under task 1. These could include the usual techniques of overhead allowance and profit allowance but could also consider other means such as contracts, grants, competitively funded continuing concept studies, etc.

3. Set forth and assess the pros and cons of various alternatives and recommend possible modus operandi for achieving the most important objectives as concluded under the task 1 assessment.

The Task Force should seek inputs from a broad spectrum of government and industry being particularly careful to recognize the possible differences in objectives between government and industry and between companies of different size and product.

The Task Force should target its efforts for completion and presentation to the DDRE by 1 September 1974.



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DEFINITIONS

To avoid misunderstanding, the definitions used by the Task Force are those developed by DoD as follows:

Independent Research & Development (IR&D)

A contractor's independent research and development effort (IR&D) is that technical effort which is not sponsored by, or required in performance of, a contract or grant and which consists of projects falling within the following three areas: (i) basic and applied research, (ii) development, and (iii) systems and other concept formulation studies. IR&D effort shall not include technical effort expended in the development and preparation of technical data specifically to support the submission of a bid or proposal. (ASPR 15-205.35).

Bid & Proposal (B&P) Expense

Bid and proposal (B&P) costs are the costs incurred in preparing, submitting, and supporting bids and proposals (whether or not solicited) on potential government or non-government contracts which fall within the following:

- (A) Administrative costs including the cost of the nontechnical effort for the physical preparation of the technical proposal documents and also the cost of the technical and nontechnical effort for the preparation and publication of the cost data and other administrative data necessary to support the contractor's bids and proposals, and
- (B) Technical costs incurred to specifically support a contractor's bid or proposal, including the costs of system and concept formulation studies and the development of engineering and production engineering data. (ASPR 15-205.3).

Relevancy

The requirement that IR&D work for which payment is received through overhead recovery on DoD contracts must have a potential relationship to a military function or operation. (Public Law 91-441, Section 203).

MAJOR DOD IR&D POLICY AND IMPLEMENTATION FEATURESPOLICY

1. Use individually negotiated advance agreements for the control and reimbursement of these costs for large defense contractors (approx. 100). Such agreements, after a formalized detailed technical review of the proposed IR&D program, will establish a separate dollar ceiling for the DoD's reimbursement of each of these costs, but allowing the contractor to combine the individual amounts into a single pool if he chooses; and requiring the contractor to burden these costs as he would for a contract, except that G&A would not be added. The requirements to negotiate a timely advance agreement will be enforced by automatically establishing a low threshold for recovery of these costs where no advance agreement exists.
2. Use the DoD developed formula for control and determination of reasonableness of these costs for the remaining large number of smaller companies who recover IR&D or B&P. This will provide a workable, uniform system that can be uniformly applied and easily adjusted as needed.
3. That technical review and evaluation of contractors' IR&D programs, as currently established under DoD Instruction 5100.66 be strengthened and that detailed review and evaluation procedures be established and made uniform throughout the DoD. The system will require both the review of a company's individual IR&D projects as submitted at the time of the advance agreement and will be supplemented by periodic technical reviews of the contractor's ongoing IR&D programs at his facility. In addition, a data bank will be established to provide a centralized body of IR&D project information. This information will be available to the DoD technical community at large.
4. That each of the Military Departments formally recognize the need to increase the support and resources needed to effectively perform the required IR&D technical reviews and evaluations by establishing a specific line item in the Management and Support Category of their RDT&E Program to support this technical review and evaluation effort.

5. That the Department of Defense continue its present policy of not acquiring rights to technical data and patents arising from industries' IR&D programs.

GENERAL IMPLEMENTATION FEATURES

1. For major contracts involving IR&D/B&P annual expense of over \$2 million, advance agreements are negotiated. These agreements are based on technical quality, relevancy to DoD needs, and reasonableness. Costs include cost center burden but no general and administrative (G&A) expense since the allowed IR&D/B&P is finally treated as a G&A cost.
2. For all other contracts no advance agreement is necessary, but in negotiating overhead allowances, a formula for control and determination of reasonableness is used. No test for relevancy is applied nor are technical reviews carried out.
3. Technical reviews encompass a review of the IR&D technical plan at the time of negotiation of the advance agreement and periodic on-site reviews of ongoing IR&D programs.
4. Acquisition of rights to technical data and patents arising from IR&D programs is not required.

TRI-ASSOCIATION STUDY OF
IR&D/B&P

PRINCIPLES AND RECOMMENDATIONS

As the subject of IR&D and B&P is undoubtedly headed for continued debate in the Congress again this year, it is important that this study of the industry position on IR&D and B&P be clearly understood. A number of points have become evident during the course of this examination of the subject. Some of these points are more properly defined as statements of principles; others are more appropriately presented as specific recommendations.

Let us first consider those points which constitute a statement of principles on the industry position on IR&D and B&P:

1. The Congress and all Government agencies should understand and fully recognize in their actions the vital nature of IR&D and B&P in support of our national interests. Relative to programs of key national importance, these activities play a major role in advancing the technological capabilities of those industries most directly involved in support of the Government. Examination of the benefits of these activities suggests that a substantial part of many technological advances that have resulted in the US position of world leadership in defense and space have had their genesis in IR&D.
2. The right of industry to exercise management discretion on the content and amount of IR&D and B&P should not be abridged by arbitrary laws or regulations. It is essential that each company be able to evaluate the needs of the future in light of its own special capabilities and product interests. This is not only basic to the continued development of vigorous competition in a strong industrial base, but also provide the most prolific generation of new technology and concepts to address problems of major significance to the Nation. Rather than consideration of means to control and constrain the scope of IR&D and B&P efforts, the Government should be jealously guarding the "independent" aspect to avoid the loss of great ideas.

3. The Government should be motivated to encourage industry to increase IR&D and resulting B&P effort. In view of the need for increased effort for the US to stay in the lead in the competition between nations, and the major source of technological innovation represented by IR&D and B&P, it seems obvious that they should not be allowed to decrease. Yet in the past five years, the level of effort expended on IR&D and B&P has decreased. The increased dollar expenditures have not been sufficient to maintain real effort in terms of man-hours. This point should be understood, and preoccupation with misleading cost data, which has not been normalized to account for Government-directed changes to financial reporting method, including application of burden to IR&D and B&P, should be avoided. The international challenge is great; this is the time to increase IR&D and B&P in terms of real effort to help meet the challenge, not the time for further retrenchment.
4. The Government should not seek ownership free rights in industry patents or inventions resulting from IR&D. This issue has been raised within the Government on numerous occasions in the past, and is a further indication that the nature of IR&D and B&P is not understood. It should be recognized that these efforts are company initiated and company funded within the indirect costs of doing business. The Government acceptance of its share of these costs appropriately allocated to Government contracts is no different than any other customer's payment of these costs included in the purchase price of a company's products or services. As any other customer, the Government benefits from improved products or services resulting from inventions conceived during IR&D. Equity demands the company retain title to its own inventions and patents.
5. A common policy and practice of independence and allowability of IR&D and B&P which recognizes their true nature as essential business costs should be employed by all Government departments and agencies. The restrictive regulations currently issued should be appropriately modified.
6. Congress should recognize that IR&D and B&P costs are not "commodities to be purchased," but rather are normal "costs of doing business." As such, they are appropriately allocated to all products

and services, and are included in the purchase price. On Government contracts, industry is required to negotiate burden rates. In the process, all indirect costs are reviewed and judgments are made as to the reasonableness of these costs. Legislation which singles out IR&D and B&P costs for undue scrutiny at the Congressional level implies that these efforts are "commodities to be purchased or not" and jeopardize a company's ability to plan and manage its total business activities.

7. The basic difference between IR&D and B&P should be clearly recognized. IR&D efforts are primarily exploratory in nature, are directed toward the advancement of technology, are aimed at future needs, and are subject to continual evaluation to determine if adequate progress is being made or if a new or different approach is needed. By way of contrast, B&P efforts are directed toward a specific set of requirements, are aimed at present needs, and are primarily concerned with thoroughly explaining that the company has already developed its expertise and technological capability to a sufficient degree to assure success. A company's proposal must demonstrate a complete understanding of all technical problems, to the point of describing therein a substantially finished design of a viable version of the system to be furnished, and discussion of the merits of the chosen design versus possible alternatives. Associated technical efforts range from studies, computer modeling and design calculations to, in many cases, the construction of prototypes. Also involved in the B&P effort is the actual preparation of proposals, engaging in presentations and negotiations, and otherwise responding to the requirements of the procuring agency. This effort is often difficult and sometimes impossible to forecast since companies are responding to evolving Government statements of need. Clearly, IR&D and B&P efforts should not be lumped together and treated as the same kind of effort simply because the same or similar technical experts of a company are called on to support each of them. They are different in purpose and are performed for very different reasons. IR&D effort can be reasonably well planned while B&P effort is much more difficult to forecast since it must be responsive to customer requirements.

Having stated these principles, and recognizing that the present method for handling IR&D and B&P costs does not fully conform to these principles, there are several specific recommendations that seem appropriate:

1. The requirement for potential military relationship in Public Law 91-441 should be eliminated as unworkable. Defense-related technology does not exist in isolation, but is part of the main stream of knowledge generally described as the national technology base. Relevancy tests are fundamentally incompatible with the nature of IR&D and B&P and invite hindsight judgments. If such tests must be included in legislation, they should appear only in the broadest context and be expressed in terms of the totality of potential US Government needs.
2. The requirement for establishing ceilings on IR&D and B&P costs should be eliminated because it is in basic conflict with stated Government objectives to encourage competition and maintain a strong industrial capability.
3. Line items should not be established in any agency budgets for funding IR&D and B&P costs as though these efforts were commodities to be priced. These are indirect costs, part of industry overhead, and as such are appropriately included in product or contract estimates.
4. A new Government agency responsible for operational aspects of IR&D and B&P should not be established. Rather all Government agencies should follow a common policy and practice for IR&D and B&P which recognizes their true nature.
5. Congress, in the national interest, should specifically express positive support for IR&D and B&P and correct the current motivation to continually reduce this effort.
6. In considering "alternative methods" of funding IR&D and B&P, it should be remembered that IR&D and B&P are indirect business expenses and should be fully reimbursed. In summary, full cost recovery of IR&D and B&P would place the US Government on an equal footing with all other customers. Anything less than full reimbursement of these costs, in effect, is a subsidization of the Government by American industry.

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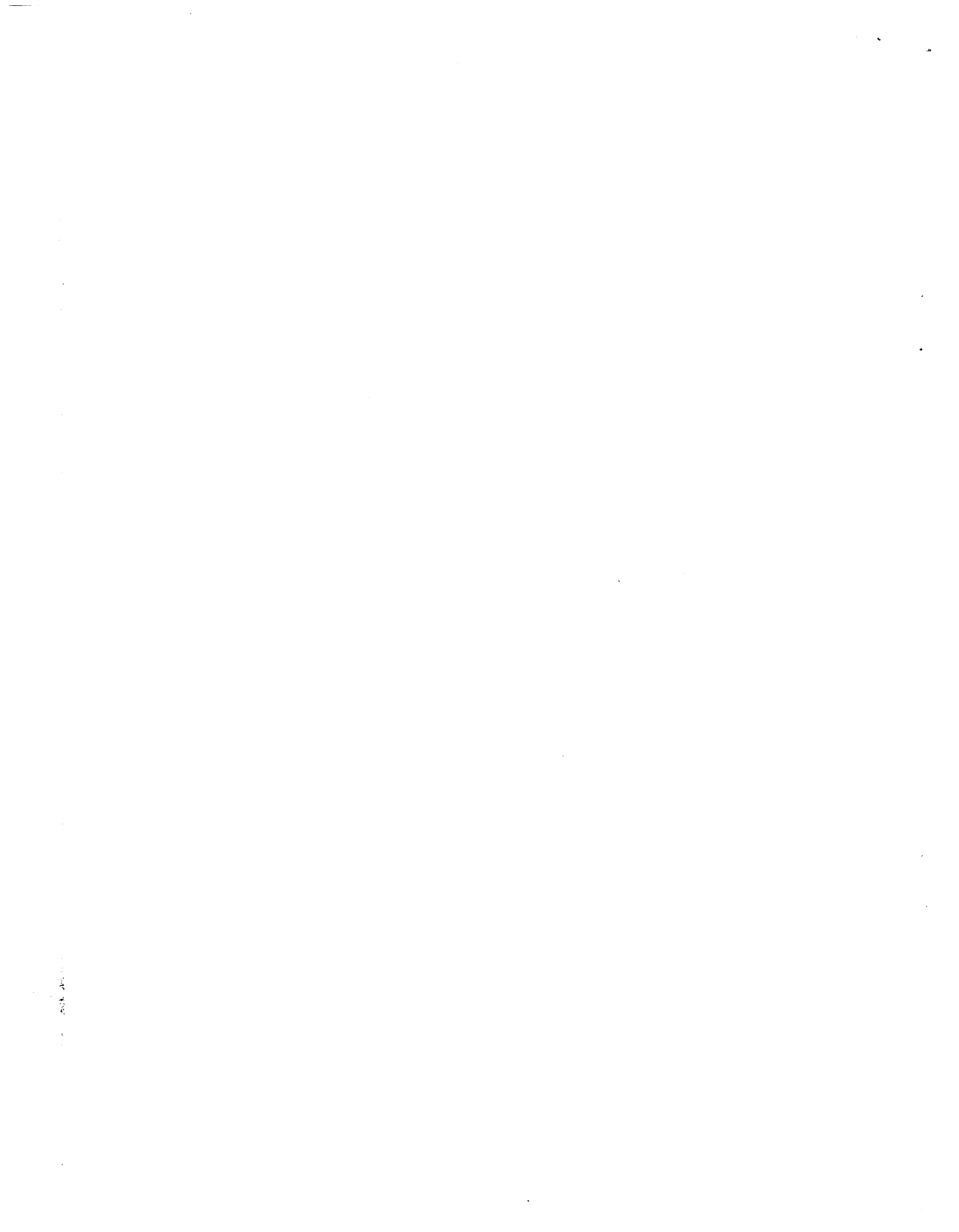
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COSTS AND TRENDS DATA

STATISTICS RELATING TO IR&D, B&P, AND OTE FOR MAJOR DEFENSE CONTRACTORS
(Millions of dollars)

	1964	1965	1966	1967	1968	1969	1970	1971 ^{1/}	1972 ^{2/}	1973 ^{3/}	1974 ^{4/}
Sales											
Total Government and commercial	23,470	24,054	28,438	34,167	36,954	36,430	32,519	32,065	30,577	37,635	40,405
Total DoD only	16,442	15,644	17,889	21,371	22,275	22,692	21,315	19,568	19,117	21,148	21,690
% DoD sales to total sales	70%	65%	63%	63%	61%	62%	65%	61%	63	56	54
IR&D											
Total industry cost incurred	419	439	502	591	752	808	753	703	936	1,164	1,148
Total reimbursed on DoD contracts	199	198	224	277	333	389	376	354	392	441	457
Amount reimbursed on DoD contracts											
As a % of total incurred	47%	45%	45%	47%	44%	48%	50%	50%	42%	38%	40%
As a % of DoD sales	1.21%	1.26%	1.25%	1.30%	1.46%	1.73%	1.75%	1.86%	2.05%	2.09%	2.17%
B&P											
Total industry cost incurred	252	277	315	338	387	426	414	428	469	553	546
Total reimbursed on DoD contracts	182	186	202	230	275	286	278	265	306	360	351
Amount reimbursed on DoD contracts											
As a % of total incurred	72%	67%	64%	68%	71%	67%	67%	62%	65%	65%	64%
As a % of DoD sales	1.11%	1.19%	1.13%	1.08%	1.23%	1.26%	1.30%	1.35%	1.60%	1.70%	1.62%
OTE											
Total industry cost incurred	182	237	238	292	252	178	151	0	0	0	0
Total reimbursed on DoD contracts	71	76	91	92	77	79	60	0	0	0	0
Amount reimbursed on DoD contracts											
As a % of total incurred	39%	32%	38%	32%	31%	44%	40%	-	-	-	-
As a % of DoD sales	0.43%	0.49%	0.51%	0.43%	0.35%	0.35%	0.28%	-	-	-	-
Grand Total											
IR&D, B&P, OTE incurred	853	953	1,055	1,221	1,391	1,412	1,318	1,131	1,405	1,717	1,694
Total reimbursed by DoD	452	460	517	599	685	754	714	619	698	801	808
Amount reimbursed by DoD											
As a % of total incurred	53%	48%	49%	49%	49%	53%	54%	55%	50%	47%	48%
As a % of DoD sales	2.75%	2.94%	2.89%	2.80%	3.07%	3.32%	3.35%	3.16%	3.65%	3.79%	3.73%
Total incurred as a % of total sales	3.63%	3.96%	3.71%	3.57%	3.76%	3.88%	4.05%	3.52%	4.59%	4.56%	4.19%

SOURCE: Annual DCAA Report, "Summary of IR&D and B&P Costs Incurred by Major Defense Contractors"

- 1/ The data represents that for 84 contractors comprising 175 profit centers. The cost principles in ASPR have been revised to include in their definitions of IR&D and B&P certain technical costs not previously included. These changes have become effective and therefore separate data for these "other technical effort" will not be included in this and subsequent reports.
- 2/ The data represents that for 77 contractors comprising 167 profit centers. \$32M of the costs is burden applied to IR&D and B&P for the first time by those contractors who had not previously burdened IR&D/B&P. \$13.8M is the amount of IR&D/B&P applicable to foreign military sales reimbursed to the DoD.
- 3/ The data represents that for 83 contractors comprising 182 profit centers. Included in the data are sales of \$1027.3 to foreign governments placed under DoD contracts but reimbursed to DoD by such foreign governments. The applicable IR&D/B&P recovered in these sales is \$38.2M. \$55M in the data represents burden applied to IR&D/B&P by the last of those contractors implementing the overhead requirement of DPC 90 dated 1 September 1971.
- 4/ The data represents that for 90 contractors comprising 236 profit centers -- an increase of 7 contractors and 54 profit centers due primarily to the addition of contractors with advanced agreement who previously were below audit thresholds. Included are the foreign government sales of \$1353.5M with \$42M of applicable IR&D/B&P allocable to these sales. There was little or no impact due to increased burdening in 1974 because full implementation of burdening as required by DPC 90 was completed by most contractors in 1973.



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