REPORT TO THE CONGRESS

Need For Increased Use Of Value Engineering, A Proven Cost Saving Technique, In Federal Construction

B-163762

Multiagency

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

MAY 6, 1974

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This is our report on the need for increased use of value engineering, a proven cost saving technique, in Federal construction.

Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the heads of the agencies involved.

Elmer B. Staats

Comptroller General
of the United States

Contents

ABBREVIATIONS

AEC	Atomic Energy Commission
ASPR	Armed Services Procurement Regulations

FAA	Federal Aviation Administration
GAO	General Accounting Office
GSA	General Services Administration
HEW	Department of Health, Education, and Welfare
NASA	National Aeronautics and Space Administration
TVA	Tennessee Valley Authority
VA	Veterans Administration

COMPTROLLER GENERAL'S REPORT TO THE CONGRESS

NEED FOR INCREASED USE OF VALUE ENGINEERING, A PROVEN COST SAVING TECHNIQUE, IN FEDERAL CONSTRUCTION B-163762

D I G E S T

WHY THE REVIEW WAS MADE

Rising costs of labor, materials, and money have given management a sense of urgency in developing techniques that promote economical construction. Value engineering is one technique that has effected cost-savings on Federal construction projects.

GAO examined value engineering activities at 10 Federal construction agencies to evaluate

--their use of value engineering incentive programs and

--circulation of proven value engineering proposals within and among the agencies. (See pp. 3 and 4.)

FINDINGS AND CONCLUSIONS

Although several construction agencies are actively seeking to promote value engineering, all agencies must do so to benefit from this technique.

Of the 10 construction agencies reviewed, 4 have had value engineering incentive programs for about 10 years, 2 have recently initiated programs, and 4 have no programs. GAO believes all Federal construction agencies should have value engineering incentive programs. (See pp. 7 and 8.)

Existing incentive programs need improvement. For the six agencies having incentive programs:

--Four were using unwieldy and complicated incentive clauses; and the clauses did not provide specific sharing ratios for subcontractors. (See pp. 8 to 11.)

--Four had no procedures for handling contractor proposals that would produce savings in operation and maintenance costs. (See p. 9.)

--Two, by restricting use of incentive clauses to contracts of relatively large dollar amounts, excluded a large portion of their construction contracts from their incentive programs. (See p. 10.)

--Most needed to increase their efforts to promote contractor and subcontractor participation. (See p. 11.)

There is a need to circulate proven value engineering proposals, both within and among Federal agencies. A major benefit of a value engineering proposal is its potential for repetitive use on other projects.

Circulation would bring to the attention of those responsible for designing, approving, and constructing projects the latest cost-saving ideas, techniques, and materials.

Only one of the agencies reviewed had a formal system for circulating proven proposals to its operating groups; none had one for circulating proven proposals among Federal construction agencies. (See pp. 14 to 16.)

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RECOMMENDATIONS

GAO recommends that, to increase the benefits that can be derived from applying value engineering to the construction process, all Federal construction agencies:

--Establish value engineering incentive programs.

--Develop a uniform and easily understandable construction incentive clause that (1) can be readily inserted into construction contracts and (2) contains specific sharing ratios for contractors and subcontractors for both construction cost savings and operation and maintenance cost savings.

--Include the uniform incentive clause in all construction contracts over a minimum amount, such as $10,000.

--Increase their efforts to promote contractor and subcontractor participation in incentive programs. (See p. 12.)

GAO also recommends that the General Services Administration (GSA) establish a system for (1) receiving from Federal construction agencies all approved value engineering proposals, (2) screening the proposals to identify those having potential for further application, (3) categorizing the proposals by engineering discipline, and (4) circulating the proposals regularly to the agencies. (See p. 16.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

The Federal construction agencies generally agreed with GAO's findings, conclusions, and recommendations. Four agencies that did not have value engineering incentive programs were going to establish or were considering establishing such programs.

Several agencies expressed reservations about developing a uniform incentive clause. GAO believes, however, that sufficient flexibility can be incorporated into a uniform clause to meet the needs of the individual agencies. GSA said that steps were being taken to explore with the construction agencies the feasibility of developing a uniform incentive clause. (See p. 12.)

Only one agency expressed negative opinions about circulating proven value engineering proposals. It is apparent from GAO's review, however, that a formal circulation system is needed. GSA expressed its willingness to implement one. (See p. 16.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

This report directs the attention of the Congress to the potential for construction agencies to expand their use of a technique that has effected cost-savings on Federal construction projects.

CHAPTER 1

INTRODUCTION

We reviewed selected value engineering activities at 10 Federal construction agencies and evaluated their use of value engineering incentive programs for construction contractors and subcontractors and circulation of proven value engineering proposals within and among agencies.

The Federal Construction Council, a unit of the Building Research Advisory Board, National Academy of Sciences, describes value engineering as an engineering and architectural discipline that (1) focuses attention on the essential function in a chosen design or construction objective and (2) emphasizes meeting that function at the lowest total cost. The Council notes that value engineering also includes such values as immediate design improvement, improved specifications and guidelines for later construction, evaluation of new systems and materials, and encouragement to designers to be innovative.

Value engineering as applied to Federal construction should be a creative process for identifying and removing unnecessary construction costs while maintaining the required quality and performance of the facility. It should analyze the functions for which the facility will be used and identify alternatives in its construction that will reduce overall costs of building and using the facility for the functions intended.

Our use of the term "value engineering" in this report, however, is not limited to savings or improvements which might accrue solely through overt application of value engineering as a discipline. Rather, our use of the term refers to the whole range of activities, ideas, or improvements from whatever source which can make for more cost effective construction of Federal projects.

Value engineering incentive programs encourage participation by contractors and subcontractors by including a value engineering incentive clause in construction contracts. The clause enables a contractor and/or subcontractor to share in savings resulting from changes it suggests in methods or materials which do not detract from the utility of the construction project.

Generally, the clause provides for the contractor to submit value engineering proposals recommending changes to the design or building specifications in the contract. Supporting each proposal, the contractor provides data documenting the cost savings and demonstrating that the proposed change will not adversely affect the utility of the structure. The proposal is reviewed by the cognizant agency, and, if approved, a change order is issued.

Several of the 10 agencies reviewed are expending considerable effort in applying value engineering to the construction process, particularly for incentive programs, and they have realized significant savings in the cost of their construction programs. However, we believe that increased efforts are needed from all the construction agencies reviewed if they are to realize the full benefits of value engineering.

SCOPE OF REVIEW

We examined value engineering construction activities at the headquarters offices and at selected field offices of the:

- Army Corps of Engineers
- Atomic Energy Commission (AEC)
- Department of the Air Force
- Department of the Navy
- Federal Aviation Administration (FAA)
- General Services Administration (GSA)
- Department of Health, Education, and Welfare (HEW)
- National Aeronautics and Space Administration (NASA)
- Tennessee Valley Authority (TVA)
- Veterans Administration (VA)

We talked with agency officials and examined applicable documents and records and interviewed selected contractors and subcontractors.

CHAPTER 2

BENEFITS FROM PROPER APPLICATION OF VALUE ENGINEERING

In our opinion, systematic application of value engineering to the construction process can produce significant savings in the costs of the original project and subsequent projects. The four examples below demonstrate how these benefits can be derived by (1) having a value engineering incentive program, (2) applying a proven value engineering proposal to future projects, and (3) applying value engineering to standard designs.

Example 1

In August 1971, before GSA established its formal value engineering incentive program, it awarded a contract for constructing a Federal office building in Chicago. At the suggestion of the contractor, GSA included an incentive clause in the contract providing for savings on the initial construction cost to be shared 70 percent by the Government and 30 percent by the contractor. (The incentive clause GSA now uses under its formal program provides for the contractor and the Government to share equally in savings in initial construction cost.)

As of June 1972 the contractor had submitted 35 value engineering proposals. GSA had accepted 25 of these proposals, resulting in savings to the Government of about $1 million.

Example 2

The Corps of Engineers' Fort Worth District, acting as the construction agent on a Randolph Air Force Base project, received a value engineering proposal from a contractor which involved a change in the material used for encasing underground electric cables. The proposal was initially rejected because Air Force specifications did not permit the use of the suggested material. The Corps' Fort Worth District, which was using the suggested material on its own projects, estimated that using this material would save the Air Force over $100,000 a year on contracts administered by

the District. The Corps convinced the Air Force to amend its specifications to permit the use of the new material.

Examples 3 and 4

The Savannah District of the Corps of Engineers made an inhouse value engineering study on the standard design for five administration and storage buildings. Several revisions to the standard design were subsequently adopted for Corps-wide use. At the Savannah District alone, these revisions saved an estimated $784,000 on nine specific projects during fiscal years 1968-70.

The Savannah District also made an inhouse value engineering study on its standard design for enlisted men's barracks. Resulting revisions were used to modify three existing contracts and were to be included in the designs of six other projects during fiscal years 1968-70. Total estimated savings at the Savannah District on these nine projects was $65,048.

CHAPTER 3

NEED FOR MORE EFFECTIVE VALUE ENGINEERING

INCENTIVE PROGRAMS

Of the 10 construction agencies reviewed, 4 have had value engineering incentive programs for about 10 years, 2 have recently initiated programs, and 4 have no programs. See appendix I for a brief narrative of the value engineering incentive efforts of each of the 10 agencies reviewed.

For the six agencies having programs, some include incentive clauses in all contracts of $10,000 or more, others use $100,000 as the cutoff point, and one includes such clauses only in contracts of $500,000 or more.

Some agencies have specific sharing ratios for both contractors and subcontractors; others have specific sharing ratios only for contractors.

In promoting their incentive programs, some agencies have expended considerable effort to familiarize contractors with their programs, while other agencies have put forth minimal effort. For example, one agency which has had an incentive program since 1965 could recall receiving only four value engineering cost proposals from contractors, of which two were approved.

NEED TO ESTABLISH INCENTIVE PROGRAMS

In our opinion, value engineering can be applied throughout the facility acquisition process. An incentive program gives an agency the opportunity to apply value engineering to construction, the final phase of the process.

In chapter 2 we cited a specific example of the benefits of an incentive program. Below are some overall figures cited by two agencies on their programs.

1. The Corps of Engineers reported that its incentive program saved the Government about $8 million in construction costs during fiscal years 1965-72.

2. The Corps reported that every dollar it spent in fiscal years 1971 and 1972 to operate its incentive program returned savings of about $35 and $23, respectively.

3. GSA reported that its program cost about $132,000 to operate for fiscal year 1972 and produced savings of about $1,011,000, a return of $7.63 for every dollar spent.

These figures demonstrate quite clearly the benefits of having incentive programs, and we believe all Federal agencies involved in construction should establish them.

We discussed the need for establishing incentive programs with the four agencies--TVA, NASA, AEC, and HEW--that did not have them at the time of our fieldwork. Their officials stated they were going to establish or were considering establishing such programs.

NEED FOR IMPROVING EXISTING PROGRAMS

In our opinion, the success of a value engineering incentive program is directly proportional to the emphasis an agency gives it. Although some agencies are attempting to develop worthwhile programs, the operations of existing programs need improvements.

We have tried to identify factors which are necessary to maximize the potential of a value engineering incentive program and which can be applied to agencies currently having programs and to those considering instituting such programs.

Uniform incentive clauses

Currently, two types of incentive clauses are used by the Federal agencies reviewed. The Corps of Engineers, Navy, Air Force, and FAA use clauses based on the Armed Services Procurement Regulation (ASPR) clause. GSA and VA use a clause developed by GSA.

The ASPR clause, about five pages long, is not directed specifically to construction contracting.[1] One agency that uses it includes only a reference to the clause in its construction contracts, and the contractor would have to review the ASPRs to familiarize itself with the clause's provisions.

The GSA clause was developed specifically for use in construction contracts. It is a one-page form (GSA Form 2653) which is inserted into the contract.

Certain agency personnel using the ASPR clause complained that it was too complicated and generalized. Officials of NASA, which has no program, noted that until development of the GSA clause, the available clauses were bulky, complicated, and somewhat vague in their intentions. In general, agency personnel and contractors preferred the GSA clause because it was simpler and more understandable.

In addition to being understandable, directed specifically to construction, and easily inserted into a contract, we believe the clauses used by agencies should (1) provide specific sharing ratios for both contractors and subcontractors and (2) allow approving proposals that reduce both initial construction cost and operation and maintenance cost (collateral cost).

The ASPR and GSA clauses both provide specific sharing ratios for contractors on savings in initial construction costs, but the GSA clause also provides specific sharing ratios for subcontractors who develop approved value engineering proposals. The ASPR clause relies upon the contractor to make arrangements with subcontractors regarding value engineering.

We believe that establishing specific sharing ratios for subcontractors and including incentive clauses in contracts with major subcontractors will result in more active participation by subcontractors.

Both clauses provide for accepting and approving value engineering proposals that produce collateral savings. Four

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[1]DOD informed us that the ASPR clause is currently being revised. (See app. X.)

agencies use the ASPR clause, but one agency does not accept such proposals and the other three have no procedures for handling them. Two agencies use the GSA clause and have procedures for handling proposals involving collateral savings.

Savings in initial construction cost are a one-time occurrence on a particular project. However, savings in collateral cost can be an annual recurring benefit over the life of a project. Accordingly, we believe it is important that an agency's value engineering incentive program consider proposals affecting collateral cost.

We believe that the ASPR clause currently being used by four agencies is not conducive to developing good programs and that a uniform clause, containing provisions similar to those in the GSA clause, should be adopted by all the construction agencies. GSA's clause (1) contains all the elements needed for an effective clause, (2) is easily insertable into construction contracts, and (3) can be readily understood by contractors.

Including clause in contracts

We found that, for two of the four agencies using $100,050 as the minimum contract size for including incentive clauses, the majority of contracts at their field installations that we reviewed were below $100,000. By excluding the clause in contracts below $100,000, these two agencies were excluding a large portion of their contracts from their incentive programs. One agency used a $10,000 cutoff point and was receiving and approving proposals on contracts in the $10,000 to $100,000 range.

We believe that a major benefit of a value engineering proposal is its potential for repetitive use on future projects and that an agency's program should include as many contracts as economically feasible. Use of a GSA-type clause would facilitate applying value engineering to small contracts since it would only require inserting a standard form.

In our opinion, a uniform value engineering clause should be included in all construction contracts over a minimum amount, such as $10,000. GSA, which generally

included its clause only in contracts of $100,000 or more, has agreed and will include its clause in all contracts of $10,000 or more.

Promoting contractor and subcontractor participation

We found that the Corps of Engineers made the most effort to promote contractor and subcontractor participation, including:

--Letters encouraging participation by successful bidders and their subcontractors.

--Discussions at preconstruction conferences with them.

--Discussions by Corps' resident engineers at construction sites.

--Allowing contractor personnel to participate in Corps' briefings, schools, and seminars on value engineering.

We believe this helps to explain why the Corps' value engineering incentive program has had relatively greater success than the programs of other agencies.

Two agencies have limited their efforts to discussing the programs at preconstruction conferences and have experienced only limited success with their programs. One agency has had a program for about 9 years but has received only four proposals, of which two were approved.

To realize the benefits of an incentive program, an agency must promote contractor and subcontractor participation. We believe that each agency should use procedures similar to those used by the Corps to promote such participation.

CONCLUSION

Value engineering incentive programs have demonstrated their effectiveness in reducing costs on Federal construction projects and should be implemented by all Federal agencies involved in construction.

An effective incentive program needs certain factors, including:

--A uniform incentive clause that is easily understandable, directed specifically to construction, and readily insertable into construction contracts. The clause should provide specific sharing ratios for contractors and subcontractors for both initial and collateral cost savings and be in all contracts over a minimum amount, such as $10,000.

--The expenditure of sufficient effort to promote effective participation by contractors and subcontractors.

RECOMMENDATIONS

We recommend that all Federal construction agencies:

--Establish value engineering incentive programs.

--Develop a uniform and easily understandable incentive clause that (1) can be readily inserted into construction contracts and (2) contains specific sharing ratios for contractors and subcontractors for both initial and collateral cost savings.

--Include the uniform incentive clause in all construction contracts over a minimum amount, such as $10,000.

--Increase efforts to promote contractor and subcontractor participation in incentive programs.

AGENCY COMMENTS AND OUR EVALUATION

The Federal construction agencies generally agreed with our findings, conclusions, and recommendations. TVA, AEC, NASA, and HEW had no incentive programs but stated they were going to establish or were considering establishing such programs.

The Department of Defense, Office of Management and Budget, TVA, and AEC expressed reservations on our recommendation for a uniform incentive clause, noting that the diversity of the construction activities of the agencies could inhibit the development and application of a uniform clause.

GSA expressed its willingness to try to develop a uniform incentive clause for all Federal construction agencies, pursuant to its authority to formulate Federal management policy. It noted that such an effort could easily form an integral part of the Federal Council on Value to be initiated by GSA to establish value management in all major Federal agencies and departments.

We recognize each agency feels that certain of its construction activities are unique, but we believe that a proliferation of differing incentive clauses would hinder the promotion of value engineering. Widely varying incentive clauses would prove particularly confusing to contractors that deal with several agencies. We believe enough flexibility could be incorporated into a uniform clause to meet the agencies' individual needs. GSA informed us that steps are now being taken to explore with the construction agencies the feasibility of developing a uniform incentive clause.

Only one agency expressed reservations on the recommendation for collateral cost savings. Defense believed that, due to the lack of sufficient information, experience, and criteria, collateral cost savings should be optional in the incentive clause.

Determining the existence and amount of collateral cost savings is more difficult than determining initial cost savings. However, as noted previously, savings in collateral cost can be an annual recurring benefit over the life of a project. The potential for savings of this nature illustrates the need for agencies to develop the expertise to identify, analyze, and quantify collateral cost savings. In our opinion, making collateral cost savings an optional item will inhibit the development of such expertise.

Several agencies questioned the optimum size contract for including incentive clauses. Because of the potential for repetitive application of some proposals, we believe the clause should be included in as many construction contracts as feasible; however, this question might well be resolved through the Federal Council on Value cited above.

CHAPTER 4

NEED FOR CIRCULATING PROVEN VALUE ENGINEERING PROPOSALS

Our review showed that proven value engineering proposals need to be circulated within and among Federal construction agencies. The greater the exposure given a proven construction proposal, the greater the opportunities for applying it to other projects. Circulating proven proposals brings to the attention of those responsible for designing, approving, and constructing projects the latest cost-saving ideas, techniques, and materials.

CURRENT CIRCULATION

Of the construction agencies reviewed, only one had a formalized system for circulating value engineering proposals to its operating groups, and one is developing a system. No agency had a formalized system for circulating proposals among other Federal construction agencies.

The agency having a formalized system of internal circulation periodically distributes a pamphlet to its field offices. We discussed the format of the pamphlet with the field personnel, who agreed that it would be more effective if it (1) included proposals from other agencies, (2) categorized the proposals by engineering discipline, such as mechanical, electrical, and hydraulic, and (3) described the proposals in more concise and understandable statements.

Our review showed that the agencies failed to realize potential savings because of the lack of circulation of proven value engineering proposals. We found that agencies had approved value engineering proposals already proven satisfactory by other agencies. For example, in November 1969 one agency approved a proposal to eliminate the painting of interior steel structures, resulting in Government savings of about $9,000. In September 1972 another agency approved a similar proposal resulting in savings of $22,348 to the Government and $33,522 to the contractor. Circulating proven proposals between Federal agencies might have

enabled the Government to realize the total savings of $55,870 from the September 1972 proposal.

In other instances, one field installation of an agency approved a value engineering proposal previously approved by a different field installation of that same agency. Circulating proposals within agencies might have enabled other field installations to apply the proposals to their projects and save the Government money.

BENEFITS OF CIRCULATION

The following example demonstrates the benefits of circulating approved value engineering proposals within Federal agencies. One agency circulates to its field offices those value engineering proposals initiated in-house. One of its field installations identified two proposals from other field installations that it could apply to its own projects, resulting in savings of about $14,000.

To evaluate the potential benefits of circulation, we furnished certain agencies with selected proven value engineering proposals. Most of the agencies felt that some of the proposals could be applied to certain of their projects.

The value engineer at a field installation of one agency evaluated the proposals against selected projects. He estimated that the savings on these projects would be approximately $19,000, contingent upon the operating division's accepting his recommendations.

We gave one field office a proposal that had been approved by another field office of that agency. The field office to whom we gave the proposal estimated that using the idea could result in annual savings of $34,000 for its office alone. As a result of our efforts, action was also taken to revise agencywide specifications to allow use of the idea.

AGENCY POSITIONS

Most agencies reviewed favored circulating proven value engineering proposals, believing they would benefit from a crossfeed of value engineering ideas.

The agencies generally agreed that circulation would be most beneficial if proposals could be screened at a central point to identify those having potential for further application. They also agreed that the proposals should be categorized by engineering discipline and circulated regularly.

CONCLUSIONS

Proven value engineering proposals should be circulated both within and among Federal construction agencies. Such circulation will bring the latest cost-saving ideas, techniques, and materials to the attention of those responsible for designing, approving, and constructing projects.

In our opinion, the potential benefits of circulation will be maximized by the designation of a central point at which proven proposals can be screened to identify those having further application. The central point should categorize the proposals by engineering discipline and circulate them regularly.

RECOMMENDATIONS

We recommend that GSA establish a system for:

1. Receiving from Federal construction agencies all approved value engineering proposals.

2. Screening the proposals to identify those having potential for further application.

3. Categorizing such proposals by engineering discipline.

4. Circulating such proposals regularly to Federal construction agencies.

AGENCY COMMENTS AND OUR EVALUATION

The Office of Management and Budget cited the potential benefits of circulating proven value engineering proposals and noted that GSA was the proper agency for considering our recommendation. GSA expressed its willingness to implement the recommendation and noted that the recommendation could

also be included as an integral part of the Federal Council on Value.

Only one agency expressed reservations on circulating proven value engineering proposals. Defense noted the existing avenues for circulation--trade journals, materials sales campaigns, etc.--and suggested a review to determine the cost-effectiveness of our recommendation.

The circulation methods cited by Defense do not appear to be systematic approaches to solving the problem. It is apparent from our review that a formal circulation system is needed. The Federal construction agencies have expressed positive reactions about establishing a systematic method for circulating proven value engineering proposals.

We believe GSA has the expertise to establish and operate an economically feasible circulation system. Accordingly, we strongly endorse GSA's plans in this area.

VALUE ENGINEERING INCENTIVE EFFORTS OF CONSTRUCTION AGENCIES REVIEWED

GSA

In March 1970 GSA's Public Buildings Service issued a "Construction Contracting Systems" report which recommended establishing a value engineering program. In November 1971 GSA initiated its value engineering incentive program.

GSA officials consider the incentive program to be in the development stage. The program's fiscal year 1973 goals were to extend the incentive clause to contractors under GSA's new Purchase Contract Program, provide additional training seminars for construction engineers and building managers administering GSA contracts, and formalize a technical system to exchange value engineering information within GSA.

GSA initially required the incentive clause to be included in all prime construction contracts of $100,000 or more and first-tier subcontracts of $25,000 or more. The clause could also be included in contracts of lesser value if contractor participation seemed likely. GSA is now lowering its cutoff point to $10,000 or more for including the clause in prime construction contracts.

If a value engineering change proposal is approved, the contractor and the Government each receive 50 percent of the cost reduction. When a first-tier subcontractor's proposal is approved, he receives 30 percent, the prime contractor receives 30 percent, and the Government receives 40 percent of the reduction. If collateral savings occur, the contractor receives 20 percent of an average year's net savings.

As of October 1972, GSA had approved 53 of the 76 value engineering proposals submitted. The approved proposals resulted in Government savings of over $1.4 million.

FAA

Since February 1965 FAA has used a value engineering incentive clause almost identical to the ASPR clause. Current Department of Transportation regulations, under which FAA

operates, provide that the clause be included in all construction contracts of $100,000 or more, unless the contracting officer determines that value engineering offers no potential for cost reduction.

Our review showed that FAA has not used its incentive program to any great extent. Data supplied by FAA shows that during fiscal years 1966-72 FAA awarded 99 construction contracts of $100,000 or more at a total value of about $79 million. Only 19 of these contracts, at a total value of about $23 million, contained value engineering incentive clauses. During this same period, FAA received only four proposals from contractors, of which two were approved.

FAA did not have a value engineering monitor for its construction program, either at its headquarters or in the field organization we reviewed. FAA maintains a high degree of standardization of air traffic facilities through standard designs and specifications prescribed by the facilities engineering component in the Washington headquarters. Although new facilities and modifications to existing facilities are built in accordance with the standard specifications, construction contracts are awarded and administered by field offices. Approval of value engineering proposals rests with the appropriate field office except in special cases involving critical requirements, when approval of the facilities engineering component in Washington is required.

FAA officials stated that, although their regulations normally require including value engineering incentive clauses in their contracts, they were unaware of any significant savings to the Government as a result of including such clauses.

VA

VA initiated its value engineering incentive program in fiscal year 1973 and included a clause similar to that used by GSA in all construction contracts of $500,000 or more. No clause is included in smaller contracts because VA believes there is not enough savings potential to warrant its use. Smaller contracts were identified as repair and maintenance types and thus less suitable for value engineering.

As of April 1973, VA had awarded six contracts for a total value of about $15 million. It is now analyzing the first proposals received under its incentive program.

From its studies of experiences in other agencies, VA believes the great potential for savings is in applying value engineering during the design phase, particularly conceptual design. Since 1971 VA has had an in-house value engineering program for applying value engineering to project designs. VA estimates that this in-house program will have saved the Government about $3 million from December 1971 if these projects are all awarded.

AEC

AEC had no value engineering incentive program for construction contracts at the time of our fieldwork. However, officials stated that AEC does have an in-house cost reduction and quality assurance program that uses value engineering techniques.

AEC's Director of Construction does not believe an incentive program for contractors has practical application to AEC projects that require extensive engineering studies during the design phase to insure safe, reliable operations or push the state of the art. The Director agreed, however, to consider applying an incentive clause to more conventional construction projects.

TVA

TVA had no value engineering incentive program at the time of our fieldwork, and officials cited the following reasons:

--Most construction work is done in-house.

--Construction contracts are firm fixed-price contracts, which force contractors to use value engineering and other cost reduction techniques in order to submit realistic and competitive bids.

--Most contracts are for specialized, well-defined work, such as painting, insulation, and roofing (normally considered subcontract-type work).

--Contract specifications are well defined and updated frequently by in-house design personnel.

--Some work, such as nuclear powerplant construction, is too technical for contractors to apply value engineering techniques.

After we discussed the benefits of value engineering incentive programs with TVA officials, they agreed to consider establishing such a program. In March 1973 an official told us that, on the basis of information supplied by GAO, TVA had drafted a value engineering incentive clause, and, if the clause was approved by the appropriate organizational units, TVA would establish an incentive program. TVA said it was investigating the possible benefits of formalizing a value engineering approach to its in-house design and construction program.

HEW

HEW had no value engineering incentive program at the time of our fieldwork, but officials subsequently informed us that it planned to implement one for construction contracts within the next 12 months.

An official noted that HEW makes value analyses--an objective study by an independent architect-engineer design evaluation team of the proposed design measured against project criteria--before and during the design phase of construction. The evaluation team makes recommendations which will reduce cost while still meeting project performance requirements. The official said that the primary objective of value analysis was to isolate and eliminate unnecessary costs and that no dollar limits had been set on when or where HEW made value analyses. He noted that, as a general rule, projects under $100,000 would not justify the expenditure of value analysis manpower. However, if a small project were repetitive, a different attitude would prevail. He stated that HEW's senior staff professionals were relied on to apply educated judgment in determining when value analysis should be applied.

NASA

NASA is considering establishing a value engineering incentive program. Although it believes the primary emphasis of value engineering should be in the development stage of a proposed facility rather than during construction, NASA is evaluating GSA's incentive clause for inclusion in construction contracts of $250,000 or more--NASA's "dollar breakpoint" between major and minor projects.

NASA officials believed until recently that existing incentive clauses were bulky, complicated, and vague in their intentions--especially as to application. They observed that this vagueness had perhaps hurt relationships between contractors and the Government. They now feel that the incentive clause developed by GSA has alleviated most of these problems.

NASA does employ an independent architect-engineer firm to apply value engineering to the designs of its larger projects, generally when designs are 30-percent to 60-percent complete. The firm is compensated on a negotiated flat-fee basis.

NASA has used two firms since 1969 to make value engineering studies and cost validations, develop training materials, and conduct management briefings on value engineering. These services have cost about $175,000, of which nearly $52,000 was for applying value engineering to the designs of projects subsequently constructed. NASA estimates that these value engineering studies have resulted in saving about $460,000.

CORPS OF ENGINEERS

The Corps initiated its value engineering program in 1964. In October of that year, a private consulting firm conducted the first in a series of value engineering workshops for Corps employees.

Early in 1966 the first full-time value engineering positions were established in the Office of the Chief of Engineers, and there followed a series of efforts to unify the program and increase its effectiveness and productivity. An intensive training program indoctrined more than 4,000 people in less than 5 months. Regulations were tightened, making it mandatory that in-house and contractor incentive programs using value engineering methodology be established and maintained. Nationwide promotion of contractor participation was initiated, and an operational guide for value engineering officers was written and distributed.

The incentive clause used by the Corps is based on the ASPR clause, and is required to be included in all contracts

of $100,000 or more. The contracting officers have the discretion to include the clause in contracts of less than $100,000.

For fiscal years 1965-72, the Corps received 2,434 value engineering incentive proposals, of which 1,553 were approved and resulted in savings to the Government of about $8 million.

DEPARTMENT OF THE NAVY

The Navy initiated its formal value engineering incentive program for construction contracts in September 1963. At the start of the program, each Navy engineering field division was directed to establish a value engineering point of contact and to implement, and report on results of, the program.

The initial program employed mostly part-time value engineering officers. By the end of fiscal year 1965, the cost savings potential of value engineering prompted the employment of more full-time personnel. As of October 1972, there were 8 full-time and 18 part-time value engineering officers.

The Navy incentive clause is based on the ASPR clause and is included in all contracts of $10,000 or more. For fiscal years 1967-72, the Navy, through its Naval Facilities Engineering Command, received 432 value engineering incentive proposals, of which 296 were approved and resulted in savings to the Government of more than $1.4 million.

DEPARTMENT OF THE AIR FORCE

The Air Force first used a value engineering incentive clause in 1961 when it included the clause in the Minuteman missile system contract. The incentive program at first employed hardware procurement, but an incentive clause has been included in construction contracts of $100,000 or more since about 1965.

Air Force officials stated that the primary emphasis of value engineering has been directed toward hardware and systems procurement rather than to construction. Officials at the field installations we reviewed believe the incentive program, as it relates to construction, is ineffective.

The Air Force uses the ASPR clause. It does not have a separate system for monitoring incentive proposals related to construction. A value engineer project officer has been designated at the headquarters level to monitor the results of the value engineering programs in all types of procurement. According to this project officer, the Air Force commands report to him all approved value engineering proposals exceeding $50,000. He noted that no such reports had been received attributing savings to construction projects.

One Air Force base did not include an incentive clause in construction contracts because it believed the clause did not apply to such contracts. Starting in July 1971 the base included a reference to the ASPR clause in all construction contracts of $100,000 or more. As of August 22, 1972, no value engineering proposals had been submitted on construction contracts awarded by this base.

The Air Force was unable to give us overall statistics on its value engineering incentive program for construction, but our review showed that it has had very limited success with its program.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

DEC 7 1973

Mr. V. L. Hill
Assistant Director-in-Charge
Facilities Acquisition and
Management Group
Logistics and Communications Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Hill:

I refer to the General Accounting Office draft report "Need for Increased Emphasis on Value Engineering in Federal Construction (code 945013)," which was provided to the Office of Management and Budget for comment.

Chapter 3 recommends among other things, that:

"1. These Federal construction agencies that do not have value engineering incentive programs establish such programs.

2. The Office of Management and Budget (OMB) develop, for use by all the Federal construction agencies, a uniform incentive clause that is easily understandable, directed specifically to construction, and readily insertable into construction contracts."

OMB Comment:

Despite Value Engineering's (VE) beneficial uses in some Federal construction activities the OMB is not certain that VE can be applied across the board with similar beneficial effects for all those Federal agencies which are involved in construction. The functions of the Executive Branch are characterized by diversity, and these differences manifest themselves, where construction is concerned, in projects which vary widely in cost, purpose, size, time to complete, and construction techniques. In the face of such diversity, we are reluctant to assume that insertion of a standard VE clause in agency construction contracts would have the effect predicted by the draft report. It appears to us that where an agency uses VE, the language of the VE clause may have to be written to cover the particular set of construction circumstances involved.

Chapter 4 recommends that "OMB designate a central point to be responsible for receiving from the Federal construction agencies all approved value engineering proposals "to screen, categorize and circulate those having potential for further application."

OMB Comment:

None of the discussion concerning the recommendations made in Chapter 3 was intended to gainsay the utility of VE in certain circumstances. To the contrary, it appears that a number of useful ideas have been generated by the VE program, and circulation of those ideas in the Federal construction community might well result, in some instances, in lower construction costs. Following the realignment of certain functions in the Executive Branch, General Services Administration now has responsibility for overview of Federal construction. Further, it is our understanding that the GSA is preparing to hold a VE seminar and workshop, with representation from all major Executive Branch agencies, to examine the entire range of VE and value analysis policies and procedures. In view of these facts, the GSA is the proper agency to consider whether or not to establish a central clearinghouse for VE construction ideas.

Sincerely,

Frank G. Zarb
Assistant Director for
Management and Operations

UNITED STATES OF AMERICA
GENERAL SERVICES ADMINISTRATION
WASHINGTON, DC 20405

OCT 26 1973

Honorable Elmer B. Staats
Comptroller General of the
United States
General Accounting Office
Washington, DC 20548

Dear Mr. Staats:

This is in reply to the letter of September 21, 1973, from V. L. Hill of your staff requesting my review and comments on a draft report to the Congress on the need for increased emphasis on value engineering in Federal construction.

[See GAO note.]

With regard to the recommendations that the Office of Management and Budget (OMB) develop a uniform incentive clause for all Federal construction agencies and OMB circulate proven VE proposals, I suggest this action be placed with GSA under our authority to formulate Federal management policy. These recommendations could easily form an integral part of the Federal Council on Value to be launched this fall by GSA to establish value management in all major Federal agencies and departments.

We are pleased to have the opportunity to present our comments on the draft report and if you wish to consider the suggestion of affording GSA the opportunity to implement the report recommendations, I have directed Larry Roush, Deputy Administrator for Special Projects, to plan accordingly.

Sincerely,

Dwight A. Ink
Acting Administrator

GAO note: The deleted comments relate to matters omitted from or modified in this report.

OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

November 9, 1973

ASSISTANT SECRETARY
FOR ADMINISTRATION

Mr. Richard W. Kelley
Associate Director, RED Division
United States General Accounting Office
400 7th Street, SW
Washington, DC 20590

Dear Mr. Kelley:

This is in response to your request for comments on the GAO Draft Report, "Need for Increased Emphasis on Value Engineering in Federal Construction," dated September 21, 1973.

We concur with the view that value engineering applied in the construction phase is a proven technique for reducing construction costs and that the technique should be used in Federal construction activities. A value engineering program is required for all Department of Transportation construction contracts exceeding $100,000 unless it is determined that the program would not be beneficial. The DOT value engineering clause and program procedures are based on the Armed Services Procurement Regulations.

We also agree with the recommendations provided by the draft report for improving the program effectiveness and contractor participation. As suggested in the report, significant pay-off could be obtained from developing a simplified value engineering clause, such as the GSA clause, for use by all Federal agencies and circulating approved value engineering proposals among Federal agencies.

It is our opinion that the program might also be improved by giving more incentive to subcontractors because most of the construction contract effort and value is in the subcontract area. Generally, a specific sharing ratio for prime and subcontractors for approved subcontractor proposals has not been included in value engineering clauses. A sharing ratio should be established for value engineering clauses. This ratio should favor the subcontractor since the prime's effort is minimal for a subcontractor proposal. This may increase subcontractor participation.

In order to maximize construction cost reductions, we believe that Federal in-house design organizations should be encouraged to use value engineering concepts in the design phase. This would increase construction cost savings

because costs reduced in the design phase are not shared with the contractor. Value engineering in design and its use by Federal agencies should be studied to determine if more emphasis in design, as well as construction, would provide significant cost reductions in Federal construction.

Please contact me if we can provide further assistance.

Sincerely,

William P. Davis

William P. Davis
Acting Assistant Secretary

VETERANS ADMINISTRATION
OFFICE OF THE ADMINISTRATOR OF VETERANS AFFAIRS
WASHINGTON, D.C. 20420

November 20 1973

Mr. Frank M. Mikus
Assistant Director, Manpower
and Welfare Division
U. S. General Accounting Office
Room 137, Lafayette Building
811 Vermont Avenue, N. W.
Washington, D. C. 20420

Dear Mr. Mikus:

We have reviewed your draft report entitled, "Need for Increased Emphasis on Value Engineering in Federal Construction, Code 945013," and have also had the opportunity to discuss the draft with your representative.

We agree with the conclusions and recommendations in the draft report, except that part concerning minimum size contracts in which a Value Engineering Clause (VE) would be practical. We agree with the concept that contracts over a minimum size should include a value engineering clause. However, the minimum of $10,000 cited as an example in your report is unrealistic for the type of contracts awarded by this Agency.

VA construction contracts smaller than $500,000 would generally be for modification or repair and maintenance types which would be less suitable for value engineering. Statistics indicate savings of less than one-fourth of one percent of contract amount from contractor proposals. A $100,000 contract might be expected to generate $250 of savings to be shared between the government and the contractor. The effort and expense involved in reviewing such value engineering proposals would not be justified. In our opinion, a minimum size contract of $500,000 is a reasonable limit.

It is generally conceded that the greatest return comes from using VE during the conceptual stage. We have thus exerted our greatest effort to the application of Value Engineering in design. However, we recognize the potential for additional savings from making use of the contractor's experience and know-how and believe the VE Incentive Clause to be essential to a comprehensive VE program.

APPENDIX V

Mr. Frank M. Mikus
Assistant Director, Manpower
and Welfare Division
U. S. GAO

Thank you for the opportunity to review this draft report, and if you have any questions concerning our comments my staff will be available.

Sincerely,

FRED B. RHODES
Deputy Administrator

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

DEC 3 1973

Mr. Hugh Wessinger
Assistant Director
Resources and Economic
Development Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Wessinger:

Subject: GAO Draft Report on Need for Increased Emphasis on Value Engineering in Federal Construction

We have reviewed the subject draft report transmitted to AEC by your letter of September 24, 1973.

[See GAO note, p. 40.]

We appreciated the opportunity to further discuss our views and position on value engineering programs.

Sincerely,

for John P. Abbadessa
Assistant General Manager,
Controller

Enclosure:
As stated above

GAO note: The enclosure has not been included in this report.

TENNESSEE VALLEY AUTHORITY
KNOXVILLE, TENNESSEE 37902
October 25, 1973

Mr. Harold Pichney, Assistant Director
Resources and Economic Development Division
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Pichney:

TVA is pleased to comment on your draft report, "Need for Increased Emphasis on Value Engineering in Federal Construction." We agree that value engineering incentive programs may produce significant savings to the Federal Government in many construction programs.

TVA, as pointed out in your draft report, does its own design and construction by force account using contractors for specialty work and in other instances where it is prudent management to do so. In this sense we serve as our own architect--engineer, contractor, and operator of facilities.

We recognize the benefits of value engineering and how, in certain situations, TVA could benefit from the use of a value engineering incentive program. However, in view of the substantial differences between TVA and other agencies as to the methods employed in obtaining the design and construction of projects, we do not believe it would be appropriate to apply to TVA the same rules and principles as regards value engineering as are applied to other agencies. We think these differences may call for different wording of contract incentive clauses, different sharing ratios, and also different minimum contract dollar amounts. As noted in Appendix I, we are presently reviewing a value engineering incentive clause for use in TVA contracts where construction is involved. We suggest that the recommendations contained on pages 3 and 17 of the report be revised to allow for the differences in agency practices such as TVA's and to provide the needed flexibility. Such flexibility should be in terms of granting agency discretion in wording of contract incentive clauses, scope of sharing ratios, and type and size of contracts to be covered. General guidelines from OMB in these areas as your report recommends would be beneficial in helping agencies set up their policies.

[See GAO note.]

GAO note: The deleted comments relate to matters omitted from or modified in this report.

Mr. Harold Pichney October 25, 1973

Please contact us if you desire more information on any of the items above.

Sincerely,

Lynn Seeber

Lynn Seeber
General Manager

Enclosure

GAO note: The enclosure has not been included in this report.

APPENDIX VIII

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

OFFICE OF THE SECRETARY

WASHINGTON, D.C. 20201

NOV 16 1973

Mr. Ronald F. Lauve
Assistant Director
Manpower and Welfare Division
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Lauve:

Thank you for the opportunity to review and comment on your very comprehensive draft report entitled "Need for Increased Emphasis on Value Engineering in Federal Construction." Attached to this letter are specific comments on each recommendation contained in your report. In this cover letter I want to discuss some specific actions we have taken that were not recognized in your report.

As you have pointed out, this Department has not formalized an incentive program in the construction phase of building construction. We plan to implement a formal incentive program for value engineering within the next 12 months along the same lines developed by the General Services Administration and the Department of Defense.

Your report indicates that we strongly emphasize the point that the greatest benefits accrue in a strong value analysis program at the earliest stages in the building process. At this stage, the decisions are made that can affect the largest dollar expenditure. As the program develops, less and less dollar impact is possible. However, we continue vigorous application of the value analysis/engineering principles throughout the whole design process.

In September of 1970, the Director of the Facilities Engineering and Construction Agency, now the Office of Facilities Engineering and Property Management, established a formal Cost Avoidance Program. One element of the program emphasized cost avoidances attained as a result of value analysis. Cost avoidances from the above date, due to value analysis, have totaled $121,000,000. The Federal share of this figure totals $40,390,000. These amounts have been validated by a board of Professional Engineers and Registered Architects. Not only have we made an impact on Federal portions of our grant programs, but through a vigorous publicity program, we have enabled the grantees to benefit. What the program has done is allow the projects to be built at full scope with original budgeted dollars when cost escalation was taking place at a rapid rate. We feel that our program of early application of value analysis techniques has avoided "cutting back" the projects or even canceling the project because of cost escalations. This is the reason we originally placed top priority on applying this technique in the early stages of our building programs.

We are now satisfied that our "early in" approach to value analysis is progressing satisfactorily and we can turn more of our energy to an equally viable program in the construction phase.

Other than these comments, which show our efforts provided tangible results, I commend you on the contents of the report.

Sincerely yours,

John D. Young
Assistant Secretary, Comptroller

Enclosure

COMMENTS TO GAO REPORT -- NEED FOR INCREASED EMPHASIS ON VALUE ENGINEERING IN FEDERAL CONSTRUCTION

GAO recommends that:	DHEW Comment:
1) Those Federal construction agencies that do not have value engineering incentive programs establish such programs.	1) DHEW will apply incentive clauses to construction contracts written by this Department. It appears now that the GSA format is feasible and we will use that clause with any minor adjustment that may be required to meet special conditions. It should be noted that this Department makes maximum use of the Construction Manager concept. In effect, we employ the Construction Manager (by competitive process) during the design phase for the purpose of using his construction knowledge of materials, cost estimating, labor availability and market conditions in assisting the architect in developing the least cost, highest quality facility. This same CM is then required to bid a guaranteed, bonded maximum price for the facility. In addition, the project is broken down into 10-20 (average) bid packages and separate bids taken on each package. For this reason we will have to modify our cost sharing scheme to eliminate sharing by the CM and pass the sharing directly to the subcontractor bidding on a package. The CM has already been paid a fee to present his cost reduction ideas and should not be allowed an additional fee or share a fee with a subcontractor.
2) That the Office of Management and Budget (OMB) develop, for use by all the Federal construction agencies, a uniform incentive clause that is easily understandable, directed specifically to construction, and readily insertable into construction contracts.	2) We have no objection to a standard clause as long as modifications are allowed to accommodate special conditions cited above. One of the inherent dangers of standardization is that it tends to restrict innovations.

GAO recommends that:	DHEW comment:
3) The uniform clause contains specific sharing ratios for contractors and subcontractors for both construction cost savings and operation and maintenance cost savings.	3) No objection except there will be exceptions and modifications when construction managers are used.
4) The uniform clause be included in all construction contracts over a minimum amount, such as $10,000.	4) No objection.
5) The Federal construction agencies increase their efforts to promote contractor and subcontractor participation in incentive programs.	5) Agree.
6) OMB designate a central point to (1) receive from the Federal construction agencies all approved value engineering proposals, (2) screen the proposals to identify those having potential for further application, (3) categorize the proposals by engineering discipline, and (4) circulate the proposals to the agencies on a regular basis.	6) In the interest of minimizing staffing, this function might be done at less cost by an agency already staffed. It is noted that the recommendation calls for categorizing by discipline. It follows then that OMB may have to employ one or more professionals in each discipline. An existing staff already evaluating incentive proposals may require less staffing.

APPENDIX IX

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OCT 17 1973

REPLY TO ATTN OF: BXB

Mr. V. L. Hill
Assistant Director-in-Charge
Facilities Acquisition & Management Group
Logistics and Communications Division
United States General Accounting Office
Washington, DC 20548

Dear Mr. Hill:

Thank you for permitting us to review and comment on the GAO draft report titled "Need for Increased Emphasis on Value Engineering in Federal Construction".

As noted in the report, NASA is considering the establishment of a value engineering incentive program for our construction activities to supplement our existing value engineering program for design activities We are pleased to advise you that we are continuing to move forward in this area and expect to have a fully operating Construction Value Engineering Incentive Program in the near future. We generally agree with the recommendations noted on page 3 of the draft report, except that we do not believe it beneficial to include value engineering incentive clauses in contracts having a construction value of less than $250,000. Our experience has indicated that the smaller construction contracts generally are composed of such numerous small material/labor efforts that none presents meaningful opportunities for significant savings.

Please advise if we may be of further service in this matter.

Sincerely,

Richard C. McCurdy
Associate Administrator for
Organization and Management

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

NOV 26 1973

IC
INSTALLATIONS AND LOGISTICS

Honorable Elmer B. Staats
Comptroller General of the United States
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Staats:

Reference is made to Mr. V. L. Hill's letter to the Secretary of Defense dated September 21, 1973 requesting comments on the GAO draft report regarding increased emphasis on value engineering in Federal construction (OSD Case #3710).

The Department of Defense concurs in the findings of the draft report regarding the advantages of using value engineering incentive programs as a means of reducing construction costs and is pleased to see that the Department of Defense is recognized as having been a leader in this field for over eight years among all Federal agencies doing construction. The principal recommendation of the report, i.e. that all agencies should use value engineering incentive programs, is a worthwhile objective.

Other recommendations in the draft report raise some question and are believed to be premature or overly general in application. This is particularly true for Defense agencies in that some of the GAO findings centered around the use of the existing Armed Services Procurement Regulation value engineering clause which is currently under revision. A proposed new clause which will satisfy the intent of the GAO findings of being easily understandable; provide a specific clause for construction contracts; and be readily inserted in contracts is included in the revision now under review. (ASPR Case 70-13). The GAO recommendation that OMB develop a uniform clause is therefore not considered necessary. Such a uniform clause, in attempting to satisfy the many special characteristics of each agency would most probably be very complex so as to be usable on a uniform basis. A proposed alternate recommendation is that each agency develop or modify clauses which are understandable, readily usable, and specifically for construction.

With regard to the recommendation that value engineering clauses for construction include provisions specifying the sharing ratios between contractors and subcontractors, it is noted that use of such clauses in contracts between the government and contractor would subject a third party to the contractual agreement of others. The current ASPR clause, and the new clause under review, require the contractor to include value engineering incentive considerations in a contractor's subsequent contracts with subcontractors and this provision should be sufficient. The recommendation in the draft report regarding the use of specific sharing ratios also recommends that value engineering incentive clauses include construction cost savings and collateral cost savings. The ASPR clause now under review includes both of these aspects with collateral savings an optional section of the clause. Insufficient information, experience, and criteria exists upon which to make a determination that collateral savings should be included in every case. It is believed more realistic to use this section when it is apparent that the particular project has a potential for these savings and thereby avoid over burdening construction administration of many other contracts at the expense of the government. It is suggested, therefore, that this recommendation encourage the use of the collateral savings incentive but not require its use in every case.

The Department of Defense concurs in the GAO recommendation regarding use of the value engineering clause in all contracts above a minimum amount and has determined that $100,000 is an appropriate level. The recommendation should also encourage use of the clause on lower cost projects on an optional basis when potential savings may be possible.

The establishment of a central point for receiving, screening, categorizing, and circulating, approved value engineering proposals is considered premature. Potential savings do exist in exchange of information but many avenues already exist for circulating improvements in construction materials, methods, and procedures, such as trade journals, materials sales campaigns, etc. and the amount of overlap can not be shown on the surface to justify the cost of establishing a permanent government function specifically for distribution of value engineering results. It is suggested, therefore, that this recommendation be revised to recommend that a review be made to establish if circulation of value engineering proposals would be cost effective.

The recommendation that increased emphasis be placed on this program by all agencies is fully concurred in. The Department of Defense has and will continue to seek every possible means of reducing construction costs and value engineering is one of the most useful tools available for this purpose.

Sincerely,

A. I. Mendolia

ARTHUR I. MENDOLIA
Assistant Secretary of Defense
(Installations & Logistics)

Enclosures 3
1. Ltr, dtd 31 Oct 73 w/ Cmts on the GAO Draft Report (Case #3710) from Dept of Air Force
2. Dept of Navy cmts on GAO Draft Report (Case #3710)
3. Dept of Army cmts on GAO Draft Report (Case #3710)

GAO note: The enclosures have not been included in this report.

APPENDIX XI

PRINCIPAL OFFICIALS

RESPONSIBLE FOR THE ADMINISTRATION OF

ACTIVITIES DISCUSSED IN THIS REPORT

	Tenure of office	
	From	To
GENERAL SERVICES ADMINISTRATION		
ADMINISTRATOR OF GENERAL SERVICES:		
Arthur F. Sampson	June 1973	Present
Arthur F. Sampson (acting)	June 1972	June 1973
Rod Kreger (acting)	Jan. 1972	June 1972
Robert L. Kunzig	Mar. 1969	Jan. 1972
COMMISSIONER, PUBLIC BUILDINGS SERVICE:		
Larry F. Roush	Aug. 1973	Present
Larry F. Roush (acting)	Jan. 1973	Aug. 1973
John F. Galuardi (acting)	July 1972	Jan. 1973
Arthur F. Sampson	Mar. 1970	June 1972
DEPARTMENT OF TRANSPORTATION		
SECRETARY OF TRANSPORTATION:		
Claude S. Brinegar	Feb. 1973	Present
John A. Volpe	Jan. 1969	Feb. 1973
Alan S. Boyd	Jan. 1967	Dec. 1968
ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION:		
Alexander P. Butterfield	Mar. 1973	Present
John H. Shaffer	Mar. 1969	Mar. 1973
David D. Thomas (acting)	Aug. 1968	Mar. 1969
Gen. William F. McKee	July 1965	July 1968
Najeeb E. Halaby	Feb. 1961	July 1965
VETERANS ADMINISTRATION		
ADMINISTRATOR OF VETERANS AFFAIRS:		
Donald E. Johnson	June 1969	Present

	Tenure of office	
	From	To
VETERANS ADMINISTRATION (continued)		
ASSISTANT ADMINISTRATOR FOR CONSTRUCTION:		
Viggo P. Miller	Aug. 1970	Present
DIRECTOR OF ARCHITECTURE AND ENGINEERING:		
Gerald M. Hollander	May 1968	Present
ATOMIC ENERGY COMMISSION		
CHAIRMAN:		
Dr. Dixy Lee Ray	Feb. 1973	Present
Dr. James R. Schlesinger	Aug. 1971	Feb. 1973
DIRECTOR, DIVISION OF CONSTRUCTION:		
Samuel L. Hack	June 1972	Present
TENNESSEE VALLEY AUTHORITY		
BOARD OF DIRECTORS:		
Aubrey J. Wagner, chairman	June 1962	Present
Don McBride	May 1966	Present
William L. Jenkins	July 1972	Present
GENERAL MANAGER:		
Lynn Seeber	Mar. 1970	Present
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE		
SECRETARY OF HEALTH, EDUCATION, AND WELFARE:		
Caspar W. Weinberger	Feb. 1973	Present
Elliot L. Richardson	June 1970	Jan. 1973
DIRECTOR, OFFICE OF FACILITIES ENGINEERING AND PROPERTY MANAGEMENT (note a):		
Gerritt D. Fremouw	May 1970	Present
DIRECTOR, OFFICE OF ARCHITECTURAL AND ENGINEERING SERVICES:		
James O. Bartlett	July 1970	Present

[a]Before June 1973, this office was known as the Facilities Engineering and Construction Agency.

APPENDIX XI

	Tenure of office	
	From	To
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
ADMINISTRATOR:		
Dr. James C. Fletcher	April 1971	Present
DIRECTOR, OFFICE OF FACILITIES:		
Robert H. Curtin	May 1968	Present
DIRECTOR, PROGRAMS AND ENGINEERING DIVISION:		
James M. Bayne	May 1970	Present
DEPARTMENT OF DEFENSE		
SECRETARY OF DEFENSE:		
James R. Schlesinger	July 1973	Present
William P. Clements, Jr. (acting)	Apr. 1973	July 1973
Elliot L. Richardson	Jan. 1973	Apr. 1973
Melvin R. Laird	Jan. 1969	Jan. 1973
Clark M. Clifford	Mar. 1968	Jan. 1969
Robert S. McNamara	Jan. 1961	Feb. 1968
DEPARTMENT OF THE ARMY		
SECRETARY OF THE ARMY:		
Howard H. Callaway	June 1973	Present
Robert F. Froehlke	July 1971	June 1973
Stanley R. Resor	July 1965	June 1971
Stephen Ailes	Jan. 1964	July 1965
CHIEF OF ENGINEERS:		
Lt. Gen. W. C. Gribble, Jr.	Aug. 1973	Present
Lt. Gen. Frederick J. Clarke	Aug. 1969	July 1973
Lt. Gen. William F. Cassidy	July 1965	July 1969
Lt. Gen. Walter K. Wilson, Jr.	May 1961	July 1965
DEPARTMENT OF THE NAVY		
SECRETARY OF THE NAVY:		
John W. Warner	May 1972	Present
John H. Chafee	Jan. 1969	May 1972

	Tenure of office	
	From	To
DEPARTMENT OF THE NAVY (continued)		
SECRETARY OF THE NAVY:		
Paul R. Ignatius	Aug. 1967	Jan. 1969
Charles F. Baird (acting)	Aug. 1967	Aug. 1967
Robert H. B. Baldwin (acting)	July 1967	Aug. 1967
Paul H. Nitze	Nov. 1963	July 1967
COMMANDER, NAVAL FACILITIES ENGINEERING COMMAND:		
Rear Adm. A. R. Marschall	June 1973	Present
Rear Adm. Walter M. Enger	Aug. 1969	June 1973
Rear Adm. A. C. Husband	Nov. 1965	Aug. 1969
Rear Adm. Peter Corradi	Feb. 1962	Nov. 1965
DEPARTMENT OF THE AIR FORCE		
SECRETARY OF THE AIR FORCE:		
Dr. John L. McLucas	July 1973	Present
Dr. John L. McLucas (acting)	June 1973	July 1973
Dr. Robert C. Seamans, Jr.	Jan. 1969	May 1973
Dr. Harold Brown	Oct. 1965	Jan. 1969
DEPUTY CHIEF OF STAFF, Systems and Logistics:		
Lt. Gen. William W. Snavely	Jan. 1973	Present
Lt. Gen. Harry E. Goldsworthy	Aug. 1969	Dec. 1972
Lt. Gen. Robert G. Ruegg	Aug. 1967	July 1969
Lt. Gen. Thomas P. Gerrity	July 1962	July 1967

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WASHINGTON, D.C. 20548

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