DRI-I

FIRST
AIR FORCE PRICING POLICY
CONFERENCE/WORKSHOP

Sponsored by:
HQ UNITED STATES AIR FORCE, DIRECTORATE OF CONTRACTING AND MANUFACTURING POLICY (AF/RDC)

Held at:
DEFENSE SYSTEMS MANAGEMENT COLLEGE, FT. BELVOIR, VIRGINIA

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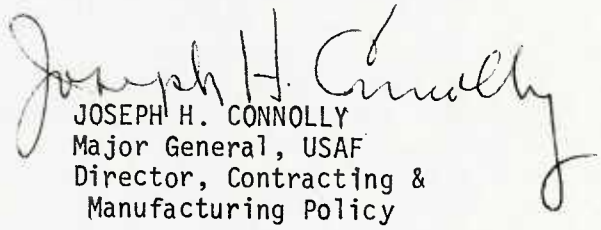
INTRODUCTION

A combination of factors have converged in recent months which have clearly shown the need for the highest possible level of professional pricing expertise in the defense contracting community. The need to revitalize our national industrial capability, strengthen our national defense, and accomplish these objectives at the least possible costs to the American taxpayer places the contract negotiating team, especially the price analyst, at the confluence of new and challenging issues. New ideas and problem solving techniques are needed to provide the best possible solutions.

The first Air Force Pricing Policy Conference/Workshop was initiated to explore the issues and to develop a roadmap from which future pricing policy can evolve. The speakers who shared their ideas with us and the topics we discussed were timely and to the point. I especially appreciate the efforts of the panel chairmen in developing the action items from the workshops. The synergism of our workshops was especially fruitful and I look forward to renewing this process in the future.

I hope you will find the summary of the conference helpful in your daily activities, and as a vehicle for incubating ideas to be used for future conferences.



JOSEPH H. CONNOLLY
Major General, USAF
Director, Contracting &
Manufacturing Policy

WORKSHOP SUMMARIES

Indirect Cost Control

Chairman: Mr. Richard J. Kowalski
AFCMD/TM

INDIRECT COST CONTROL

I. PROBLEMS/PERCEPTIONS

A. Indirect costs have not been analyzed and are misunderstood by many people in the acquisition community. They know that significant dollars are being spent in this area and that these costs are increasing.

B. Overhead is often perceived to be synonymous with inefficiency and/or unproductive labor.

C. There are those who believe that it is possible to effect large percentage reductions in the overhead of all plants through more effective management.

D. Some believe that the overhead is so complicated, cumbersome, and institutionalized that nothing can be done to have it reduced or to have inefficiency eliminated from the accounts.

II. PANEL'S PERSPECTIVE

A. Composition of indirect cost overhead at most major aerospace plants.

1. The largest single element is composed of fringe benefits that are paid to both the direct and indirect employees. This includes vacation time, pension, holidays, health benefits and payroll taxes.

2. The next largest elements are the wages and salaries paid to employees who are not classified as direct employees and who do not normally maintain timecards.

3. The third largest single element is the money spent for Independent Research & Development and Bid & Proposal expenses.

4. The above three elements, in composite, normally account for approximately two-thirds of total indirect cost.

5. The remaining indirect cost are for the other expenses of running the operation, such as, depreciation, supplies, heat and lights, rental cost, and corporate assessments.

6. Some of the cost included in the overhead accounts are rising significantly faster than the inflationary rates; examples would be cost of energy as well as the cost of health benefits.

B. Indirect costs are necessary.

1. All cost associated with producing on individual contracts cannot be directly identified. Indirect costs should be viewed as an accounting convention whereby necessary expenses can be equitably distributed to all of the goods and services produced in the organization.

2. There will always be a need for labor that is classified as overhead. This normally includes top management and the executives of the organizations as well as the maintenance, and security and administrative personnel in the operation.

3. It must be recognized that increased productivity or efficiency in a contractor's operation can result in added expenditures in the indirect cost area. For example, the replacement of direct labor with machinery can cause increases in the depreciation accounts, the cost of energy and maintenance personnel. Such expenses are normally assigned to overhead accounts.

4. Some advocate that the lifeline to technology advancement is the expenditure of IR&D. Increases in the ceilings for these costs increase the overhead costs allocated to Government contracts.

C. Significant Reduction of Indirect cost would be tied to labor.

1. The vast majority of indirect costs are associated with the wages/salaries paid to indirect labor and the fringe benefit paid to all employees. As such, the primary key to controlling or reducing overhead by a substantial percentage lies with the efficiency control and management of the employees.

2. Many of the large divisions in the aerospace segments of industry control indirect employees by using a ratio between indirect and direct employees. There are those who advocate periodic zero base assessments for all of the indirect employees. Such exercises have been accomplished by some aerospace companies. It still appears that the ratio between indirect and direct is the predominant criteria used by top management for determining the quantity of indirect personnel needed within their organization. With this philosophy in place, it is difficult to effect a large scale percentage reduction in the indirect costs. Contractors rarely, if ever, admit that they could identify a significant number of indirect employees who are not being effectively utilized.

D. Cost Avoidance in the overhead area can be achieved.

1. The accounting for indirect cost is complicated and methods used by the individual companies are not uniform. It has been found that the Government employees can influence the expenditure patterns of contractors. To achieve this influence, there has to be an understanding of the contractor's operation and a commitment to actively seek inefficiency or ineffectiveness in the procedures or practices used by the contractor.

2. Contractors are responsive when inefficiency is identified and realistic solutions are set forth for implementation. Effort of this nature can only be accomplished through increased engagements on the part of the Government employees.

3. Although it might not be feasible to have a large percentage reduction in the indirect cost expenditures, it is the possibility to identify cost avoidances or improper allocation which can avoid hundreds of thousands of dollars each year. Government employees have a responsibility of identifying inefficiency and tenaciously pursue corrective action when costs can be reduced.

III. PRAGMATIC CONSIDERATION

A. The preponderance of Air Force weapons systems are acquired through the use of negotiated contracts. These negotiations are predicated upon the anticipated or projected costs. Traditionally, profits/fees have been established as a percent of the cost. It is difficult to believe that contractors are motivated to reduce cost if such reductions are considered for follow-on acquisitions and the amount of profit dollars are proportionately reduced.

B. Some believe that contractors are not necessarily motivated to maximize profits in the near term. Many advocate that contractors are more concerned with perpetuation of the company and maximizing revenues as opposed to maximizing profits. If this is true, emphasis should be placed upon identifying that which motivates the contractor and using such motivators to reduce the overall price of weapons systems.

IV. PANELS OBSERVATION AS TO WHERE EMPHASIS IS NEEDED

A. Forward Pricing.

1. The forward pricing rate agreements that are established by the contract administration personnel in the overhead area establishes the contractor's indirect cost budget on contracts negotiated using such agreements. We should advocate that the contract administration organization maximize their emphasis in this area with objectives to negotiate multiple year overhead forward pricing rate agreements.

2. The most difficult task encountered when projecting overhead forward pricing rates is establishing a realistic base of business which will flow through the contractor's operations during each succeeding year. Initiative 19 set forth by Mr. Carlucci may assist in predicting realistic business volume at the major aerospace companies.

3. The Army representatives reported that they are having demonstrated and documented success in performing "Should Cost" in conjunction with their significant production acquisitions.

B. On-Going Review.

1. Management emphasis and engagement by Government personnel of all levels are the keys to identify costs which are either unnecessary or inappropriately assigned to Government programs. Such engagement and assessment of the contractor's operations is provided for by the cost monitoring program set forth in DAR Section XX, Part 10. Panel members reported that the implementation of that program has been very successful at locations where management within the contract administration function has enthusiastically supported and encouraged the accomplishment of such reviews.

2. There has been growing concern at the highest level of the Air Force that the salary and wages paid within the aerospace industry are exceeding the rate of inflation. It would appear that we are not providing the appropriate motivation to contractors by having an economic price administration (EPA) clause associated with labor. Such a clause may not motivate contractors to reduce or constrain their labor costs.

3. Many of the major programs in the Air Force are experiencing significant cost growth and overrun. There are innuendos that company management is not performing its responsibility to reduce the cost of Air Force weapons systems. At the same time, bonuses to executives are paid/reimbursed as allowable cost in accordance with provisions of DAR. Those bonuses are allocated to programs experiencing overrun and cost growth. Disallowances cannot be effected because of the definitions of reasonableness and allowability included in the DAR.

4. High level Air Force representatives are very concerned because they perceive that the salary and fringes paid to aerospace workers are escalating at a rate faster than the consumer price index. The provisions of DAR do not permit the questioning of this cost as long as the compensation paid to employees is commensurate with that paid by firms of the same size, in the same industry, or in the same geographic area. It is difficult, if not impossible, to pursue disallowances when the scope of alternatives for justifying reasonableness are so broadly written in the DAR.

V. RECOMMENDATION:

A. Reemphasize that contract administration service organizations should vigorously pursue the negotiation of overhead forward pricing rate agreements. Special efforts should be placed on obtaining multi-year agreements when appropriate.

B. Encourage the buying activity to coordinate with in-resident contract administration personnel at the major plants producing high dollar value weapons systems. The buying activity personnel should participate in the negotiation of overhead forward pricing rates and, as a minimum, assure that they are completely conversant with the content of overhead pools as well as the accounting procedures and practices used by the contractor.

C. Initiate a study to determine how we can more effectively predict business base in contractors' plants. Mr. Carlucci's direction in conjunction with Initiative No. 19 should be the cornerstone for efforts in this area.

D. Increase the use of the "Should Cost" approach for more indepth evaluation of contractors' proposals.

E. Reaffirm a policy of engagement at contractors' plants where the price of weapons systems are primarily predicated upon cost expenditures. There should be a reemphasis on the requirement to perform the cost monitoring program set forth in DAR Section XX, Part 10.

F. Solicit a high priority from DCAA to pursue reviews which use the technical resources available within the Government as well as the financial capability of the agency. This would be compatible with the approach set forth in DAR Section XX, Part 10.

G. Consideration should be given to prohibiting upward adjustments in conjunction with labor related economic price adjustment (EPA) clauses.

H. Consideration should be given to changing policy in DAR to permit disallowances of certain questionable practices in the compensation area. Some examples are:

1. Executive bonuses at locations where they are not effectively controlling cost of producing major weapons systems.

2. Compensation and fringe benefit cost which exceed the escalation identified by representative national indices.

3. Discretionary cost such as those paid for stock appreciation rights (SAR), employee stock ownership plans (ESOP), tax recovery act stock ownership plans (TRASOPs) and payroll stock ownership plans (PAYSOPs).

Profit Objectives Workshop No. 1

Chairman: Mr. Robert Sands
HQ USAF/RDCP

PROFIT OBJECTIVES NO. 1

I. Problem:

There is much discussion within industry and the government concerning adequacy of profit on defense contracts. These discussions eventually turn to definitions of profit and how it is measured. Alternative methods have been suggested by different groups. The panel objective was to discuss some of the proposed alternatives and to make appropriate recommendations.

II. Definition

Three approaches to the calculation of profit were explored. The approaches were: Return on Investment (ROI); Mark-Up-Factor (MUF); and Weighted Guidelines (WGL) method.

III. Discussion

A. The ROI did not appear to offer any benefit over the current approach. It was agreed that the mechanics of this process was extremely complex, would require new additional data and substantial training of personnel. It was agreed that most Defense contractors would not accept this because the return on investment in the Defense industry is quite high. It was the consensus that little could be gained by pursuing this approach.

B. The Mark-Up Factor which is described as a commercial type approach that would cover general and administrative (G&A), Independent Research & Development (IR&D); Bid & Proposal (B&P) and profit. It was agreed the concept offered a lot of positive things. The ranges would be simple, it would ease negotiation and the process would let the contractor manage an area that offers possibility for cost reduction. It was felt it would be tough to change the way we handle R&D. This method should be studied as it appears to offer the most of the three approaches explored.

C. The Weighted Guidelines was found to be simple enough and understood by all. The time required to complete was not excessive, but it has lost its credibility. Contractors do not even want to discuss it as they feel it is outmoded. It was agreed at the present there is no better way to do the job. Two of the elements needed more clarification as to policy (19b Independent Development) and (19A Productivity). Neither of these were well understood nor used.

IV. Conclusions

A. Weighted Guidelines is the best way to go until the "Mark-up" concept is further defined and details of operation are defined.

B. It was agreed that little credit is given to the "hidden" profit factors such as:

1. Substantial amounts of money furnished under CAS 414.

2. Almost complete financing with flexible progress payment.

3. Avoidance of risk with substantial protection from inflation by economic price adjustment clauses.

4. Many special protection clauses that protect the contractor from risk.

5. The current procedures won't stimulate capital investment unless some "hooks" are included to force contractors to do it with the added funds we are providing.

C. It was agreed some other areas that needed improvement were:

1. We need a way to not penalize the contractor who reduces cost.

2. We need a procedure to identify contractors who are consistently late in response to requests for cost data.

3. A similar but separate procedure is needed for contractors who are consistently late on delivery.

Profit Objectives Workshop No. 2

Chairman: Mr. Jeremy Olson
HQ USAF/RDCP

PROFIT OBJECTIVES NO. 2

I. Revise the Weighted Guidelines Form and Profit Policy

A. Independent Development (3-808.8(b))

1. Clarify application criteria to state that the base against which the profit weight is applied is:

a. The acquisition cost of the independently developed item (less FCCM).

b. Not the development cost of the item.

c. Not the complete cost of all items acquired on the contract.

2. Consider change to application policy to give credit to independently developed manufacturing process used during performance of the contract.

B. DAR 3-808.2(a) should be rewritten to remove confusion regarding application of three weighted guidelines approach.

1. The current guidance leads one to believe that the choice between the "Manufacturing" "Research and Development," and "Services" guidelines is driven by the type of product or service which is procured (i.e., R&D, or production, etc.).

2. A careful reading of 3-808.2(a) reveals that the decision among the three guidelines should be made on the basis of the need for "a significant amount of facilities ... for efficient contract performance."

3. Recommend that the weighted guidelines blocks 6(c), 6(d) and 6(e) be retitled and that DAR 3-808.2(a) be rewritten to give proper emphasis and correct a widely held misunderstanding.

C. Investigate the apparent incongruity of the Weighted Guidelines factor weight range for "Manufacturing Overhead."

1. The weight range of 4-7% appears to be very low compared to Engineering Labor (9-15%) and manufacturing labor (5-9%).

2. Because manufacturing overhead is the expense pool where most of the facilities investments would be charged, this low weight seems to work against the DOD desire to promote contractor investments.

D. Restructure DAR 3-808.8(a) Productivity.

1. This section of the weighted guidelines allows profit credit for actual cost reductions accomplished through contractor productivity improvements.

2. This portion of the weighted guidelines is rarely used because it is too complex, time consuming, and has little support from contractors.

3. The paragraph should be either deleted or restructured to provide for sharing projected costs savings instead of past cost savings.

E. DAR 3-808.6, Contract Cost Risk, should be expanded to address many recently emphasized contracting techniques.

1. Techniques such as Economic Price Adjustment clauses, Termination Indemnification clauses and commitments to buy back undepreciated facilities are being used frequently.

2. These provisions can have a significant impact on the contractor's assumption of cost risk.

3. Paragraph 3-808.6(b), Evaluation of Contractor's Assumption of Contract Cost Risk should be expanded to require that whenever a special contract provision reduces the contractor cost risk, that the extent of this risk reduction be reflected in the weight which is assigned for cost risk.

II. Reevaluate the stated purpose of profit.

A. DAR 3-808.1(b) states that the objective of profit for DOD contracts is to:

1. Reward for use of high skill and difficult work.

2. Give profit commensurate with cost risk.

3. Motivate contractors to provide their own facilities and financing.

4. Conduct their own development.

5. Improve contractor productivity.

B. These stated goals may be too ambitious.

1. The small amount of profit involved (compared to the amount of contract costs) may be split into too many categories to be effective in any one of them.

2. Not all categories are best treated by profit.

C. Investment incentives may be more effective if removed from profit.

1. This would leave a much greater portion of profit for risk assumption and rewards for efficient operation.

2. Promote investment through means not tied to negotiation of profit on individual contracts such as termination protection, long term contracts (multi year), cost savings sharing, and improved depreciation methods.

TECH MOD/Capital Investment/MANTECH

Chairman: Col George Lippencott
HQ USAF/RDCM

TECH MOD/CAPITAL INVESTMENT/MANTECH

I. Extensive discussion of current activity and future thrusts as seen from the production viewpoint.

A. Rationale

B. Current philosophy

C. Evolution

D. OSD instruction

E. PMD

F. Money

II. Field experience in negotiating contractual coverage to implement Tech Mods discussed.

A. Procedure complex and time consuming.

B. Procedures tailored to each situation.

C. Would like greater latitude/less direction.

III. Discussed implication on profit policy.

A. Reduced risk

B. Possibility of double recognition of contractor effort.

C. Few participants outside the manufacturing community familiar with concept.

IV. Discussed existing policy/procedures.

A. No overall Air Force policy.

B. Procedural details contract specific.

C. Policy framework needed.

D. Field participation in policy development a must.

E. Policy framework should be broad to allow room for learning/tailoring.

V. Recommended an Air Force policy position be established.

A. Broad framework

B. Interdisciplinary

C. Air Staff/AFSC/AFLC/AFCC participation.

D. Revised and expanded after experience base broadens.

The Future of the Price Analyst Workshop No. 1

Chairman: Mr. William M. Chamberlain
AFCMD/TMF

THE FUTURE OF THE PRICE ANALYST NO. 1

I. Problems now being Encountered in Pricing.

A. Personnel turnover

B. Workload quantity vs. available resources

C. Quality of people vs. demands

1. Estimating/pricing knowledge

2. Knowledge of manufacturing systems

3. Use of computer tools

4. Use of business management, analysis

D. Training plans

II. Why are we Experiencing Problems?

A. Main reasons given for high personnel turnover

1. Excess workload

2. Lack of recognition

3. Lack of higher grade positions

4. Low journeyman grade level

B. Workload quantity vs. capable resources

1. Workload has gradually increased over the past 5 years without corresponding changes in resources.

2. Larger dollar proposals

3. More, sophisticated estimating systems

a. Parametrics

b. Computer programs

C. Quality of people vs. demands

1. In addition to complexity of estimating systems there are:

a. More requirements for technical evaluations by analysts.

b. More knowledge of computer applications.

c. More need for use of comparative analysis models covering financial health and cash flow.

D. Training plans

1. Heavy workload won't permit release of better people to go to schools.

2. Upon returning from courses covering new concepts, workload demands require quickest way to get out accumulated backlog, therefore new concepts are delayed.

3. Managers tend to send people for training that they can do without, therefore better people are often deprived of training.

4. Individual training programs are not being set up/followed.

III. Other Observations:

A. Doesn't appear to be a visible price analyst career progression program.

B. Fraud, waste and abuse (DODD 5000.42) has created more management oversight activity because of:

1. Preparations for senior acquisition official.

2. Creating more audit activity on the part of AFAA and other audit agencies.

3. Personnel are more cautious because they expect more audit activity.

C. Is the pricing workload being assigned properly ($ thresholds)?

1. No. Most panel members feel it should be assigned on a cost benefit analysis basis, rather than the $ threshold method.

D. Training

1. Training courses appear to be adequate.

2. Individual plans need to be set up and carried through.

3. Maybe more Financial Management courses covering subjects such as cash flow, contract clauses like EPA, termination, etc.

IV. Current Techniques being used

A. We are working towards an overall systems approach to pricing.

1. Giving closer attention to estimating systems by working out front with companies on major changes. Don't wait and review after new system is installed.

2. Formula pricing and parametrics.

3. Pricing sampling agreements.

4. Use of labor standards for estimating and evaluating price reasonableness.

5. Computerized cost models and data banks.

6. Computerized management systems.

V. Description of Techniques

A. Parametrics/Formula pricing - make sure we work out front with companies (AFPRO/DCAA/SPOs) on acceptable criteria.

1. Reach an agreement with the contractor on the formula/parametric to be used.

2. Make sure that the drivers are correct and current.

3. Make sure that the company has an acceptable tracking system for each CER prior to negotiation.

4. Negotiation CERs and update each year.

B. Sampling:

1. To have an acceptable confidence level, sampling must have a homogeneous universe.

a. Spares are the best candidates for sampling.

b. Manhour consumption when using effective systematic sampling systems are not grossly affected by volume (i.e., 50 PIOs can be worked with slightly more time than 20).

c. Effective sampling techniques rely upon contractors computer system, containing line item detail. Used to build homogeneous packages.

d. If threshold changes are made for field analysis, cases will move away from the sample system in the field to the buy office without a sampling system.

e. Good on-site visibility needed for good sampling.

C. Use of labor standards

1. MIL STD 1567 defines standards (Class I, II, III, etc.).

2. We now place too much emphasis on actuals (efficient or inefficient).

3. "Should Cost" addresses this and has a significant pay-off in dollar savings.

4. However, we simply don't have enough people to do many "should cost" studies.

5. Can we do day-to-day should cost? The answer is yes to some degree.

6. Use labor standards to measure efficiency of actuals (see attached illustration).

D. Computerized Cost Models and Data Banks

1. Need to concentrate on joint use models so as to benefit both field and buying office.

2. Need to build models that have the ability to access "Computerized Data Banks" containing rates and factors.

3. Computerized models need to reach the lowest level of the estimate.

VI. Recommendations

A. To assist in the price analyst career development plan, DOD management needs to inform all agencies that cross training assignments between pricing/procurement/contract administration is to be encouraged. Also that higher level position selections should stress this cross training with emphasis on pricing as well as the procurement and contract administration areas.

B. In light of the additional demands for expanded expertise of price analysts along with turnover, recommend that the journeyman level for price analysts not be below the GS-12 level.

C. Recommend that DOD policy be published on the acceptable criteria for company use of "Parametrics." Suggest that the cirteria set out in AFCMDR 70-8 Chapter 10 be considered in developing such policy (see Atch 1).

D. Recommend that DOD render positive support for placing MIL STD 1567 on contracts with the retention of the section requiring the use of labor standards for estimating.

E. Recommend that ASPM #1 be expanded to include encouragement for using "labor standards" as an estimating tool. Suggested information might follow text and illustration shown in Atch 2.

The Future of the Price Analyst Workshop No. 2

Chairman: Mr. Michael D. Amidan
OO-ALC/PMWFA

I. Identify trends to the requirements placed on price analysts.

A. Increased use of computer based tools.

The general consensus of the panel was that computer usage could be expanded through:

1. Expanded technical competency of the individual analyst.

2. Better utilization of existing equipment through specialized programs, and the use of a central focal point to specifically develop individual organization's program needs.

3. Place more emphasis on the use of the computer. Analysts are presently using manual techniques that could be more effectively accomplished by a computer.

4. Evaluate overall needs to determine if a mix of Copper Impact and Mini Computer would enhance the capability of the organization.

B. Increased use of Price Analysis vs. Cost Analysis.

In discussing this area of the pricing function, the panel's opinion was that more price analysis could be accomplished. However, this type of analysis (outside of that in conjunction with cost analysis) would be best limited to less complex cases and effectively accomplished at the buyer/PCO level.

C. Increased role of review and oversight functions. Most of the panel was of the opinion that these functions will be increased. The reasons cited were DOD 5000.52, AF Audits and Tech Mods, etc. The consensus was that these functions could cause delays and increase manpower requirements. Most did not agree with future increases in this area.

II. Manning/Workload.

A. Is manning adequate?

Present manning was felt to be adequate, however, with the increased responsibility of reviews and quality, some expressed this would be short lived for reason in para 1.c.

B. Is workload assignment to pricing based on cost effective criteria?

1. Most of the time, however, each location has its own criteria; rarely are these thresholds changed even if good reason exists. Should be reviewed and reasonable criteria established by AFLC or higher level.

2. Assignment should be based upon complexity, timeliness and contractor involvement.

C. Is formula pricing/advanced agreements a viable tool in workload management?

All panel members viewed these pricing techniques as time savers and would encourage maximum usage.

III. Training.

A. Is present training adequate?

Mixed feelings; most felt that adequate training is available but not all have taken advantage of it. Some felt that the formal training did not meet the real needs, and that timing was off or too difficult to achieve because of pre-course requirements. It was suggested that each organization evaluate the employee's needs, if interim training is necessary before starting formal AFIT course then develop as necessary. This would eliminate the diversity among students, also increase the number of slots for basic courses (QMT 170) etc.

B. Is training adequate for future pricing tasks?

1. In this area the panel did not feel analysts would have the necessary training. The primary reasons were the increased use of computer generated proposals and the incorporation of statistical methods of pricing. Further, it was felt that a price analyst should be better trained in the art of negotiations, using both formal and OJT training.

2. The OJT method of training was determined the best available means of providing this training, however, the lack of TDY money precludes much of the price analyst's trainee relationship or field experience.

3. In addition, the panel felt that good price analysts were difficult to find initially and very vulnerable to industry after trained. It was suggested that action be taken to enhance the professional image of the price analyst with Government service.

Productivity

Chairman: Mr. Donn V. Aaby
HQ AFSC/PMM

PRODUCTIVITY

I. Definition

"The definition of productivity has changed over the years. In the 40's and 50's the measurement of productivity focused on output, or the production of as much as possible. In the 60's and 70's quantity was no longer as important as efficiency, or production at the lowest possible cost. Now, in the 80's, given the constraints imposed by scarcities, regulations, changes in job skills and cost mix and greater international competition, the productivity emphasis is on effectiveness. Your performance will be judged on whether or not you produce the right things, not just whether you produce things right and at a low cost."

II. U.S. No Longer as World Competitive

A. U.S. lowest average annual productivity growth 1950-78 output per employee hour, versus other industrial nations.

B. U.S. lowest average hours worked, annually (1,605) per worker in 1980, versus other industrial nations (example, Japan 2,127 hours).

1. Japanese worker hourly pay less, but earns comparable to U.S. worker, because of additional 500 hours worked annually.

2. Japanese worker "work ethic" may be stronger than U.S. because more dependent on job for personal satisfaction.

III. Quality and Productivity are Closely Coupled

Less waste and rework increases net output and productivity.

IV. To maximize productivity requires proper allocation of resources of capital, materials, technology and personnel.

V. National commitment needed for a productivity growth policy requiring close cooperation of government, management, labor and academia.

VI. Case Study Westinghouse

A. Corporate commitment for productivity improvements.

B. Quality improvements, people and technology are important determinants.

C. Tools used: Quality circles; improved technology applied such as electronic mail, robots, CAD-CAM-CAT, word processing, teleconferencing; concurrent design of product and manufacturing process; top and middle management training in quality and productivity improvements.

VII. Recommendations

A. Recommend support of the Carlucci Acquisition Improvement initiatives on Capital Investment, with the goals of technology, productivity, and quality improvements, not just capital investment without specificity.

B. Recommend increased AF support of MAN TECH and TECH MOD to stimulate productivity improvement.

1. Direct contract support with up-front money.

2. Encourage contractors to pursue their own efforts in their independent research and development (IR&D) expense program and other overhead.

C. DOD should offer specific incentives to stimulate productivity improvements.

1. The Special Factor on Productivity within the weighted guidelines on profit, DAR 3-808.8(a), has not been used with any frequency, or if used, it was used improperly.

2. Recommend the following alternatives be explored by DOD:

a. Rewrite DAR 3-808.8(a) to encourage and clarify use of the productivity incentive.

b. Remove this provision from profit and reclassify it to cost where it would be clearly identified as productivity improvement. The contractor would propose a method for measurement, accountability would be within the Statement of Work of the contract, and the contractor could expect to negotiate a profit additive to it.

c. Structure an award fee type of arrangement, but call it productivity improvement. Measurement criteria proposed by contractor in response to the RFP. A government unilateral determination of "award" would then be made. A further refinement may be to divide award between prime and major subs to provide flow-down to critical subs.

D. Recommend that future "should cost" studies emphasize productivity improvements in their analysis.

E. Recommend DOD and, specifically, the Indirect Cost Monitoring Office (ICMO) encourage more wide spread application of the Cost Monitoring Reviews (DAR 20-10) at major contractor locations. Ongoing DCAA operations audits and technical reviews on a total plant basis can serve as mini-should cost surveys in identifying potential contractor productivity improvements.

F. As a means to reduce both contractor and government in-house indirect expenses, recommend increased use of parametric pricing of components and spares. This should reduce cost estimating and bid and proposal costs, as well as reducing proposal time and increasing responsiveness, thereby increasing productivity.

G. Recommend multi-year contracting with flow-down to critical subs, as one of the best vehicles for increasing productivity and reducing total program cost, versus annual buy. Upfront commitments, indemnification provisions, and shared savings can be negotiated with a long-run view toward increasing productivity.

Financial Issues

Chairman: Mr. John H. Lynskey
HQ USAF/RDC-DAR

FINANCIAL ISSUES

I. Subject: Prompt Payment Act

The conferees discussed the impact of the Prompt Payment Act on program costs. This Act is to be effective 1 October 1982. The majority of the conferees expressed concern with the possibility that the payment of interest will reduce needed program funds. They believe that some responsibility and/or penalty must be assigned to the paying function. The conferees were also afraid that the necessary groundwork to assure coordination between the services to resolve problems as quickly as possible has not been accomplished. The conferees were extremely concerned with the lack of guidance issued on the subject. In this area, a problem was noted which might impact flexible progress payments. The Prompt Payment Act was legislated to assist small contractors in receiving payment in a timely manner. If paying offices place more emphasis on cash flow problems of small contractors -- then the cash flows of the larger contractor might be impacted. These changed cash flows might impact the rate for flexible progress payments in contracts.

Recommendation:

a. That HQ USAF issue guidance concerning the implementation of the Prompt Payment Act. In particular, this guidance should address the source of funds to pay "interest" for delayed payments.

b. That HQ USAF work with the other Services and DLA in order to establish procedures for effective resolution of payment problems.

II. Subject: DOD Finance Committee

The majority of the conferees did not know of the existence of the DOD Finance Committee, its role and responsibility for contract finance matters. The conferees noted a complete lack of communication between the command level and field pricing units on proposed financing policies. The conferees believe that there is definitely a need to circulate proposed financing policies. These policies impact contracts, just as much as other DAR changes.

Recommendation:

That HQ USAF request dissemination for comment by the DOD Finance Committee of proposed changes to Appendix E to major commands and buying offices.

III. Flexible Progress Payments

The consensus of the conferees was that the flexible progress payment methodology was appropriate. For the first time, it ties cash flow to individual contract circumstances. The conferees noted that the initial classes on flexible progress payments and the cash model were not, in their opinion, effective. One of the weaknesses of the initial training was that the PCO's and price analysts did not know what the model was sensitive to. In the meeting, a lively discussion took place as to whether contractor's estimated money streams or cash flow forecasts are "negotiated" or "verified." Some of the attendees definitely considered the process one of negotiating any difference between contractor and Government estimates of cash flow. Others looked on

this as simply a verification task. The differing interpretations, however, could produce inconsistencies in the implementation of the technique.

Some conferees expressed dissatisfaction with the techniques on multi-year contracts. It apparently does not work, but there is no guidance on correction techniques or alternatives. Other conferees noted that if the flexible progress payments is valid, then it does not need arbitrary ceilings or floors. Currently, if the calculated rate is 88%, then the floor 90% is used. The Government looks ridiculous if when the calculated rate is 94%, the contractor receives the higher rate, but when it is 88%, we use a higher rate.

The use of the flexible progress payment techniques, however, has increased both administrative and negotiation effort. The negotiation of the rate is becoming almost a separate negotiation.

Recommendation:

a. That HQ USAF work with the DOD Finance Committee to develop:

-- a better training program on flexible progress payments,
-- guidance concerning the level of negotiation appropriate on contractor cash flow streams, and
-- guidance concerning necessary corrections or alternative techniques for multi-year contracts.

b. That the DOD Finance Committee consider the removal of arbitrary floors or ceilings on flexible progress payments.

IV. Financial Management/Pricing

The conferees addressed the issue of whether cash management should continue to be separated from contract pricing/profit decisions. The conferees agreed that the current DOD policy disconnecting cash management and procurement is not only wrong, but illogical. Currently in negotiations, contractors have combined the two concepts and so a reduction in cash flow usually results in a contractor request for higher profit. The conferees felt that as the Government's so-called businessmen, we should consider the value and worth of money.

Recommendation:

That the DOD Finance Committee and the DAR Council reevaluate current policies which disconnect cash management and profit policies.

V. Use of Financial Surveys

The consensus of the conferees was that so far as they could ascertain, the results of financial surveys of contractors was not effecting contract award decisions. Information similar to that in the FINADAS Program was simply nice to have.

VI. EPA Clauses

Several of the conferees noted that there was no consistency in how many and what indices were used. Some pricing personnel simply used the CPI index, while others used multiple indices for material and labor. Also, there was some confusion as to when EPA clauses would be appropriate and when they would not be appropriate. The conferees concentrated its discussion on the extent of any impact on profit through the use of EPA clauses. The conferees discussed:

-- whether DOD should permit profit on EPA costs, and

-- whether DOD should reduce overall profit if EPA clauses are included in contracts.

While substantial disagreement existed on whether the contractor should earn profit on EPA costs, the majority felt it would be inappropriate. It was the feeling of the conferees that contractors are aggressively seeking reduction of risk through EPA clauses and special termination clauses - without reduction of profits. If a contractor's investment risk is limited to 5% by flexible progress payments and use of EPA clauses and other clauses reduce cost risk, what is not clear is what the norm should be in the cost risk area of profit. Whether we adjust profit for EPA should depend on our definition of "cost risk." Particularly, whether a contractor should assume all cost risk or only "normal" cost risk.

It was noted in the discussion that the PCO and the Government might look foolish if we permit the prime to have an EPA clause, but this flexibility is not passed on to subcontractors by the prime. Sometimes the prime is tougher on the subcontractor than we are.

Recommendations:

a. That the DAR Council and/or HQ USAF issue guidance concerning the use of indices. In particular, ASPM #1 coverage should be expanded in this area.

b. That HQ USAF issue guidance as to those situations where the use of EPA clauses is appropriate.

c. That HQ USAF develop a policy position of not allowing profit on EPA costs or reducing profit on the basic contract if EPA clauses are to be used.

d. That the DAR Council redefine what the "norm" for the cost risk section of profit should be.

VII. Milestone Billings

The conferees still felt that certain conditions could exist where the use of milestone billings would be an appropriate technique. It was felt, however, that the procedures were now too complicated and the high level of approval was unnecessary.

Recommendation:

That milestone billings should continue and that HQ USAF and DOD Finance Committee should delegate some responsibility in this area.

VIII. Business Volume Adjustment Clause

Because of time, the conferees held only a limited discussion on results of the use of this clause. Some conferees felt, however, that the net result of this clause was to pay overhead on a cost reimbursement basis on an otherwise fixed price contract.

Recommendation:

That HQ USAF reevaluate use of Business Volume Adjustment Clauses.

CONFERENCE ACTION ITEMS

CONFERENCE ACTION ITEMS

1. What kind of implementing instructions will be issued to the field for the FAR/DAR?

OPR: AF/RDC-DAR

2. What is the plan to update Appendix "O" to the DAR so that it is complete and current?

OPR: AF/RDCP

3. What plan does the Air Force have to minimize impact on the authority of Contracting Officers as a result of DODD 5000.42?

OPR: AF/RDCP

4. What can be done to stimulate contractors to pursue their own efforts in independent research and development (IR&D and other overhead)?

OPR: AF/RDCM

5. Future "Should Cost" studies should emphasize productivity in the analysis.

OPR: AF/RDCP

6. The Cost Monitoring Reviews (DAR 20-10) should be given more visibility by DOD. The Indirect Cost Monitoring Office (ICMO) reviews at major contractors should be in effect mini "Should Cost" reviews.

OPR: AF/RDCP

7. The use of parametric pricing of components and spares should be increased as a productivity enhancement of both Government and Industry.

OPR: AFSC/CMD

8. Flow down of multi-year benefits to critical subcontractors should be enhanced to increase the productivity of subcontractors.

OPR: ~~AF/R~~DCS

9. The profit study should be expanded to explore the following:

a. Increase of the emphasis on facilities capital investment and further reduce the cost basis of Weighted Guidelines (WGL) method of profit determination.

b. Investigate the matching of the offset factor and amount of computed interest on facilities investment.

c. Expand and clarify the productivity improvement reward portion of WGL.

d. Expand and clarify the Independent Research and Development portion of WGL.

e. Establish a control process for unreasonable contractor demands for profit.

OPR: AFSC/PM

10. Reemphasize the immediate need for contract administration organizations to pursue the negotiation of overhead forward pricing rate agreements. Special emphasis should be placed on obtaining multi-year agreements when appropriate.

OPR: AFSC/CMD

11. Encourage the participation/coordination of buying activities and in-resident contract administration in the negotiation of overhead forward pricing rates. Familiarity with content of overhead pools and accounting procedures used is a necessity for negotiation.

OPR: AFSC/CMD

12. Study the practice of granting full relief to upward adjustments in labor costs through economic price adjustment clauses (EPA).

OPR: AF/RDCP

13. Study the DAR policy relative to permit disallowance of certain questionable practices such as:

a. Executive bonuses at locations where costs are not being controlled on major systems.

b. Compensation and fringe benefits costs which exceed the national indices or regional averages.

c. Discretionary costs such as those paid for stock appreciation rights (SAR), employee stock ownership plans (ESO), tax recovery act stock ownership plans (TRASOPS) and payroll ownership plans (PAYSOPS)).

OPR: AF/RDC-DAR

14. Assist the price analyst career development plan by encouraging cross training assignments between pricing, buying and contract administration. Higher level position selections should stress cross training with emphasis on pricing as well as other areas.

15. The journeyman level of at least the GS-12 level should be established to mitigate the turnover problem.

OPR: AF/RDCX

16. That DOD policy be published on the acceptable criteria for company use of "Parametric" cost estimating. The criteria set out in AFCMDR 70-8, Chapter 10, should serve as a guide.

OPR: AFSC/CMD

17. DOD should render positive support for placing MIL-STD-1567 on contracts, with the retention of the section requiring the use of labor standards for estimating.

OPR: AF/RDCP

18. Armed Services Pricing Manual #1 should be expanded to encourage the use of "Labor Standards" as an estimating tool.

OPR: AFSC/CMD

19. Air Force policy position should be established on Tech Mod/Capital Investment/MANTECH with a broad framework, interdisciplinary. The participants of this position should be AFSC/AFLC/AFCC.

OPR: AF/RDCM

20. Air Force issue guidance concerning implementation of the prompt payment act.

OPR: AF/RDCP

SPEAKER PRESENTATIONS

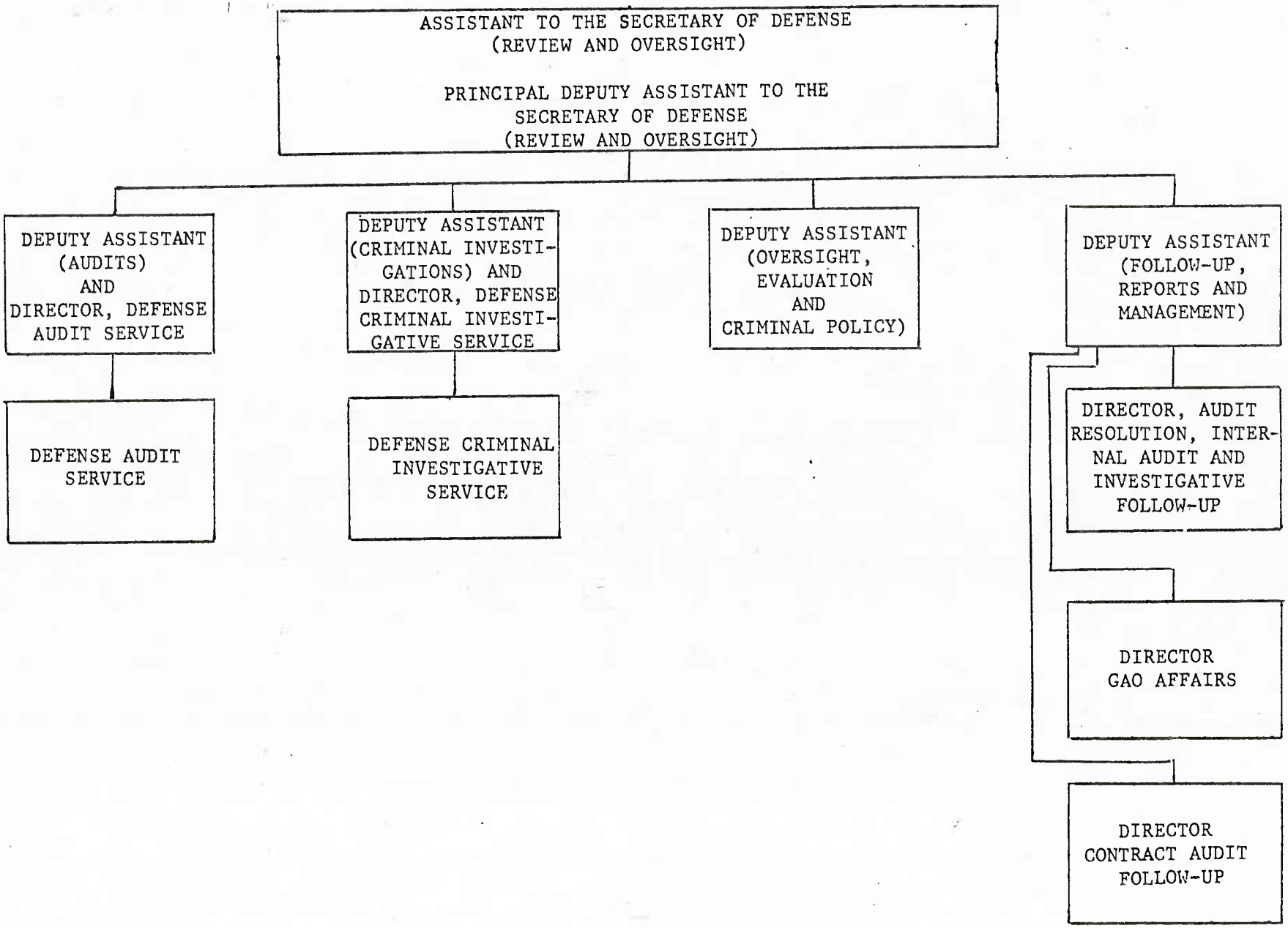
Hon Richard D. DeLauer
Under Secretary of Defense for Research and Engineering

(written report not available)

Mr. Richard D. Lieberman

Deputy Assistant to the Secretary of Defense (Review and Oversight)

OFFICE OF THE ASSISTANT TO THE SECRETARY OF DEFENSE
(REVIEW AND OVERSIGHT)



GAO REPORT - OCT 1978 "MORE EFFECTIVE ACTION IS NEEDED ON AUDIT FINDINGS - MILLIONS CAN BE SAVED"

- o DISCLOSED $4.3 BILLION IN 14,000 REPORTS WERE UNRESOLVED
- o DCAA REPORTS ACCOUNTED FOR $1.5 BILLION
- o PROCEDURAL CHANGE FOR RESOLVING AUDIT FINDINGS NECESSARY
- o RECOMMENDED
  - ACCURATE RECORDS
  - SIX MONTHS TO RESOLVE AUDITS
  - INDEPENDENT OFFICIAL BE RESPONSIBLE FOR DETERMINING DISPOSITION ON REPORTS OVER SIX MONTHS OLD

HOUSE GOVERNMENT OPERATIONS COMMITTEE (CHAIRMAN BROOKS) HEARINGS - MARCH 1979

- o COMPTROLLER GENERAL, ELMER STAATS, AND OMB DIRECTOR, McINTYRE TESTIFIED
- o COMMITTEE REPORT SUGGESTED THAT HIGH LEVEL, INDEPENDENT OFFICIAL OR GROUP RESOLVE SIGNIFICANT DISPUTED AUDIT FINDINGS

GAO REPORT - MAY 10, 1979 - "THE EFFECTIVENESS OF THE DEFENSE CONTRACT AUDIT AGENCY CAN BE IMPROVED"

- o FOLLOW-UP OF DCAA AUDITS NOT EFFECTIVE
- o RECOMMENDED THE SECDEF IMPROVE CO FEEDBACK TO AUDITORS AND REQUIRE REPORTING OF DISAGREEMENTS BETWEEN COs AND AUDITORS
- o MADE CLEAR THAT DoD AUDIT FOLLOW-UP DIRECTIVE WOULD HAVE TO COVER CONTRACT AUDITS AS WELL AS INTERNAL

OMB CIRCULAR A-73, "AUDIT OF FEDERAL OPERATIONS AND PROGRAMS" (ISSUED MARCH 15, 1978) - DEC 1979 REVISION "FOLLOW-UP"

- RESOLUTION OF AUDITS REQUIRED
- FOLLOW-UP SYSTEMS MUST TRACK TO FINAL RESOLUTION
- HIGH-LEVEL FOLLOW-UP OFFICIALS
- INDEPENDENT REVIEW PROCEDURES
- SEMIANNUAL REPORTS ON STATUS OF AUDITS OVER 6 MONTHS OLD

FOLLOW-UP LEGISLATION

- PUBLIC LAW 96-304, ISSUED JULY 8, 1980
- PUBLIC LAW 96-527, ISSUED DECEMBER 15, 1980
- BOTH REQUIRED THAT ALL AUDITS INVOLVING QUESTIONED COSTS BE RESOLVED WITHIN 6 MONTHS

DoDD 5000.41 - ISSUED JANUARY 16, 1981 (REISSUED ON MARCH 15, 1982)

- o "POLICIES FOR FOLLOW-UP ON AUDIT AND INTERNAL REVIEW REPORTS" (ORIGINAL)
- o "FOLLOW-UP ON REPORTS FROM THE GAO AND AUDIT AND INTERNAL REVIEW ORGANIZATIONS OF THE DEPARTMENT OF DEFENSE" (REISSUANCE)
- o PRODUCT OF DoD STEERING GROUP
- o EXCLUDED CONTRACT AUDIT REPORTS

GAO FOLLOW-UP REPORT - JAN 23, 1981, "DISAPPOINTING PROGRESS IN IMPROVING SYSTEMS FOR RESOLVING BILLIONS IN AUDIT FINDINGS"

43

- o IDENTIFIED $24.9 BILLION IN UNRESOLVED FINDINGS
- o $12.4 BILLION ATTRIBUTED TO DCAA REPORTS

BROOKS HEARINGS AGAIN - JULY 1981

- o CARLUCCI TESTIFIED AT LENGTH THAT IMPROVEMENTS NEEDED
- o DESCRIBED NEWLY FORMED ATSD(R&O)
- o COMMITMENT ON CONTRACT AUDIT FOLLOW-UP DIRECTIVE (ISSUED AUG 31, 1981)

PURPOSE OF DIRECTIVE 5000.42

- o TO IMPLEMENT OMB CIRCULAR A-73
  - ASSIGN RESPONSIBILITIES
  - ESTABLISH FOLLOW-UP SYSTEM
- o UNIFIED GOVERNMENT POSITION
- o BETTER UTILIZATION OF AUDIT RESOURCES

IMPACT ON ACQUISITION OFFICIALS IN DOD

- o REEMPHASIZE ACCOUNTABILITY
- o ESTABLISHES INDEPENDENT REVIEW PROCESS
- o REEMPHASIZES TIMELINESS OF DISPOSITION
- o NO EFFECT ON CO's AUTHORITY
- o NO EFFECT ON CO/AUDITOR RELATIONSHIP WHERE BOTH PARTIES ARE RESPONSIVE

IMPACT ON AUDITORS

- PROVIDE FOR TIMELY FEEDBACK ON AUDIT RESOLUTION
- INCREASES AUDITOR ACCOUNTABILITY
- NO EFFECT ON AUDITOR ROLES

IMPACT ON DEFENSE CONTRACTORS

- o ALL SIGNIFICANT RECOMMENDATIONS WILL BE CONSIDERED
- o UNIFIED GOVERNMENT POSITION
- o DOD WILL RECOVER COSTS DUE TO GOVERNMENT IN TIMELY MANNER
- o PROBLEMS BROUGHT TO HIGH-LEVEL DOD/PUBLIC ATTENTION
- o IMPACT DEPENDS ON CONTRACTOR

FIRST SEMIANNUAL REPORT UNDER DODD 5000.42

DIFFERENT COMPONENTS HAVE DIFFERENT PATTERNS OF OVERAGED REPORTS

- o TOTAL = 557 REPORTS: ARMY = 51; NAVY = 157; AF = 129; DLA = 220
- o TOTAL COST QUESTIONED = $1.1 BILLION: ARMY = $121 MILLION; NAVY = $175 MILLION; AF = $559 MILLION; DLA = $240 MILLION
- o ARMY REPORTS
  - 31% CLAIMS
  - 25% DEFECTIVE PRICING
  - 18% INDIRECT RATES
- o NAVY REPORTS
  - 54% DEFECTIVE PRICING
  - 11% CAS
  - 10% INDIRECT RATES
- o AF REPORTS
  - 35% DEFECTIVE PRICING
  - 30% INCURRED COSTS
  - 19% OPERATIONS AUDITS AND INTERNAL CONTROL REVIEWS
- o DLA REPORTS
  - 43% INDIRECT RATES
  - 39% CAS

DODD 5000.42 HAVING POSITIVE IMPACT

- o EXPEDITING DISPOSITION
  - DLA - CAS
  - AF - DEFECTIVE PRICING
- o IMPROVING FIELD INSTRUCTIONS
- o BACKLOG SHOULD DIMINISH

CONCLUSIONS

- o IMPLEMENTATION SLOW
- o COMPONENTS "FINE TUNING" SYSTEMS
- o SOME POSITIVE RESULTS
- o EDUCATIONAL PROCESS REQUIRED

REVISION TO DOD DIRECTIVE 5000.42 (JUNE 7, 1982 DRAFT)

- QUARTERLY VS. SEMIANNUAL REPORTING.
- REVISED TWO-PART REPORTING FORMAT. AUDIT REPORTS WILL BE LISTED AS EITHER "OPEN" OR "CLOSED."
- FOUR ADDITIONAL DATA ELEMENTS WILL BE REQUIRED FOR REPORTS OVER SIX MONTHS OLD TO FACILITATE TRACKING THE DISPOSITION OF SIGNIFICANT DIFFERENCES BETWEEN CONTRACTING OFFICERS AND AUDITORS.
- ALL SIGNIFICANT AUDIT REPORTS, INCLUDING THOSE DISPOSITIONED IN LESS THAN SIX MONTHS, WILL BE INCLUDED IN QUARTERLY REPORTS.
- COSTS QUESTIONED SUSTAINED AND NET SAVINGS TO THE GOVERNMENT WILL BE REPORTED.
- CONTRACT MODIFICATION TRACKING AND REPORTING REQUIREMENTS WILL BE ELIMINATED.
- RESPONSIBILITY FOR DETERMINING AUDIT SIGNIFICANCE WILL BE ASSIGNED TO CONTRACT AUDITORS.
- REQUIREMENTS FOR A CENTRALIZED TRACKING AND REPORTING SYSTEM WILL BE CLARIFIED.
- THE RESPONSIBILITIES AND AUTHORITY OF THE ASSISTANT TO THE SECRETARY OF DEFENSE (REVIEW AND OVERSIGHT) WILL BE OUTLINED.
- INDEPENDENT REVIEW BOARD/OFFICIALS AND PROCEDURES FOR RESOLVING AUDITOR/ CONTRACTING OFFICER DIFFERENCES ARE UNCHANGED.

Mr. Clark Adams
U.S. General Accounting Office

(written report not available)

Ms. Mary Ann Gilleece
Counsel Subcommittee on Investigation, House Armed Services Committee

(written report not available)

Mr. Peter Goldberg

Trial Attorney, Department of Justice

THINK ANTITRUST:
THE ROLE OF ANTITRUST ENFORCEMENT IN FEDERAL PROCUREMENT

I. PREFACE

Price fixing, bid rigging and other typical antitrust violations have a more devastating effect on the American public than any other type of economic crime. Such illegal activity contributes to inflation, destroys public confidence in the country's economy, and undermines our system of free enterprise. In the case of federal procurement, such crimes increase the costs of government, increase taxes and undermine the public's confidence in its government.

Because government procurement officials receive bids and award government purchasing orders, they are in a good position to observe and identify violations of the antitrust laws. Other important players in the fight to maintain the free flow of competition include agency auditor-investigators, local and state administrators of federally funded projects, and federal supervisors of such state activities. If all those involved in procurement have a working knowledge of the antitrust laws and understand how to identify violations, they can make a significant contribution to law enforcement.1/

This paper, prepared by the Justice Department's Antitrust Division, is designed primarily for procurement and contract specialists, and for investigative and audit personnel.2/ The text outlines the purposes of the antitrust laws, briefly describes what conduct violates the laws and what penalties may be imposed, and then focuses on how to detect price fixing and bid rigging. Steps that individual agency employees can take to seek out actual evidence of collusion are suggested, along with ways that agency procurements can be administered to stimulate competition and inhibit anticompetitive behavior. Finally, methods that can be implemented on an agency-wide basis to sensitize procurement and auditing employees to antitrust violations and encourage them to THINK ANTITRUST are suggested.

1/ Although these comments will be directed toward the purchasing process, they also apply to sales by the government of surplus items and other commodities on a competitive basis.

2/ This paper draws extensively from: "Government Purchasing and the Antitrust Laws", a joint publication of the National Association of Attorneys General and the National Association of State Purchasing Officials, May 1972; "A Treatise on State Antitrust Law and Enforcement: With Models and Forms", Robert R. Fellmeth and Thomas A. Papageorge, Antitrust & Trade Regulation Report Supplement 1 Issue No. 892, December 7, 1978; and Chapter 13 of the Department of Transportation's Operating Procedures Manual, "Antitrust Investigations," prepared by DOT's Office of Inspector General in consultation with the Justice Department's Antitrust Division, May, 1981.

II. ANTITRUST VIOLATIONS AND PUBLIC AGENCIES

The federal antitrust laws were enacted to preserve our system of free competition. They serve as our primary defense against unlawful attempts to limit competition and increase the purchase price of products and services.

As a major purchaser of goods and services, public agencies can be both prime targets for, and sensitive detectors of, antitrust violations. If you detect an antitrust violation, you can perform a triple public service: (1) you can end a practice that is costing your agency money and is costing consumers and taxpayers millions of dollars; (2) you can also bring monies to the treasury, since criminal penalties collected in antitrust enforcement go into the general treasury fund; and (3) you can help recoup the additional prices paid since the government may bring antitrust damage actions and actions under the False Claims Act.

III. FEDERAL ANTITRUST ENFORCEMENT

The Sherman Act (15 U.S.C. §1) prohibits any agreement among competitors to fix prices.3/ Criminal enforcement of the Sherman Act is the responsibility of the Antitrust Division of the United States Department of Justice. Violation of the act is a felony punishable by a fine of up to $1 million for corporations, and up to $100,000 or three years imprisonment (or both) for individuals. In addition to a criminal violation of the antitrust laws, collusion among competitors may also form the basis for violations of the federal mail fraud statute (18 U.S.C. §1341) and for making false statements to a government agency (18 U.S.C. §1001). Both of these are felony violations punishable by a fine and imprisonment of up to 5 years. Civil actions for injunctive relief, for actual damages under 15 U.S.C. §15a and for double damages under the False Claims Act (31 U.S.C. §231 et seq.), are also effective enforcement tools.

3/ The operative language of the act reads as follows:

> Section 1. Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. . . . Every person who shall make any contract or engage in any combination or conspiracy. . . .shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine not exceeding one million dollars if a corporation or, if any other person, one hundred thousand dollars or by imprisonment not exceeding three years, or by both. . . . [2 July 1890, chap. 647, sec. 1, 26 Stat. 209, as amended, 15 U.S.C.A. sec. 1 (supp. 1 1975)].

IV. BID RIGGING, PRICE FIXING, AND OTHER TYPES OF COLLUSION

Commencement of criminal prosecution under Section 1 of the Sherman Act, requires that the unlawful "contract, combination or conspiracy" have existed within the previous five years. The offense most likely to arise in a procurement context is commonly known as "price fixing" or "bid rigging", and also referred to as "collusion." An express agreement is not always necessary, and the offense can be established either by direct evidence (such as the testimony of a participant) or by circumstantial evidence (such as bid awards that establish a pattern of business being rotated among competitors).

Any agreement or informal arrangement among independent competitors by which prices or bids are fixed is per se unlawful. Where a per se violation is shown, defendants cannot offer any evidence to demonstrate the reasonableness or the necessity of the challenged conduct. Thus, competitors may not justify their conduct by arguing that price fixing was necessary to avoid cut-throat competition, or that price fixing actually stimulated competition, or that it resulted in more reasonable prices.

Price fixing among competitors can take many forms. For example, competitors may take turns being the low bidder on a series of contracts, or they may agree among themselves to adhere to published list prices. It is not necessary that all competitors charge exactly the same price for a given item; an agreement to raise present prices by a certain increment is enough to violate the law. Other examples of price fixing include: (1) agreements to establish or adhere to uniform price discounts; (2) agreements to eliminate discounts; (3) agreements to adopt a standard formula for the computation of selling prices; (4) agreements not to reduce prices without prior notificiation to others; (5) agreements to maintain specified discounts; (6) agreements to maintain predetermined price differentials between different quantities, types or sizes of products; and (7) agreements not to advertise prices. Usually, but not always, price fixing conspiracies include mechanisms for policing or enforcing adherence to the prices fixed.

V. TYPICAL ANTITRUST VIOLATIONS

The following section describes common bid rigging patterns that agency personnel may be able to recognize.

A. BID SUPPRESSION

In "bid suppression" or "bid limiting" schemes, one or several competitors (who would otherwise be expected to bid or who have previously bid) refrain from bidding or withdraw a previously submitted bid, so that a competitor's bid will be accepted. In addition, fabricated bid protests may be filed to deny an award to a non-conspirator.

B. COMPLEMENTARY BIDDING

"Complementary bidding" (also known as "protective" or "shadow" bidding) occurs when competitors submit token bids that are too high to be accepted (or if competitive in price, then on special terms that will not be acceptable). Such bids are not intended to secure the buyer's acceptance, but are merely designed to give the appearance of genuine bidding. This enables another competitor's bid to be accepted when the agency requires a minimum number of bidders.

C. BID ROTATION

In "bid rotation," all vendors participating in the scheme submit bids, but by agreement take turns being the low bidder. A strict bid rotation defies the law of chance and suggests collusion.

Competitors may also take turns on contracts according to the size of the contract. Many cases of bid rigging have been exposed in which certain vendors or contractors get contracts valued above a certain figure, while others get contracts worth less than that figure.

Subcontracting is another area for attention. If losing bidders or non-bidders frequently receive subcontracts from the successful low bidder, the subcontracts (or supply contracts) may be a reward for submitting a non-competitive bid or for not bidding at all.

D. MARKET DIVISION

Market division schemes are agreements to refrain from competing in a designated portion of the market. Competing firms may, for example, allocate specific customers or types of customers, so that one competitor will not bid (or will submit only a complementary bid) on contracts let by a certain class of potential customers. In return, his competitors will not bid on a class of customers allocated to him. For example, a vendor of office supplies may agree to bid only on contracts let by certain Federal agencies, and refuse to bid on contracts for military bases.

Allocating territories among competitors is also illegal. This is similar to the allocation-of-customers scheme, except that geographic areas are divided instead of customers.

VI. DETECTING BID RIGGING, PRICE FIXING, AND OTHER TYPES OF COLLUSION

Certain patterns of conduct suggest that illegal restraints on trade have been established. The following is a checklist of some factors, any one of which may indicate collusion. Agency personnel should therefore be sensitive to their occurrence.

A. CHECKLIST FOR POSSIBLE COLLUSION

1. Some bids are much higher than published price lists, previous bids by the same firms, or engineering cost estimates. (This could indicate complementary bids.)

2. Fewer competitors than normal submit bids. (This could indicate a deliberate plan to withhold bids.)

3. The same contractor has been the low bidder and has been awarded the contract on successive occasions over a period of time.

4. There is an inexplicably large dollar margin between the winning bid and all other bids.

5. There is an apparent pattern of low bids regularly recurring, such as corporation "X" always winning a bid in a certain geographical area for a particular service, or in a fixed rotation with other bidders.

6. A certain company appears to be bidding substantially higher on some bids than on other bids, with no logical cost differences to account for the difference.

7. A successful bidder repeatedly subcontracts work to companies that submitted higher bids on the same projects.

8. There are irregularities (e.g., identical calculation errors) in the physical appearance of the proposals, or in the method of their submission (e.g., use of identical forms or stationery), suggesting that competitors had copied, discussed, or planned one another's bids or proposals. If the bids are obtained by mail, there are similarities of postmark or post metering machine marks.

9. Two or more competitors file a "joint bid," even though at least one of the competitors could have bid on its own.

10. A bidder appears in person to present his bid and also submits the bid (or bond) of a competitor.

11. Competitors regularly socialize or appear to hold meetings, or otherwise get together in the vicinity of procurement offices shortly before bid filing deadlines.

12. Competitors meet as a group with procurement personnel to discuss or review terms of bid proposals. (This may facilitate subtle exchanges of pricing information.)

13. Competitors exchange any form of price information among themselves. (When this occurs among sellers in concentrated markets [markets with few sellers], it is suspicious. Note that such exchanges may take quite subtle forms, such as public discussions of the "right" price.)

14. There is industry-wide resale price maintenance.4/ (This could help manufacturers police collusion at the manufacturing level, since any reduction in the resale price, which is both easily observable and known to be controlled by the manufacturer, is readily detected by other manufacturers to account for the extra cost of the transportation expense.)

15. Competitors submit identical bids or frequently change prices at about the same time and to the same extent. (Regulations currently require submission of identical bid data to the Antitrust Division.)

16. Bidders that ship their product short distances to the buyer charge the same price as those that ship long distances. (This may indicate price fixing, since otherwise the distant sellers would probably charge more for a given item to account for the extra cost of the transportation expense.)

17. Local competitors are bidding higher prices for local delivery than for delivery to points farther away. (This may indicate rigged prices in the local market.)

18. Bid prices appear to drop whenever a new or infrequent bidder submits a bid.

B. SUSPICIOUS STATEMENTS

Sometimes, statements made by marketing representatives of suppliers suggest that price fixing is afoot. Examples of such statements, and other representations that are suspicious and may be indicative of price fixing, include:

a. Any reference to "association price schedules," "industry price schedules," "industry suggested prices," "industry-wide" or "market-wide" pricing.

b. Justification for the price or terms offered "because they follow industry (or industry leaders) pricing or terms," or "follow (a named competitor's) pricing or terms."

c. Any reference to "industry self-regulation," etc., such as justification for price or terms "because they conform to (or further) the industry's guidelines" or "standards."

d. Any references that the representative's company has been meeting with its competitors for whatever reason.

4/ i.e., each manufacturer sets the price at which all of his distributors, resellers etc. must sell the product to their customers.

e. Justification for price or terms "because our suppliers, etc., require it" or "because our competitors, etc., charge about the same," or "we all do it."

Statements by marketing representatives or in company promotional materials may also suggest the existence of agreements among competitors to divide territories or customers. (This is also known as market allocation.) Highly suspicious examples are:

a. Any references that the representative's company "does not sell in that area," or that "only a particular firm sells in that area," or "deals with that business."

b. Statements to the effect that such and such salesman (of a competitor) should not be making a particular proposal to you, or should not be calling on you.

c. Statements to the effect that it is a particular vendor's "turn" to receive a particular job or contract.

Consultations among purchasing agencies that procure the same services or commodities can reveal whether vendors are selling to some agencies but not to others, or if vendors appear to be limiting their selling to particular or selective units within a given agency. Such behavior suggests customer allocation.

C. CONDITIONS FAVORABLE TO COLLUSION

While price fixing can occur in almost any industry, it is most likely to occur in industries where only a few firms compete, and where the products of those firms are similar. The bread, milk, and steel industries are examples. Procurement officials should be sensitive to industry conditions that increase the probability of collusion. Thus:

1. Collusion is more likely to occur if there are few sellers. The fewer the sellers, the easier it is for them to get together and agree on prices. Collusion may also occur when the number of firms is fairly large, but there are a small group of major sellers and the rest are "fringe" sellers who control only a small fraction of the market.

2. The probability of collusion increases if the product cannot easily be substituted for another product. The gains from colluding will be high if the product has few, if any, good substitutes.

3. The more standardized a product is, the easier it is for competing firms to reach agreement on a common price structure. It is much harder to agree on such forms of competition such as quality or service.

D. COLLECTING RELEVANT INFORMATION

Certain information and types of documents are especially useful to agency investigators pursuing antitrust violations and to prosecutors at the Department of Justice. This list includes the documents and information that will be useful if a Justice Department investigation begins.

1. Information

(a) Indicate the agency's annual dollar value of purchases of the item in each of the three calendar or fiscal years (depending on how you keep the data) preceding the year in which you received the suspect bids.

(b) State whether the pattern of bidding in the three year period preceding the receipt of the suspect bids appears to indicate bid rigging, bid rotation, sharing of the business, collusive bidding, or any other form of joint action. Explain.5/

(c) If there are any known financial, personal, or other relationships among any of the suspect bidders, describe them.

5/ In order to detect bid rotations, accurate records of bid tabulations over a period of time are essential. It is most helpful if you computerize the following data for each contract let: (1) the identity of each firm that received an invitation to bid, (2) the identity of a firm that submitted a bid, along with the amount of the bid and the variance between the bid and the agency's estimate, if there is one, and (3) the identity of the winning bidder. A typical procurement action should appear on a computer printout as follows:

Project: _____ Date:

Estimate $100,000

	Co. Winner	Bid	Variance From Estimate
A.	Co.	$110,000	+ 10%
B.	Co.	$120,000	+ 20%
C.	Co.	$130,000	+ 30%

As this information is collected, "suspect projects" can be identified. You will be able to focus on the most promising projects, i.e., those where there are few bidders and the bids seem suspiciously high in relation to the estimate or prior bids. You will also be able to identify the companies that consistently bid on particular contracts and determine whether they are taking turns being the low bidder.

(d) Indicate whether the Government's specifications are such that only one or a limited number of potential bidders are capable of meeting them.

(e) If there are any known manufacturers or suppliers of the item who consistently avoid bidding on Government contracts, identify them and indicate whether the procurement agency knows why these firms do not seek Government business.

(f) Determine whether one bidder is uniformly low on bids to a particular awarding authority, on particular items, or in particular geographic areas. (If the pattern cannot be explained in economic terms, there may be an unlawful allocation of customers or territories.)

(g) Determine whether each bidder enjoyed a constant percentage of the total business over a period of years. (If so, there may be an unlawful division of total business.)

(h) Indicate whether or not the prices bid by the suspect bidders are identical to their published list prices. If the prices quoted by the suspect bidders are not their published list prices, state whether the bids appears to have been derived by the application of a uniform "Government discount" from list prices, or by some other method of computation. If available, furnish photostatic copies of suspect bidders' and other bidders' standard price lists.

(i) Indicate whether there appears to be a territorial division by competitors. One way to do this is to assign each competitor a different color. Then, using a map of the purchasing area, appropriately colored pins (or tabs) can be inserted for each location where a contract is awarded. If clusters of the same color are found throughout the area, there may be an illegal allocation of territories.

2. Documents

(a) A copy of the invitation for bids, and any amendments thereto, and a list of all parties invited to bid.

(b) An abstract of all bids received for each item covered by the bid invitation, showing for each such bid:

(1) The unit and total price bid.

(2) The net price to the Government after discounts and allowances for transportation, or other costs.

(3) The destination of shipments, and whether the price quoted includes or excludes the cost of transportation to destination.

(4) The identity of the successful bidder; where identical low bids were submitted by several bidders, indicate how the award was made.

(c) Copies of documents filed by suspect bidders as part of the bid submission or obtained by the procuring agency, such as the following:

(1) Evidence of financial or other ties between suspect bidders (as revealed by Dun and Bradstreet or other reliable financial reports).

(2) Copies of reports containing the findings of any special investigations conducted by the procurement agency concerning the bids at issue including inquiries related to any bid protests.

(3) Copies of all correspondence between the procurement agency and the suspect bidders.

(4) Copies of any certificates of independent price determination or non-collusion submitted by the bidders.6/

(d) You should save the original bids, envelopes, and affidavits of non-collusion for all bidders. In addition, you should save the log recording government mailings to the bidders, including notice of awards, checks and notices to proceed.7/ These will be important as evidence in the event any action is taken.

VII. ENCOURAGING COMPETITION

Procurement officers can assist in the enforcement of the antitrust laws not only by playing an active role in the detection of collusive bidding, but also by taking positive steps to stimulate competition and prevent collusive behavior. This section discusses some of the procedures that can be established to discourage anticompetitive activity.

6/ Such documents are needed to determine if any additional federal crime of making false statements to the government under 18 U.S.C. § 1001 has been committed.

7/ This documentation will determine whether the federal crime of mail fraud (18 U.S.C. §1341) was committed.

A. EXPAND LIST OF BIDDERS

It is much more difficult for a large group of competitors to collude than for a small group. To reduce the ability of conspirators to coordinate illegal activities, buyers should solicit as many reliable sources as economically possible. As the number of bidders increases, the probability of successful collusive bidding decreases. Soliciting numerous suppliers will not necessarily prevent a conspiracy, but it can reduce the effectiveness of a conspiracy by providing a larger competitive base. While there is no magic number of bidders above which collusion does not occur, past experience suggests that collusion is more likely to arise where there are ten or fewer competitors.

B. CONSOLIDATE PURCHASES

Another defensive tactic available to agencies is to combine orders. The existence of a large number of contract opportunities facilitates collusion among sellers. When buyers are numerous, and each purchases only a small amount, sellers have less incentive to grant price cuts. Consolidation of purchases tends to increase the value of winning the bid. A firm, even if part of a conspiracy, may be tempted to cheat and take the prize.

C. AWARDING TIE BIDS

Not all identical bids are the result of a price fixing conspiracy. However, procurement officers should not inadvertently encourage tie bids by assuring identical bidders an equal or reasonable share of the buyer's business. From a seller's standpoint it may be better to share business equally with other suppliers at significantly higher prices than to have an uncertain share of the business at lower competitive prices. Thus, in a tie bid situation, agencies should consider reletting the contract, or some way to award the bid to one of the tied bidders. A lottery system of awarding contracts should not be used.

D. KEEP THE PROCESS SECRET

You should consider not publically disclosing the identity of proposal holders or bidders. This will help prevent competitors from knowing who to contact. You should also consider not publically disclosing the government's estimate so that bidders do not have an incentive to use that estimate as the floor for their bids.

VIII. SOME OVERALL STEPS AN AGENCY CAN TAKE TO DETECT AND DETER COLLUSION

Federal agencies have a tremendous stake in detecting and deterring price fixing. In fiscal 1981, federal procurement

amounted to over $134 billion. Without doubt, some contracts are the subjects of collusion like bid rigging. It is up to procurement personnel to understand the applicable law, to limit opportunities for collusion and to seek out evidence of violations for prosecution. If the vendor community realizes that your agency means business in antitrust enforcement, the dollars saved can be spent on more worthwhile projects.

This section summarizes programs that an agency should consider adopting as a matter of policy:

1. Assure that procurement and contract personnel, auditors and investigators understand the elements of collusion, such as bid rigging and market allocation. Provide instruction on how to detect collusion, etc. Stress the importance (to the agency and to the taxpayer) of preventing and detecting collusion. In short, THINK ANTITRUST.

2. Have procurement records, e.g., bid lists, abstracts, awards, readily available. Looking at a single contract is not enough because records of past bids are needed to determine if a pattern of allocation or rotation is present. Data collection forms should be employed, with the raw information subsequently compiled and, where feasible, programmed for storage in a computer.8/ This makes routine analysis simple and keeps you aware of patterns. It may also be prudent to advise the bidders that you conduct this type of analysis periodically.

3. Reports of suspected collusion (based upon a bid analysis, an audit, a complaint from other competitors, or statements by persons who appear knowledgeable, e.g., former employees) should be communicated within the agency and to the Antitrust Division along established, readily available channels. If other federal violations also appear to be present, e.g., false statement (18 U.S.C. §1001); mail fraud (18 U.S.C §1314) or conspiracy to defraud (18 U.S.C. §371), these offenses can also be prosecuted by the Antitrust Division if it is related to the types of collusion described here. If it does not, the Antitrust Division will refer it to an appropriate U.S. Attorney. If the Antitrust Division is contacted promptly, a determination can be made whether:

(a) additional facts are needed;9/

(b) a formal Antitrust Division investigation should be commenced. If so, an appropriate Antitrust Division section or field office will be assigned

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8/ Attached is a data collection form that was designed for use within DOT.

9/ A suggested interview format, recently produced and used by DOT, is attached. The format can be modified to meet the needs of a particular agency in specific investigations.

to work with the agency and its investigators to develop the case; or

(c) the allegation does not suggest an antitrust violation. If other federal violations appear to be present, the agency will be advised to contact an appropriate U.S. Attorney or the Criminal Division within the Department of Justice.

4. Encourage informal communication between agency personnel (e.g., procurement, audit, investigative and legal staff) and Antitrust Division personnel whenever a potential bid rigging situation is encountered.

5. The agency should consider rewarding agency employees responsible for detecting and developing information that may result in antitrust or fraud prosecutions.

IX. CONCLUSION

This paper is meant only as a beginning point. The Antitrust Division looks forward to working together with you to make antitrust enforcement a fundamental feature of your procurement activities. We warmly welcome your support. We solicit readers' views on this paper, and hope to incorporate suggestions in future revisions. Please contact Peter H. Goldberg with your comments and inquiries or if you have any evidence of a violation. He can be reached on FTS 633-2776 at the Antitrust Division, Department of Justice, Washington, D.C. 20530. An alternate contact is John W. Poole, Jr., Chief, Special Litigation Section on FTS 633-2425.

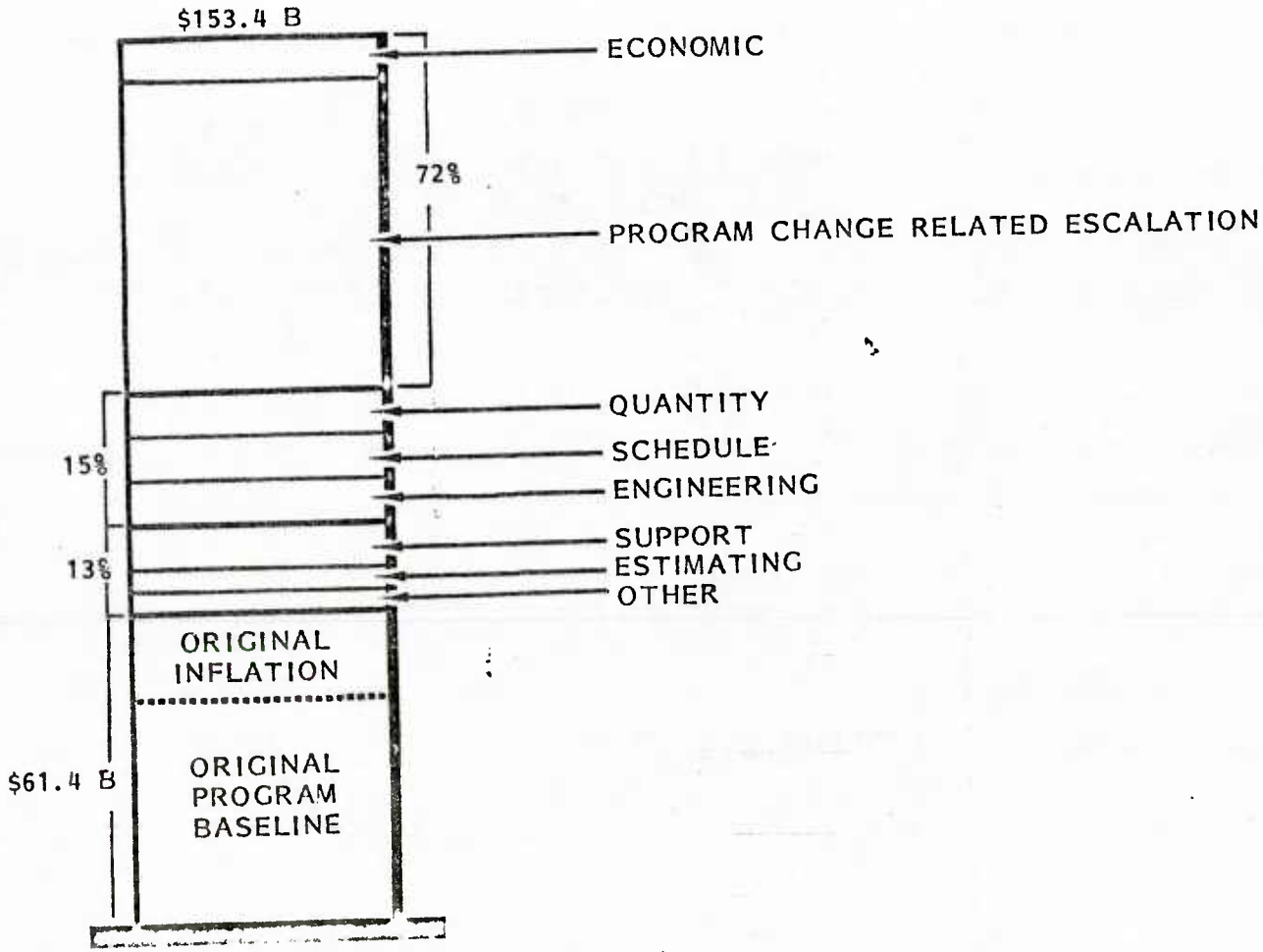
Lt Gen H. Driessnack

Assistant Vice Chief of Staff, HQ United States Air Force

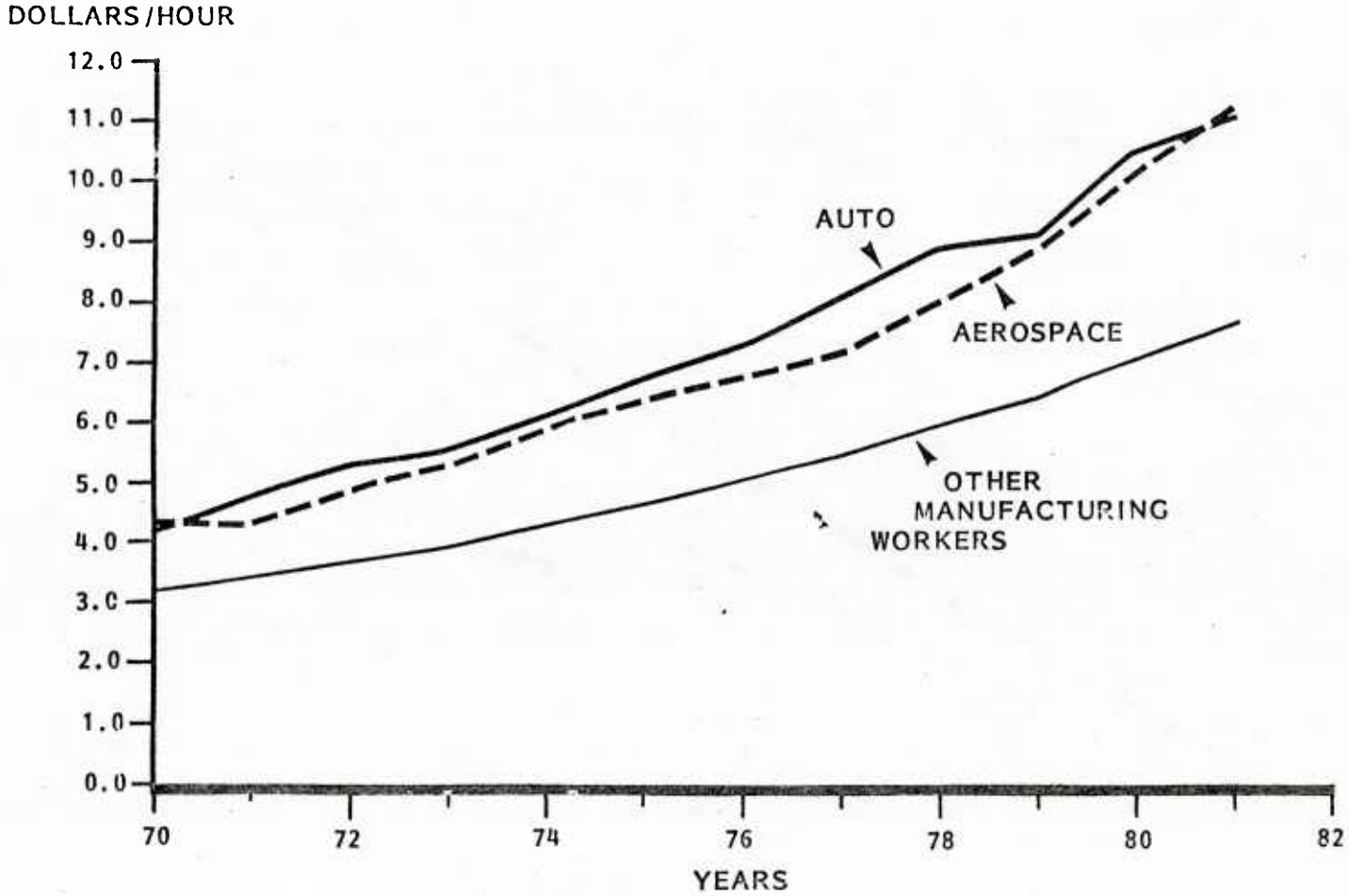
IMPLEMENTATION

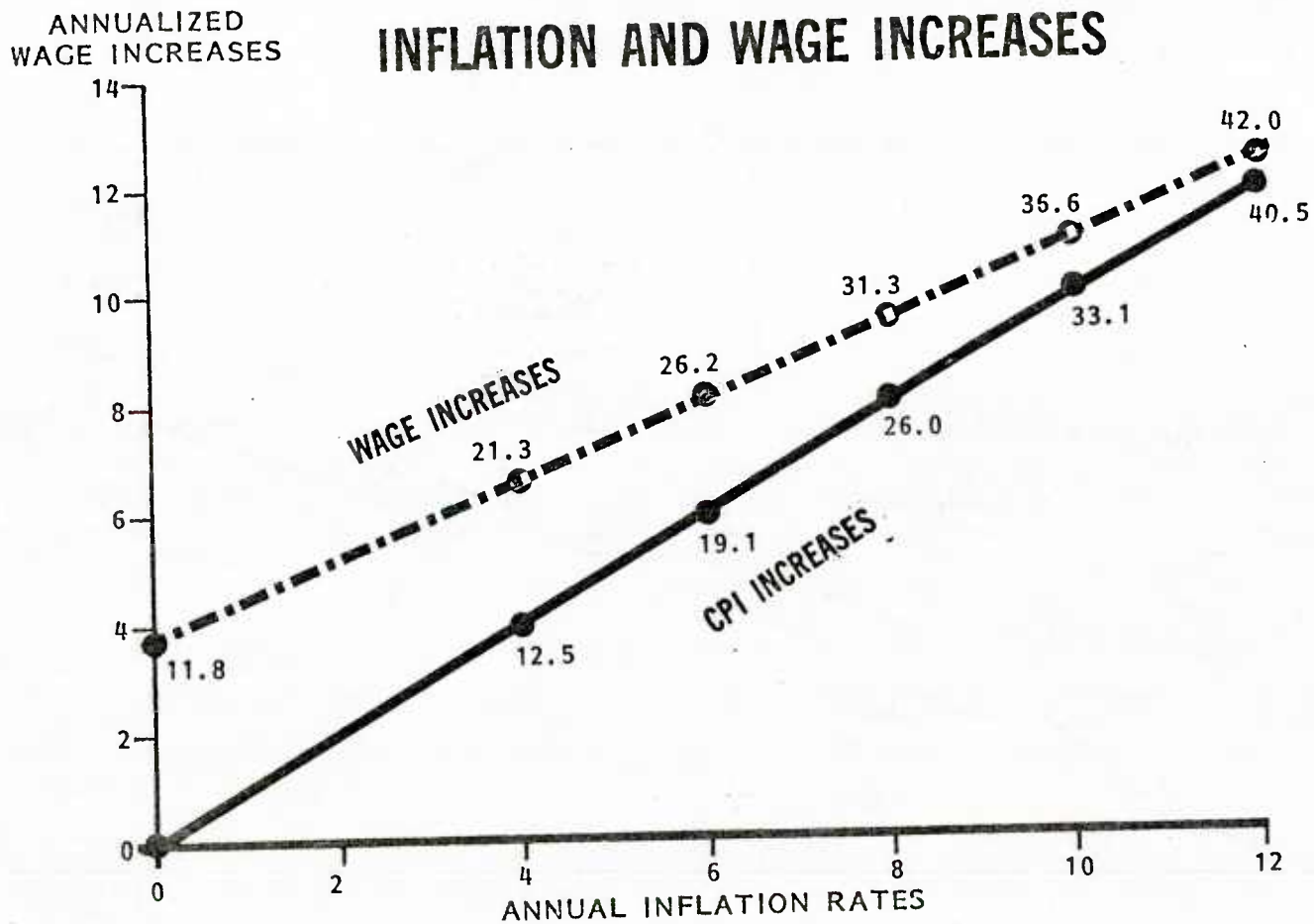
- DIRECTED PROGRAM CHANGES
  - OSD
  - CONGRESSIONAL (MX, AIRLIFT ISSUES)
- CONTRACTS
  - SINGLE YEAR vs MULTI-YEAR
  - EPA ADJUSTMENT
- ESTIMATING
- PROGRAM COST GROWTH
  - LABOR CONTRACTS
  - INDUSTRY OVERHEAD

VARIANCE ANALYSIS
(AIR FORCE SYSTEMS)



INDUSTRY LABOR RATES




INFLATION AND WAGE INCREASES
ANNUALIZED WAGE INCREASES
14
12
10
8
6
4
2
0
WAGE INCREASES
CPI INCREASES
11.8
21.3
26.2
31.3
35.6
42.0
12.5
19.1
26.0
33.1
40.5
0
2
4
6
8
10
12
ANNUAL INFLATION RATES

WAGE COMPARISONS

CONTRACTOR	AVERAGE WAGE	INDUSTRY AVERAGE	AREA AVERAGE	K-TYPE C% / F%	
A	11.92	11.48	8.45	20	80
B	11.17	11.48	8.45	0	100
C	11.91	11.48	8.45	19	81
D	12.01	11.48	10.93	15	85
E	11.02	11.48	NA	2	98
F	10.08	11.48	8.05	2	98
G	11.55	11.48	9.23	33	67

RATES FOR PRODUCTION WORKERS IN MANUFACTURING

Mr. John Kennedy

Professor of Marketing, University of Notre Dame

PRICING INCENTIVES

PAPER PREPARED

FOR PRESENTATION

AT AIR FORCE CONTRACT

PRICING CONFERENCE

JULY 11, 1982

DEFENSE SYSTEMS MANAGEMENT COLLEGE

FORT BELVOIR, VIRGINIA

BY

PROFESSOR JOHN J. KENNEDY

SCHOOL OF BUSINESS

UNIVERSITY OF NOTRE DAME

NOTRE DAME, INDIANA

THE PRICING OF INCENTIVES

Macnamara told President Kennedy that he would reduce the Department of Defense budget by 10 percent by using incentive contracts. As a result, in the 60's incentives became the way of life. But incentives were not new. Incentives were used during World War I under the name of "Bonus for Savings" and extensively in World War II under the name of "Target Price Contracts".(1) In the post war period, the incentive was used for large production contracts primarily as a form C redeterminable. What wetted Macnamara's appetite was the purported effects of implementing incentives.(2) These included:

1. There would be better estimates of cost and schedule.

2. The belief that there would be a requirement for the government to develop its own estimates for the targets.

3. The belief that the budgetary system would work more effectively.

4. The assumption that the pricing of change orders would be more realistic.

5. The belief that contractor efficiency would be improved.

6. A disillusionment with liquidated damages as a tool to obtain sound costs and schedules.

7. A hope that the incentive would reduce the amount of contractor surveillance.

8. A desire to motivate contactors to improve the quality of their performance. Yet, prior to 1959, special permission was required to use an incentive contract. Under title 10 of the U.S. code it had to be determined that such a contract was likely to be less costly than other types and also that it was unlikely to secure the necessary services without the use of such a contract.

Cost type contracts increased from 12.7% in 1952 to 40.9% in 1959. In the Army contract chart of 1957, several problems and/or requirements for the use of incentives were noted. These are of particular interest: 1) Incentives require complicated accounting systems, 2) they increase the cost of administration, 3) the government assumes part of the risk, 4) it is difficult to establish targets, and 5) they require experienced and honest contractors. Karl Vinson was so adament in his distrust of incentives that he devoted several years of his life attempting to get rid of them. Macnamara prevailed and the era of the incentive ensued.

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(1) In a 1943 article, Glenn Loyd discussed the advantages and disadvantages. Among the disadvantages were inflated targets.

(2) Incentive Contracting In The Aerospace Industry; Kennedy, Nolan Bass, C.M.I., 1966.

The last twenty years have seen the wide adoption of a variety of incentive contacts. Along with the adaptation has been a rather regular review and analysis by the procurem schools and the think tanks. The purpose of my research was to synthesize, if possible, the research to date and to take a fresh look at what has happened, to compare it with the original intent, and to recommend on the appropriations of their use. As a result of two and one-half years of research, it is now possible to ascertain some of the possible problems and perhaps their sources.

In the time frame available for this paper it is not feasible to touch on the entire scope of the research.(3) Rather, the intent is to select pertinent findings that impinge on the pricing function. Hopefully, even if we cannot provide conclusive answers we can perhaps give some insights that can lead to new and fresh approaches to the issues. What then can be said about pricing of incentives? And of this, what can we generalize about concerning the pricing function? In pursuit of that question let us address several areas:

1. The nature of the pricing function as seen through the eyes of an industrial concern, II. The findings of the research as they relate to these queries, and III. Implications.

I. PRICING FROM THE INDUSTRIAL PERSPECTIVE

From a company's point of view the pricing decision has at least four elements: 1) The estimation of the costs, 2) the evaluation of the competitive environment to determine pricing flexibility (how high can we go?), 3) The application of company policy, and 4) The determination of the goals.

The determination of the probable costs vary from easy to nearly impossible depending on the uncertainties. The uncertainties are influenced strongly by the specification or lack thereof, the length of the development cycle--if there is one, the stage of technology involved, the potential changes, the projected capacity and the like. For example, the average indirect costs including subcontractors as reported by one study was in excess of fifty-five percent. What are the implications on an incentive? Obviously great. Also there is the query whether efficient producers are in fact tempted to estimate costs low and inefficient producers high. The commercial government mix, as well as the contract mix, will all play a role.

FLEXIBILITY. After costs are addressed, the stage is set for an examination of the flexibility of the competitive environment. Ideally, companies desire to have differentiated products with unique market segments so that they can achieve pricing flexibility. They prefer to price on the basis of value-in-use, rather than on the basis of cost. Much of marketing expenditures in the commercial world of consumer goods is directed toward convincing the buyer of the uniqueness of the company's brand and hence the reasonableness of the price. A manufacturer does not seek intentionally highly competitive markets with homogeneous products where the price is determined by competition. Thus, pricing flexibility determines the upper range of the potential price...the costs determine the lower range.

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(3) Appendix A lists the original hypothesis.

In the world of missiles and jets the task of assessing costs is most difficult due to the technological uncertainties of how to make the item, the customer induced uncertainties of what the item is to be and to do... Plus the additional burdens of indirect costs and external economic influences. An obvious over-simplification but to the heart of the matter. The determinants of pricing flexibility in the weapons business is often determined by factors such as the amount of money in the budget, the type of contract, the stage of the procurement process, historic purchasing data (what was charged last time), what the competitor is charging, legislative considerations, and rules of thumb for a contract type or an industry (ten percent for fixed price for example). The dominant influence seems to be the amount that the contracting officer indicates is available.

GOALS. What about the impact of goals? What is the company strategy? Do we want market dominance? Are we willing to buy in to obtain a major market share on the premise that market share is the primary determinant of profit flexibility. Perhaps short-run profit or maybe return on investments! In the current economic climate if might well be cash flow. Other goals could equally be considered such as prestige, technical reputaton or follow-on busines.(4) The goals selected will strongly influence the price strategy. Too often short-run profit is assumed to be the only possible goal. The early incentive literature stressed that the primary goal of industry is to make a profit, and much of the early guidance relative to the writing and negotiation of incentives assumed that the short-run goal was profit. It is likely that this orientation was invalid.

POLICY. The last phase of the corporate pricing cycle is the application of company policies. Over what time period do we want to recover capital investments? Over what period do we want to recover research and development? What is our philosophy on cost type as opposed to fixed price contracts? Some companies insist that cost type contracts lead to an inefficient work environment. Some few contractors insist that they would take any kind of business fixed price rather than deal with the problems of the cost type contract environment. How valid are these positions? Almost every company studied had policies of this nature that influenced the pricing decision.

Whithin this context the research addressed the queries raised above. The hypothesis and the preliminary findings are listed in Appendix A. Those that might be of major concern have been isolated for discussion in this paper and are addressed below.

II. SELECTED FINDINGS

CONTRACTOR MOTIVATIONS

Too often the pricing function overemphasizes profit and ignores the other contractor motivations. Both the literature and this research project clearly demonstrate that contractor motivation is complex. Particular motivations include prestige, follow on contracts, reputation, market share or dominance, to finance research and development and/or the excitement of high technology work as important if not prime motivators of behavior. Clearly, one cannot explain contractor behavior with short-run profit.

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(4) See work for example by Hunt, Hill, Cross, and others.

Contractors have not attempted to optimize profits under incentive arrangements. Why is it not so obvious. But it appears that the extra profit offered by the incentives is not adequate to offset other rewards associated with the increased expenditures of dollars. This is addressed again under the sections on share and fee levels. Contractor motivation probably varies with such variables as nature of ownership, size of company, company life cycle (age), product mix, and customers.

THE CONTRACT TYPE IS NOT THE DETERMINATE VARIABLE IN CONTRACTOR BEHAVIOR.

Extra-contractual factors seem to dominate in determining behavior.(5) The contract type does not. For example, in discussions with chief executives it became obvious that major corporate decisions were made on some other basis than the contract type. Often top management is unaware of the particular contract type, and certainly the particular characteristics of complex incentives are generally either not known to management as a rule, or if known, rarely understood. Where the contract type plays a significant role appears to be at the initial negotiations. That is in pre-contract award behavior. The point to be made here is one of emphasis--too often those in contracts over-emphasize the importance of the contract type rather than the elements often outside the contact, i.e., the extra-contractual factors. The hypothesis that highly complex multiple incentives can be and are managed internally within the contractor organization, for example, appears fallacious.

BUYING-IN IS WIDELY PRACTICED

Buying-in still remains a viable strategy. Again it reflects the complex nature of contractor motivation. Perhaps the desire to dominate a market, or the promise of increased technical knowledge, or the promise or follow-on business is adequate to offset the cost of the buy-in. Dollars seem to be the criteria of measurement in comparing decisions, but that is far different than saying dollars are the goal. Buy-ins and/or the equivalent and involuntary cost sharing in early development competitions seriously impacts the validity of the proposed targets and the goals of the contractors. In many, if not most situations the goal seems to be risk adversion(6) (i.e., to minimize the risk to attain reasonable returns in the short run, and to assure long-run survival.)

COMPLEX MULTIPLE INCENTIVES

There is a growing consensus that complex multiple incentives are simply not operable. They are difficult to design and almost impossible to implement and administer. Contractors do not attempt to optimize as implied in theory. Similarly, there does not seem to be any evidence that contractors organize to implement the implied tradeoffs. For numerous reasons, contractors lose the handle on the variables and then tend to concentrate on avoiding disaster. On the positive side, technical parameters are uesd internally to manage the engineers and technicians, and the financial people use the cost targets to alert management to expenditure ceilings. But the sophisticated attempt to optimize through tradeoffs does not seem to be functioning.

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(5) See original NASA Guide. Also work by LMI. See Cornell's papers.

(6) See papers by Hunt and McKean.

Multiple incentives also are prime areas of misunderstandings. It is not uncommon to find multiple contracts which in fact are quite different than the parties had anticipated. Multiple incentives are often misunderstood by both parties to the contract.

INADEQUATE FEE POOLS

Incentives to be meaningful have to be adequate to offset conflicting goals. The opportunity to spend another ten dollars on development might outweigh the opportunity to earn another one or two dollars fee through the incentive. Fee pools and related fee levels have been determined primarily by custom and precedent. For example, ten percent for fixed price and eight percent for CPIF are common. Rather than use substantial fees to motivate contractors, the government system informally rewards contracting officers who keep fees down. Woe to the contracting officer who is the negotiator of a substantially underrun contract. The implied message is that the contractor is a crook and the government contracting officer incompetent. When low fees are combined with the multiple goals noted earlier, serious doubts are raised about the possible impact that incentive contracts have on costs. The deep rooted need to survive in the long run negates incentives directed to short-run profit maximization.(7)

SHORT RUN DECISIONS ARE PRIMARILY INFLUENCED BY LONG RANGE COMMITMENTS

Managers are evaluated in the immediate time frame. Cash flow currently is an important criteria. Budgets are established for periods up to eighteen months and there is a strong tendency to spend to the budget level. If you do not spend the money, you have to give it back, and in addition, there is a likelihood that in the future the amount you request will be discounted. If you overspend you are penalized--if you underspend you are penalized. Thus, the drive toward targets. Companies do not overrun their budgets. They overrun the government's initial estimates. This might be an important factor explaining why most contracts end up near target.

OTHER THINGS BEING EQUAL CONTRACTORS ARE MOTIVATED TO GET AS MANY DOLLARS AS POSSIBLE

It is misleading to arbitrarily differentiate between cost and profit dollars. The goal might be to maximize dollars--not maximize profits. A company can often accomplish its goals through cost incurrence rather than reduction. Often there is a keen felt motivation to do so. It is far easier to meet cash needs through cost incurrence than through profit. Profits have to be funnelled through taxes and dividends. With rates of fifty percent for taxes and if the dividend payout is fifty percent, then you have to earn four dollars to get one through the profit route. It is far more efficient to go the cost route. When you view the fees available through incentives in this light, the decision to forego the incentive fee for cost incurrence becomes a little easier to understand.

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(7) An interesting paper on this subject is the dissertation of Colonel Troy Jones, or the work of Fisher of Rand.

RISK MINIMIZATION AS THE MAIN GOAL OF NEGOTIATION

Hunt, on commenting on this area, observed that contractors are risk adverters an profit satisfiers. Similar conclusions have been drawn by other scholars. This is confirmed in this study particularly when looking at the negotiation process. A prime driver seems to be the desire to minimize risk. This could explain many of the apparent discrepancies in corporate behavior. Why don't contractors optimize incentive contracts? This is, of course, no single answer. But a significant factor might be that there was really no intention to do so. The system drives the contractor to minimize the risks inherent in the process through the establishing of cost targets as high as possible. If not targets, then certainly break points, minimums and ceilings. If this is assumed and the contract outcomes viewed in this context, the behavior becomes more understandable. It is not even suggested that this is a conscious intent of the contractor. But rather it is the result of the pressures and influ-ences on the myriad of parties involved. Again it looks like contractors optimize costs, not profits.

THE CONTRACT AS A CONSTRAINT DOCUMENT

Two opposing philosophies are on stage (at least two). The most prevalent seems to be that suggested by the terms of adversaries, hands-length dealings, and truth in negotiation clauses. The opposite is that of a team...sort of like the often abused military-industrial complex. The one suggests a contractual instrument to guard against abuse, to assure constraints, to check and counter-check to assure that abuses are minimized. The other suggests a sense of mutual respect and an assumption of an ethical and honest majority with sufficient professional self-respect to assure reasonableness. Whether dishonest behavior is rampant--or isolated incidents--is an important question. Whether dishonesty--or unethical practice is in fact fostered by the unreasonableness of the auditing requirement--is another. At the heart of the matter is whether the contract should be an enabling document with maximum flexibility to allow the parties to solve the problems as they confront them or must it be a constraining document binding the hands of the parties in the conviction that contractors are somehow inately dishonest.

DELEGATION OF THE INCENTIVE

The elements of the incentive are rarely passed on to the balance of the organization. The controller and the financial team use the targets as leverage for control of costs. The technical side of the house welcomes the performance parameters to use as bogeys within the research and development sphere of the company. On the other hand, the manufacturing personnel are rarely cognizant of the contract type and its implications. Generally, the implied intent to set up some organizational system to implement an incentive is not in evidence. Again, the dominant influence on costs are the budgets previously established. Technical goals receive maximum priority regardless of the incentive structure. Schedules are slipped before technical parameters. Time and dollars are also much more discrete and measurable than performance parameters. Trade-offs are difficult.(8)

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(8) I have seen few instances in my study or in the existing literature where companies were organized to implement incentives.

INCENTIVE CONTRACTS ARE OFTEN INCONSISTENT WITH THE INFORMATION SYSTEMS OF THE COMPANY

Too often incentive contracts require information that is not available in the information system of the company. Costs are forced to be gathered in a fashion that is meaningless. Too many assumptions have to be made to develop estimates. Technical and cost data simply might not be available in the format required by the contract. Yet if they are required they are provided, and their value is obviously severely restricted.

FEE LEVELS AND SLOPES

There does not appear to be a significant correlation between fee levels, slopes and cost outcomes.(9) This suggests that other factors are drivers in the contractor behavior. Some of these were suggested earlier. A key question would be, what would happen if fee levels and/or slopes were significantly increased?

THE PRESSURES TO FINISH AT TARGET

The responses from industry suggest that most contracts end near target.(10) The goal is to minimize risk at the outset. Then the drive is to achieve technical maximization within the dollars alloated and the time frame. Both the government and the contractor are driven not to underrun substantially. If the contractor underruns then he is suspected of having submitted excessive targets and he is penalized in subsequent procurements. The government negotiator is criticized for allowing the contractor to pull the wool over his eyes. Neither party cares to repeat the experience. This particular issue was discussed across the United States in various NCMA meetings. The general tenor of the discussions suggested that the scenario has some validity. If in fact incentives end up near target, they would have accomplished the original intent as envisioned in 1961. That is to reduce overruns. The vital concern would then be--are the targets inflated? Do contractors minimize risks through the negotiation of high targets and then come in at that specified level?

ORGANIZATIONAL MEMORIES

During the study several contracts were tracked from ground zero. The cooperating companies allowed free access to the routine day-to-day operations of the plants. Given, the sample is very small, but the insights gained might still provide clues for further study. It is important to note that long standing friendships assisted in reducing the normal halo effect supplied an outsider.

The firehouse metaphor is reasonably accurate. Businesses can often be viewed as a bunch of firemen running around putting out fires. Crisis follows crisis. An exaggeration to be sure, but not far off the mark.

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(9) See work by authors such as Jones, Redden, Fisher, Shaner, etc.

(10) See work by Jones, Fisher, Belden, Parker, and Dixon.

In the last two years one of the companies has gone through so many organizational changes that it is virtually impossible to track the cost histories of the products. There have been three different accounting systems--and there still are valid questions about how much anything costs. The third Vice President of Finance moved his office only last week. I am the only one there who knows anything about the incentive contract's original intent and structure. There are constant battles on what overhead is appropriate for the different divisions. The division managers are always battling for more favorable rates. In short, there has been no stability in the organization. This was due to its success and the resultant rapid growth. There is constant disagreement internally between the controller and the head of Accounting on the validity of costs and how to price. Rarely is there any agreement over what a price should be. At any time it seems that the range could be plus or minus twenty percent depending on the assumptions. The principle driver has been the amount of money the government has and the estimate of the price necessary to get in the game. They are not trying to optimize profits. They are trying to stay in business and accept the fee levels necessary to win competitions.

PENALTY INCENTIVES

Given the evidence suggested in the study, penalties might be more effective than rewards as motivators. If, in fact, contractors extra-contractual factors often outweigh the fee available for rewards--that is, if the incentive rewards are not adequate to sway contractor behavior, then perhaps penalties could be used to assure particular behavior is avoided. This particular area requires further study.

GOVERNMENT ADMINISTRATIVE PRACTICES

There is widespread belief that the administrative process of the government all but eliminates any incentive opportunities designed into the contract. One possibility is that the government is in fact fostering unethical practice by creating an atmosphere of distrust. Beyond the scope of this paper, but germane to the study, are the questions relating to disengagement. Can the marketplace work? Does D.O.D. really need all the date requested? Who reads it? Can anybody really analyze a billion dollar program? Are we going to have specialists in the government capable of second-guessing highly skilled specialists in industry? Do we need a new form of industry/government cooperation similar to those of Japan?

III. IMPLICATIONS OF RESEARCH

ARE WE USING INCENTIVE CONTRACTS INAPPROPRIATELY

TOO COMPLEX. Companies cannot implement them, the government has difficulty administering them, and often neither party really comprehends the precise nature of the agreement. To work, incentive contracts should reflect simplicity.

IGNORING EXTRA-CONTRACTUAL INFLUENCES

There is little likelihood that a company operating at 40% capacity will choose to underrun a contract substantially to obtain an increased fee of perhaps three percent when they can contribute more to profit by overrunning.

There is little likelihood that a company will underrun a contract for development when it is clear that the follow-on production contract will be awarded primarily on performance parameters. The company will be encouraged to spend as much as possible on achieving technical superiority--some situations clearly are inappropriate for the use of incentives. Incentives have to be large enough to offset the built-in drive to maximize dollars.

DOES THE GOVERNMENT IMPOSE ARBITRARILY THE CONTRACT TYPE REGARDLESS OF THE SITUATION?

The government often chooses (for convenience apparently) to define the appropriate contract type for a procurement. The result is that the contractor might have to respond in a mode that is inappropriate to his organization. For example, the contract might require or impose technical monitoring that is incongruent to how his firm is organized, financial data might be required in a format that is not available, or more significant, it might request a cost contract when, in fact, the company would prefer a fixed price contract. Some companies are not organized to handle incentive contracts.

DOES THE ADMINISTRATION OF THE INCENTIVE NEGATE THE POTENTIAL OF THE CONTRACT?

In the pilot studies, the administrative burden of reports, data, and documentation of various kinds hampered the effectiveness of the incentive. For a reward to be an effective motivator, it should be direct and timely.(11) Part of the problem with the classical incentive is that neither of these criteria are met. By the time the government finishes its reviews and audits, the contractor may or may not receive it's reward--and the amount of the reward is never clear. In one of the cases studied there is still a battle going on between the contracting officer and the audit group over what the appropriate costs should be. The items were delivered over fifteen months ago.

DOES THE GOVERNMENT SYSTEM PENALIZE THE CONTRACTING OFFICER IF ONE OF HIS CONTRACTS SIGNIFICANTLY UNDERRUNS?

There is a general query as to whether the procurement system might, in fact, be creating or fostering the very behavior it seeks to eliminate. This particular issue regarding the incentive that works resulting in the contracting officer being suspected of incompetency is one example. The concern is real if one is to rely on the comments received from hundreds of contracting personnel in NCMA meetings across the country. The contractor does not want to underrun substantially because of the loss of creditability in his estimates and the impact it could have on future negotiations. The government contracting officer fears a major underrun because it reflects on his negotiation and estimating skill. He was really "had". Everybody is happy if targets are attained. In this atmosphere there is a natural pressure to get the targets as high as possible.

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(11) See particularly the provocative through the studies of Dr. Ray Hunt.

WHAT ARE THE GOALS OF THE INCENTIVE?

One of the issues that arose in the research was the reasonable basis to evaluate the effectiveness of incentives. Is the intent to merely eliminate overruns? Is it to harness the profit motive as stipulated in the original guide? In fact, the goals as envisioned in the late fifties and early sixties were much broader than imlied by these statements. As noted earlier, they included some eight objectives. Improved performance, better specification, an improved government estimating capability, an improved communicaion between industry and the government, and reduced government surveillance are examples. The general thrust was cost control and assured performance. Times have changed. Many of the alleged weaknesses in the government and industry procurement skills and capabilities have been addressed. In some instances, the pendulum has swung too far. The role of the contract--any contract has to be reconsidered.

DOES THE GOVERNMENT ENCOURAGE OR FOSTER UNETHICAL PRACTICES BY CREATING AN ATMOSPHERE OF DISTRUST?

The behavorists tell us that behavior is a function of expectation and rewards. Does the government approach the contractor interface primarily in an attitude of distrust? Is the fundamental assumption that companies are dishonest? If auditors are to audit isn't it necessary to find something? Can an auditor go home completely empty? Does this suggest to the contractor that he should put something in for the auditor to find so that he can fulfill his function? Taking this to the extreme might suggest that there is a lot more gamesmanship than is generally admitted.

BUY-INS AND OVERRUNS

Are there built-in factors that drive overruns? Is the mutual buy-in very common? Does the program office and the contractor form an industrial military team to present a common front to assure program success. Can we expect individuals whose careers are tied to programs to act in something other than their own self interest? Are not overruns a function primarily of competitive pressurs at the outset of a program to assure award and then increased program scope once a program nitch is assured in the budget and the organizational structure? Given the pressure of the competitive buy-in, the impact of the incentive is diluted.

IS THE ACQUISITION PROCESS TOO CUMBERSOME?

At the worst, the mechanism of the acquisition system probably destroys any valid motivation inherent in the incentive approach, and weakens it's potential at best. The common wisdom, as reflected in conversations with industry and government personnel, is that indeed the system is too complex. For example, who really understands the entire scope of the regulatory framework? Are companies sufficiently sophisticated to use highly complex information and tracking systems? Can complex incentives really be managed? The response to these questions is almost a universal negative reaction against the cumbersome apparatus that has evolved. It is precisely this unwieldy administrative process that undermines motivational approaches.

HOW DO THE TRADITIONAL MOTIVATORS VARY BY INDUSTRY AND COMPANY LIFE CYCLE?

Short-run profit does not explain corporate behavior. A model relating motivators to products, company life cycle, commercial and government product mix needs to be developed. Market share, follow-on business, long-run survival, technical superiority, in addition to profit, help. Explain what companies do and why. Profit should probably be viewed as a necessary long- and short-run reward. But companies are composed of people--and all people do not work for profits. They are working for such goals as salaries (most of them), power, prestige, and recognition. This suggests incentives should be tied to the individuals who manage the companies. Much more has to be learned about the nature of the aerospace industry.

IS THERE AN EFFECTIVE EHTICAL WORK ETHIC?

Are industry personnel crooks? Must the government assume a defensive posture on their techniques with industry? Can the government disengage from the contractor? Does the system of assuring honesty cost more than the inevitable abuses? This is a critical issue. If, in fact, most of industry is ethical, why must we assume that all are dishonest? Does the public's trust require the government to eliminate all abuse? There is an enormous amount of duplication of effort. The attitude of distrust mitigates substantially the impact of motivational factors. Ask yourself, how motivated would you be in a situation where the presumption was that you were dishonest? If a contractor is in fact an avowed professional thief, chances are he will succeed.

APPENDIX A

ORIGINAL HYPOTHESIS

HYPOTHESIS. Based on twenty years of experience in the field, both on the government and on industry sides, and in research and consulting, it is my suspicion that the following hypotheses are valid:

1. The type of contract is not the determining variable as to the performance under the contract.

2. Most incentive contracts end up near the targets.

3. The targets of the incentives were higher than the targets of the alternate types of arrangements...If cost plus or even fixed price are determinable.

4. The most significant factor is where you need or expect to end up.

5. In many instances the government in its administration of the incentive destroys any opportunity for the incentive to work.

6. The costs of administering the incentive may outweigh any savings suggested by the arrangement in the contract.

7. Many of the contractual arrangements are designed for intentional overruns.

8. Many of the contracts are inappropriately structured. What started out as rules of thumb have in ten to fifteen years become biblical.

9. As opposed to what we once suspected, it might well be that the penalties outweigh the potential awards as motivators.

10. The more complex the arrangement, the less likely it is to be adhered to, manageable or meaningful.

11. The time function is important...they have to deal in manageable time frames.

12. They should be keyed to people and/or some kind of visibility.

Mr. John W. Boddie

Deputy for Accounting and Internal Audit
Assistant Secretary of the Air Force

FINANCIAL INCENTIVES FOR PRODUCTIVITY

John W. Boddie

Deputy for Accounting and Internal Audit
Office of Assistant Secretary of the Air Force
(Financial Management)

We appreciate your invitation for financial management participation in your conference. Secretary Hale asked me to reiterate his commitment for the FM to work with you in the contract financing and funding areas to develop the necessary arrangements to facilitate procurement.

The subject of productivity in general and specific tools and mechanisms for improving and enhancing productivity have recently received a great deal of attention and publicity. There have been an abundance of articles, conferences, seminars and training programs on incentives for improving productivity. Certainly, because of our economic condition and competition from foreign sources in the free market, the desirability of developing a sensitivity and awareness of the need for increased productivity has probably never been greater.

In the government contracting area, I think the need for financial incentives for productivity has always been recognized, although the degree of recognition has understandably varied depending on many factors, including extent of competition and general market conditions.

I will use a 184 year old example to illustrate this point. Eli Whitney's letter of May 1, 1798 to the Secretary of the Treasury, which today we would call an unsolicited proposal, stated in part:

"By the debate in Congress I observe that they are about making some appropriations for procuring arms, etc., for the United States. Should an actual war take place my business of making the patent machines for cleaning cotton must, in the meantime, be postponed. I have a number of workmen and apprentices whom I have instructed in working in wood and metals and whom I wish to keep employed. These circumstances induced me to address you and ask the privilege of having an opportunity of contracting for the supply of some of the articles which the United States may want. I should like to undertake to manufacture ten to fifteen thousand stands of arms.

"I am persuaded that machinery moved by water, adapted to this business, would greatly diminish the labor and facilitate the manufacture of this article. Machines for forging, grinding, etc., may be made use of to advantage.

"Cartridges is an article which I can manufacture. I have a machine for boring wood of my own invention, which is admirably adapted for this purpose.

"There is a good fall of water in the vicinity of this town (New Haven) which I can procure, and could have works erected in a short time. It would not answer, however, to go to the expense of erecting works for this purpose unless I could contract to make a considerable number."

Forty-five days later, on June 14, 1798, a contract was executed for Eli Whitney to produce and deliver 10,000 muskets, at $13.40 each, for a total contract price of $134,000. (As an aside, we can perhaps be envious that at that time the Government obviously didn't have to go through source selection procedures, sole source justification, cost and price analysis, audit, and so on, or they certainly couldn't have progressed from an unsolicited proposal to a definitive contract in 45 days.) The financing part of the contract provided that the contractor would be advanced $5,000 upon signing the contract; would be given a second $5,000 advance upon demonstrating the first advance had been spent in making preparatory arrangements for manufacturing, a third payment of $5,000 upon delivery of 1,000 muskets; payments commensurate with progress up to delivery of the second thousand, and payment in full for future deliveries.

There are several indications in the proposal and contract that demonstrate a recognition of the need for skilled labor and modern machinery and equipment for efficient production and the requirement for the Government to provide financial support. The contractor had the skilled labor, was convinced that machinery powered by water would reduce labor costs and facilitate manufacture, had invented a machine for boring wood, and could procure the property and have the facilities constructued. However, he couldn't afford to incur this expense without some assurance that the Government would procure a sufficient quantity to warrant the investment. The Government recognized this situation by providing advance payments to obtain the property, equipment and machines and payments thereafter commensurate with contract progress and deliveries. I mentioned before we could be envious of the speed with which the contract was finalized. We can also be envious of its size, the proposal and contract which provides for what we would today call advance, progress, and delivery payments, consists of a total of 2 and one-half pages.

Although obviously a simplified example, in principle this is not unlike some of the things we do today to encourage capital investment in labor saving equipment and facilities to improve productivity. In our more complex society there are now a multitude of rules, regulations, and laws that must be dealt with. However, I am convinced that the recent increased awareness and emphasis on the need to improve productivity and the several initiatives will have positive results and even better prospects for the future.

First, to discuss incentives provided at the federal Government level.

A couple of years ago Congress permitted the contract renegotiation act to expire. The DOD Authorization Act of 1982 replaced the profit limitations of the Vinson-Trammel Act. Defense contractors no longer have to be concerned that the Government may come in years after a contract is completed to recoup what it considers to be excessive profits. Profits realized under a contract no longer have any contingent government strings attached and they are available to further pursue the objectives of defense contractors.

The Economic Recovery Act of 1981 included several incentives for business.

- The new law has substantially increased the annual deductions for tax purposes attributable to business assets. Assets acquired after 1980 may be written off over three, five, or fifteen years; these new recovery periods are substantially shorter than the assets' actual useful life. It is hoped that the

tax savings accruing from application of these new guidelines will be used for investment in new plant and equipment and will, in turn, result in increased productivity and revenues. I recognize that the accelerated depreciation guidelines are not consistent with cost accounting standard 409 which precludes contractors from allocating depreciation costs to defense contracts in excess of that calculated over the useful life of the assets. Regardless of this inconsistency, defense contractors can still reap substantial tax benefits from application of the rapid write-off guidelines and this should provide a positive incentive to invest in more efficient machinery and equipment.

- Lagging investment in research and development has hampered technological progress for much of the 1970s and into the 80s. Prior to the new law, a business could elect to take a current deduction for qualified research incurred in connection with its trade or business, or it could amortize the costs over a number of years. The new law now provides a special 25% tax credit (bottom line deduction) for certain research and experimental expenditures. These are:

- In-house expenditures for reesarch wages and supplies, plus certain lease or other charges for research use of computers and laboratory equipment.

- 65% of amounts paid for contract research: and

- 65% of corporate grants for basic research to be performed by universities or research corporations.

- The new tax law has also extended and expanded the targeted jobs credit. The credit is equal to 50% of the first $6,000 paid an employee in the first year of employment and 25% in the second year.

There have also been several DOD and Air Force initiatives.

1. Capital investment incentive clauses are being used more and more frequently to provide incentives to contractors to invest in capital assets and thus improve productivity. In those cases we agree to indemnify the contractors for the undepreciated value of these assets in the event of program termination or cancellation prior to a certain time or delivery of a specified quantity of items.

2. The $5 million limitation on contract termination liability has been removed. Authority to provide for termination liability of up to $25 million has been delegated to the heads of procuring activities. If the termination liability is expected to be between $25 and $100 million, the Air Staff must be advised at least 15 days before contract award. We must notify Congress of planned termination liabilities in excess of $100 million and give it 30 days to voice any objections.

3. We are seeing more frequent use of special termination cost clauses in incrementally funded R&D contracts in order to free up funds to spend on contract performance rather than being tied up to cover potential termination costs. The Government assumes the responsibility of coming up with the necessary funds to cover termination costs if the contract is terminated.

4. Also, in accordance with CAS 414, contractors are receiving additional revenues, as both contract costs and as profit on amounts calculated to be the cost of money on the undepreciated investment in newly acquired facilities.

5. Multiyear contracting is now a reality and it will be further used in order to acquire equipment and services in the most timely, cost effective and efficient manner.

6. Contract financing has been substantially liberalized within the last 15 months. In March 1981 the progress payment rates were increased to 85% for large businesses and 90% for small businesses. The progress payment rates were again increased in August 1981 to 90% and 95%. An increase in the rates under FMS contracts to 95% and 100% has been approved and will be implemented prospectively at an early date. Also, in August of last year, flexible progress payment procedures were authorized. Under these procedures, contractors can receive progress payment rates of up to 100% as long as they can demonstrate they are maintaining a 5% investment in their work in process inventories. Consequently, all contractors are now receiving progress payments of at least 90% of costs and some are receiving as much as 100%. This represents improved cash flow of a range from 12-1/2% to 25% from the standard rates that existed for more than ten years. In the past there has been about $8 billion outstanding in unliquidated progress payments on DOD contracts; therefore, this one initiative alone will result in a minimum of $1 billion in improved cash flow to contractors at any given time. The focus is on advance manufacturing techniques to reduce product costs and leadtimes, improve productivity, and improve product quality. Funds budgeted for the MANTECH program in fiscal years 82 and 83 were $64 million and $69 million, respectively.

7. A similar program is the technology modernizations (Tech Mods) program. Tech Mods are more factor oriented while MANTECH is process oriented. Tech Mods take a more comprehensive approach than MANTECH and they are designed to facilitate the modernization of production facilities. Funds budgeted for Tech Mods in fiscal years 82 and 83 were $22 and $27 million. The funds are made available under separately negotiated contracts wherein the Government and contractors agree to a sharing of funding to modernize and implement facilities and manufacturing systems, both parties enjoy the benefits realized from the investments based upon an agreed to sharing arrangement.

In summary, there have been several initiatives taken by the Government which should contribute significantly to increased productivity and reduced manufacturing costs in defense procurements.

The economic recovery act provides significant tax advantages for investment in new plant and equipment and expenditures for research. The use of capital investment incentive and special termination cost clauses should further incentivize contractor capital investments by shifting the burden of risk from the contractor to the Government. Yet another incentive has been furnished by considering as costs and paying profit on the calculated cost of money on the undepreciated value of newly acquired facilities. The much more liberal contract financing arrangements make very significant amounts of money available for capital investment that would otherwise be tied up in work-in-process inventories. And finally, the MANTECH and Tech Mods programs provide funds to improve productivity and product quality.

Taken together, these initiatives have made it much more attractive to do business with the Department of Defense. We should recognize that the benefits are going to be realized over a long period of time but we should hopefully start seeing some real growth in productivity in the not too distant future. In the meantime, all of us need to be aware of existing vehicles for incentivizing productivity and alert for new methods and techniques that will benefit the total federal Government and individual Air Force programs.

Mr. Donald E. Sowle
Administrator, Office of Federal Procurement Policy

(written report not available)

Mr. Norman M. Tallan

Chief Scientist, Materials Lab, Air Force Wright Aeronautical Labs

Technological Improvements As They Relate To Cost

by

Dr. Norman M. Tallan
Materials Laboratory
AF Wright Aeronautical Laboratories, WPAFB, OH

Introduction

There are many factors that contribute to aerospace industry productivity and the costs of acquisition, operation and maintenance of Air Force systems. Clearly, the efficient use of labor, the availability of investment capital, the quality of management, and legal or societal constraints play major roles. Many studies have shown, however, that technology is generally an equally important, and in fact often a dominant factor. The Air Force has operated on this basis, and taken advantage of technological advances to reduce costs for many years now.

Until recently, our major tool has been the Air Force Manufacturing Technology (Man Tech) program, which has been extremely successful in making new manufacturing methods available for Air Force production, maintenance and repair. Over the past several years we have developed some new tools, particularly the Air Force Integrated Computer Aided Manufacturing (ICAM) and the Technology Modernization (Tech Mod) programs which have enabled us to address additional cost centers in manufacturing and to broaden our approaches for technology implementation. We are also in the process just now of starting a new program in Manufacturing R&D that we feel will also have a major impact on productivity. What I would like to do is describe briefly how these programs work and present just a few examples of how we use them to provide the basis for reduced costs of the systems we buy.

The Air Force Man Tech Program

The Air Force Man Tech program provides a means of moving advances in manufacturing methods from the laboratory to the real factory floor environment, where they can be used in aerospace system production, maintenance and repair. It typically involves process scale-up, reduction to practice in the real production environment, the development of realistic processing parameters, specifications, and quality assurance procedures, and an evaluation of realistic quality and cost projections in both the direct and indirect cost areas. Since the program is production funded, it specifically does not perform the precursor laboratory-scale R&D or provide the capital facilities required for actual implementation of the new methods. Other programs and strategies are evolving to handle those aspects of the overall problem.

The Man Tech program has always concentrated on productivity improvement and reduced cost, as well as enhancements in quality and basic producibility. Indeed the investment strategy for the program in recent years has focused very heavily on a projected, trackable return-on-investment. The major thrusts of the program span the spectrum of aerospace systems and production methods,

with major emphasis right now on metallic and composite structures, engine materials and components, avionics and aerospace power devices, system maintenance and repair, and quality assurance.

One of the thrusts, for example, is directly addressing the problem of batch production of machined parts. It will establish, in an operating machining cell, the use and integration of advanced machine tools, fixturing and set-up techniques, material handling procedures, machine control, and ultimately machining cell/design department interfaces that will drastically reduce the handling and support time required per part and also shift the actual time on the machine from predominantly non-cutting functions to productive cutting time.

Another way of reducing machining time and costs, and at the same time reducing the amount of material wasted in the production of machined parts is to go to processes that can produce parts closer to net shape in the first place. The Man Tech program has been very aggressive in this area, and the U.S. aerospace industry today leads the world in isothermal forging and superplastic forming technologies. These technologies will have very broad engine and airframe structural implications, and are already responsible for significant performance advances and cost reductions in the F-100 engine.

The Air Force ICAM Program

If one takes a broader look at the elements which go into the manufacture of typical aerospace systems and the cost distribution for those elements, one finds that the factory-floor operations generally impact less than half the total cost of manufacture. Considerably more than half the cost is involved in management and control activities such as inventory control, process planning, and the scheduling and routing of parts and operations - functions that are currently considered part of the necessary overhead. The Air Force ICAM program was established several years ago to address ways the computer could be brought to bear in the aerospace batch production environment to significantly reduce these overhead or production management costs by streamlining information flow and management decision and control processes.

The initial step in the ICAM program was the validation of a manufacturing architecture, or model, which covers all aspects of aerospace manufacturing, ranging from the initial design of a product through all phases of its fabrication. The model includes management decision-making processes, economic analyses, design optimization, material and process flow, quality control, and in principle all of the other components of the production cycle. These elements were defined so that they would provide a universally-understood, accurate model for the description of any part of the manufacturing process or even a whole manufacturing system.

Key individual functions, such as the management decision support system and the manufacturing control/material management system, are currently being developed as working modules by broad contractor coalitions. These modules will be available individually for industry use immediately upon their completion and should have dramatic near-term payoffs. The real return, however, will come through the tying together of these modules through a new ICAM-

developed language which bridges the communications gap between companies and between operations analysts and systems designers. The payoff of this approach will be validated in the ICAM program by several demonstrations which begin on the shop floor in a typical aerospace process, but which build upward through a significant part of the manufacturing architecture so that they use and test a substantial number of its modules and its management and support structures. The first demonstration program will be a new, high through-put sheet metal center. The Air Force ICAM 100M dollar, five-year investment should ultimately provide a multi-billion dollar return by integrating and focusing the much larger investments in computer-aided manufacture that industry itself is making, and by bringing them to bear on our aerospace system needs.

The Air Force Tech Mod Program

The Air Force Technology Modernization program is a relatively new one. It combines the use of new technology, in the Man Tech and ICAM sense, with incentives for implementation and capitalization through contractual arrangements with the actual producers of Air Force systems. The first Tech Mod program was established with General Dynamics/Fort Worth and involved their facility for the production of the F-16. The Air Force agreed to fund a 25M dollar effort that would establish, through the application of a number of required ICAM and Man Tech studies, the designs and enabling technologies for three specific work centers within the F-16 production plant. The three work centers, involving machining, sheet metal forming, and electrical wiring harness fabrication, were selected on the basis of their impact on total system cost. In fact, it was projected that modernization of the techniques used in these areas would save 370M dollars in the production of the first 1388 aircraft. General Dynamics agreed to invest 100M dollars of their own capital to facilitize these new work centers, based on an Air Force agreement to share the cost savings with them, to provide award fees periodically through the program, and to indemnify them against losses due to curtailment of production.

The F-16 Tech Mod contract was initiated and managed by the F-16 SPO, with technical support from the Materials Laboratory. The program has been extremely successful, both in its technical approach and in its management philosophy, and in fact it has been a model for all of the Tech Mod programs that have followed.

The Air Force Manufacturing R&D Program

The Man Tech, ICAM and Tech Mod programs clearly provide the essential tools for translating new technology into validated, established processes that can be used to reduce cost in actual production. The problem until recently has been that there has been no similar emphasis in the Air Force R&D tech base on manufacturing as a scientific or engineering technology goal. Some, but not nearly enough 6.1 basic research and 6.2 exploratory development has been done on improved unit processes and operations. For example, we have supported a number of research and development programs in areas like machining, forging, and composites fabrication. The real science base for these operations, however, has been largely neglected. As we move upward in the manufacturing architecture from the individual unit operations on the factory floor to their basic automation through the use of computer controls and to their integration in manufacturing functions such as assembly, then the R&D base to support Man Tech follow-on

efforts thins drastically. In fact, the real future for cost reductions in manufacturing, I believe, will come through the use of computers not merely to control manufacturing functions, but to optimize them.

Continuing advances in the operating speeds and memory capacities of computers will make it increasing likely that we will be able to use them in operations such as process modeling, simulation and intelligent automated decision making. If we could provide sensors that would operate inexpensively and reliably in a real manufacturing environment to gather all of the data available in any given manufacturing operation, and use the true power of the computer as an *intelligent* processor that could sort through the huge volumes of data that would have to be dealt with, select the really important information, and use it to self-optimize the process in real-time, then we should be able to achieve not only significant reductions in cost, but also significant improvements in quality and reliability. While research is being done in the universities and in industry in each of these technologies, unfortunately there has been no Air Force program designed to augment this research in critical areas and, most importantly, to integrate and focus it specifically on our problem, the batch manufacturing of aerospace systems.

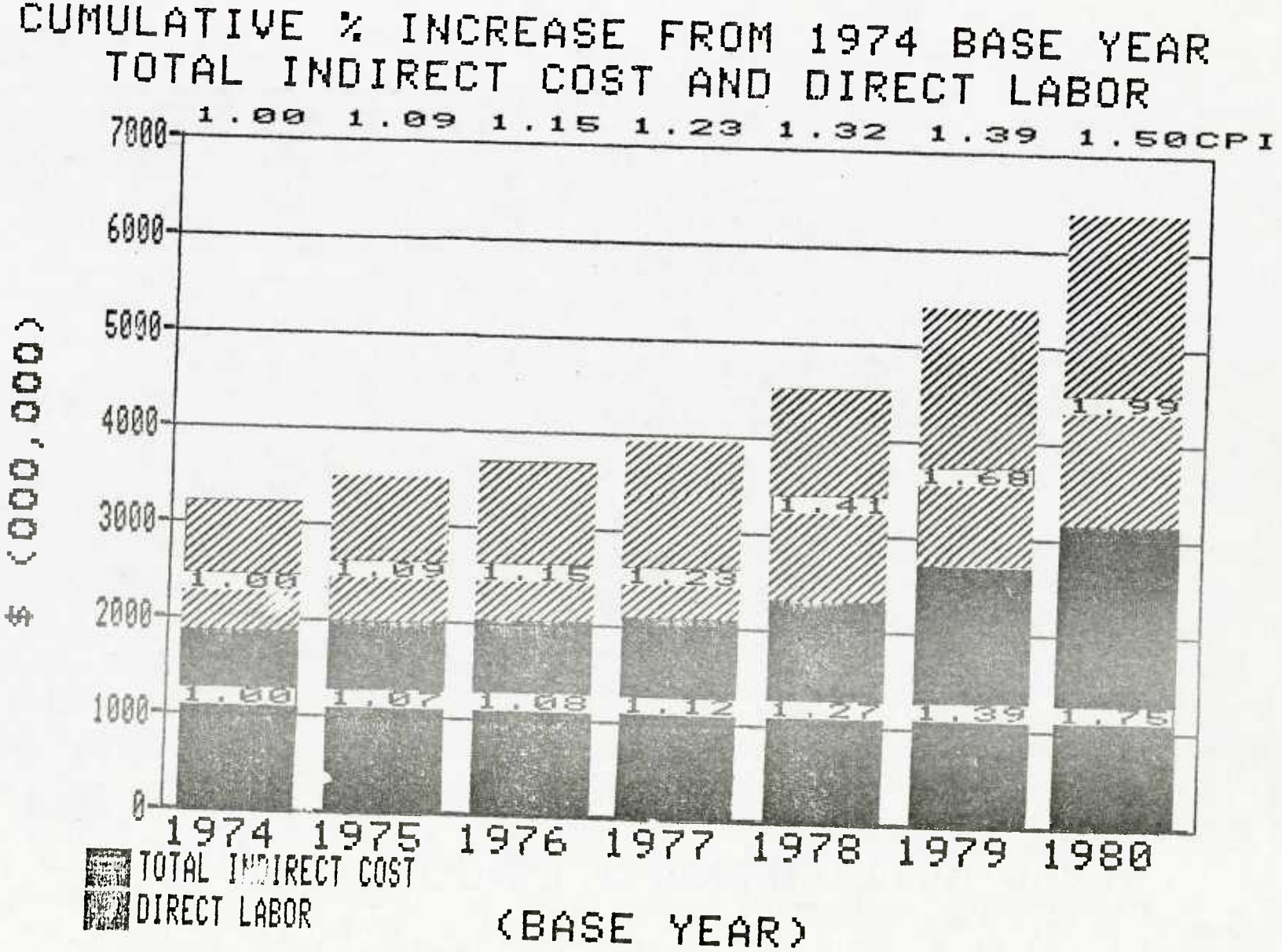
To fill this gap, we are initiating a Manufacturing R&D program aimed specifically at those technologies that would make smart, computer-optimized manufacturing processes possible and at enhanced funding for studies that could lead to better manufacturing processes themselves. Our first effort will be a major program that we are undertaking together with DARPA to develop the techniques required for intelligent task automation, and to apply them as a first step to the development of a new family of more flexible and more intelligent robots that could be used, for example, to dramatically enhance the productivity of aerospace assembly operations. The second program will probably be one which would extend some of our current research in the science of forging to an automated capability for the design and fabrication of forging dies. We hope these will be the first of a growing series of efforts to apply the talents of our Air Force, university and industry scientists and engineers specifically to the problem of basic and applied research in aerospace batch manufacturing.

Summary

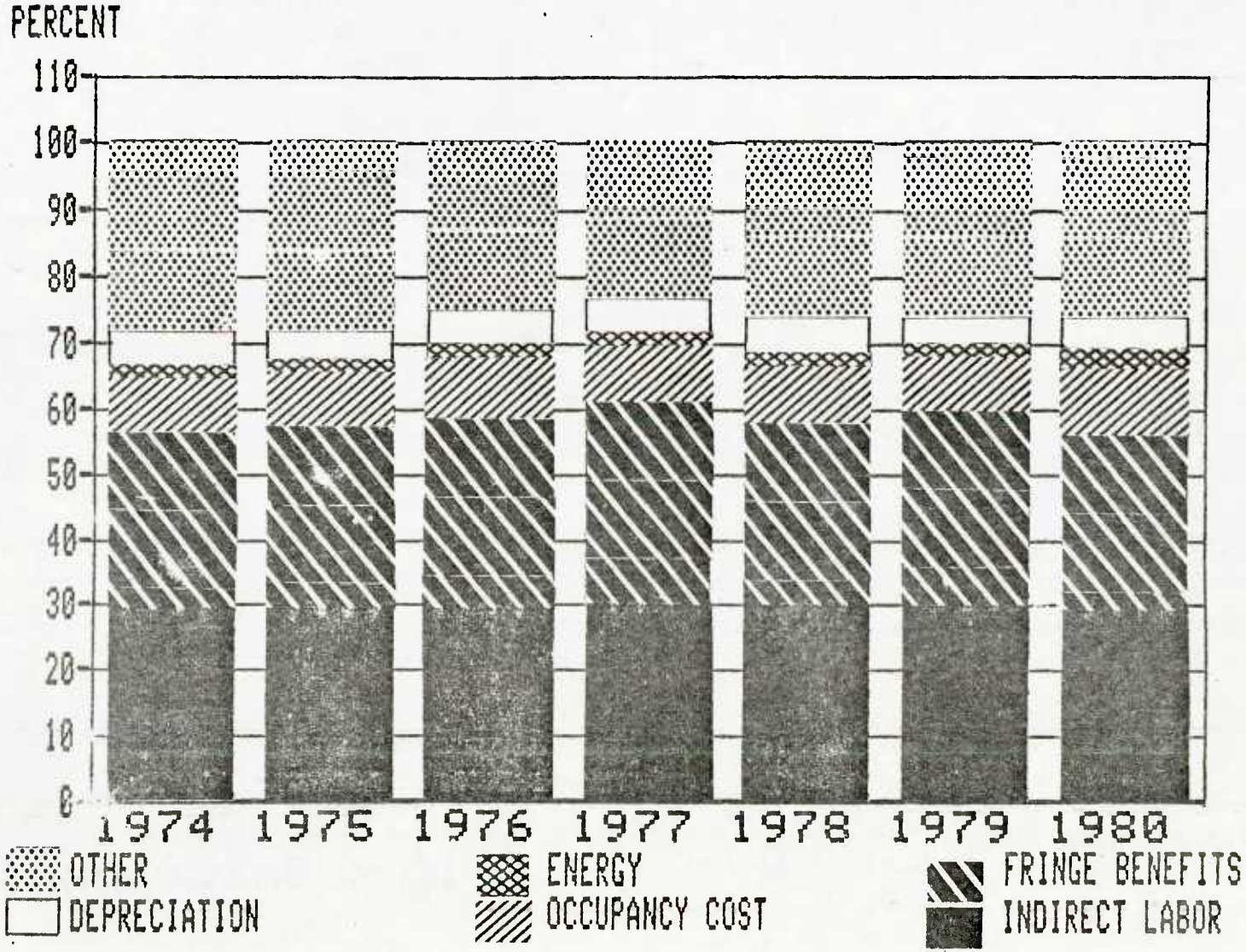
Through these programs, Man Tech, ICAM, Tech Mod and Manufacturing R&D, the Air Force is aggressively pursuing technologies that can have a major impact on manufacturing costs and quality. To realize their benefits, however, their results must be implemented by industry and they have to find their way into Air Force system designs and Air Force system procurements. Technology has long been considered an essential ingredient of improved system performance, and indeed we owe much of our military superiority to advanced technology. In many cases, for example in the hot sections of turbine engines and in ballistic missile reentry vehicle accuracy, performance is still a key factor. Where it is, a new system must balance the needs for performance and affordability. Frequently, the SPO responsible views new technology with a somewhat wary eye, because it knows that the new, high performance technology may also mean added costs. The technologies I have discussed here, however, are addressed specifically at reducing the costs of systems at any performance level. In these cases we ought to be insisting that they be used or at least considered in every system we buy.

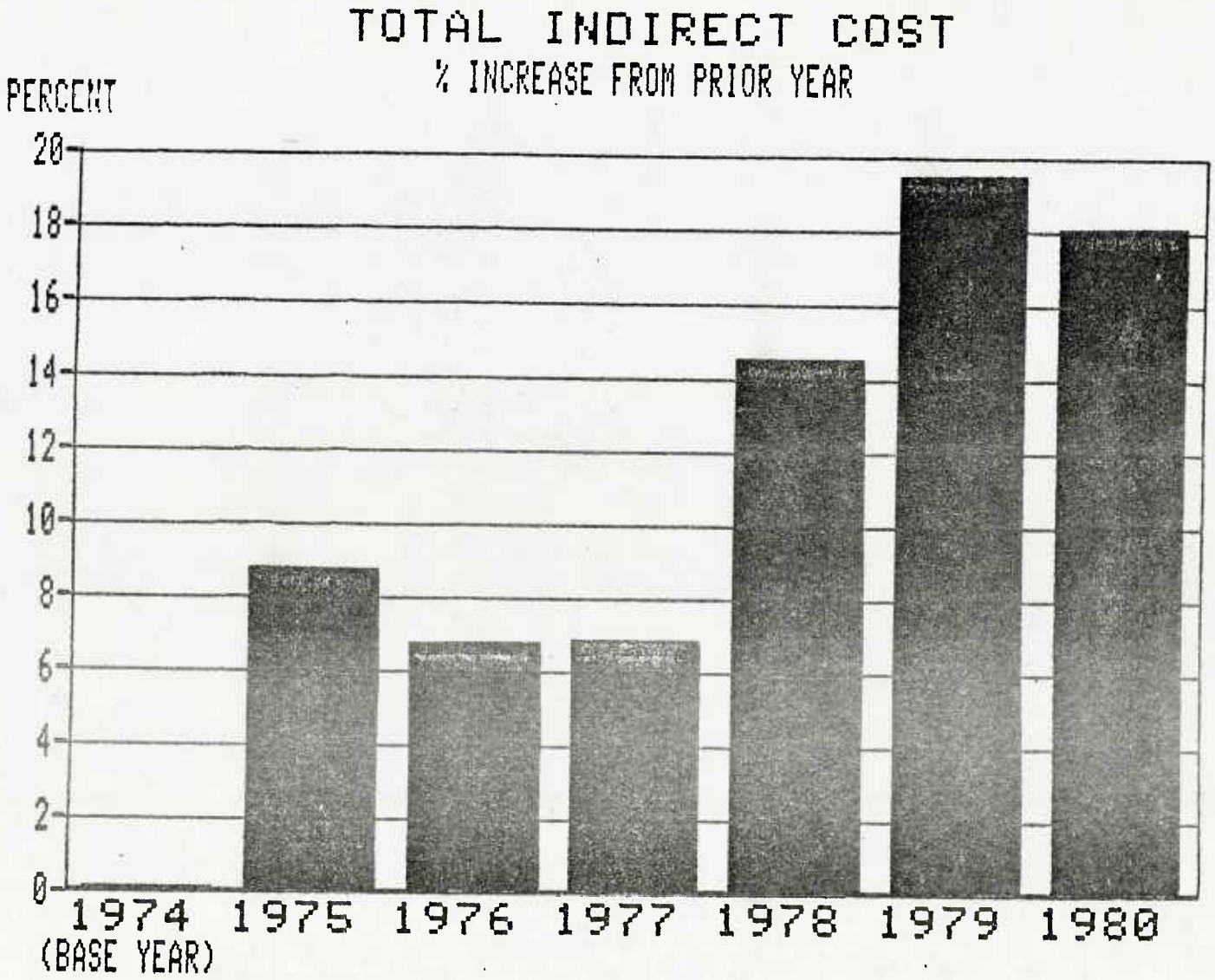
Mr. Charles O. Starrett

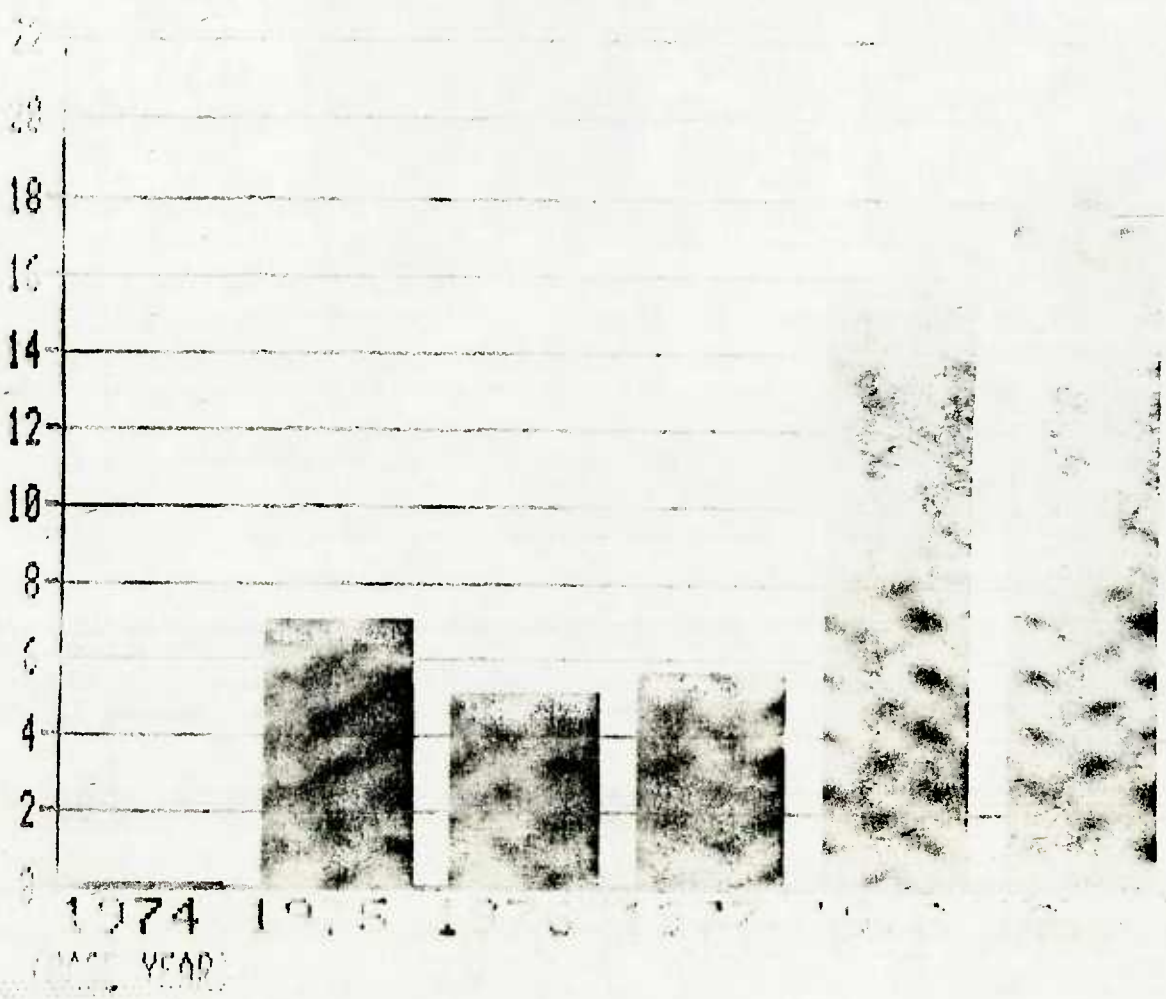
Director, Defense Contract Audit Agency

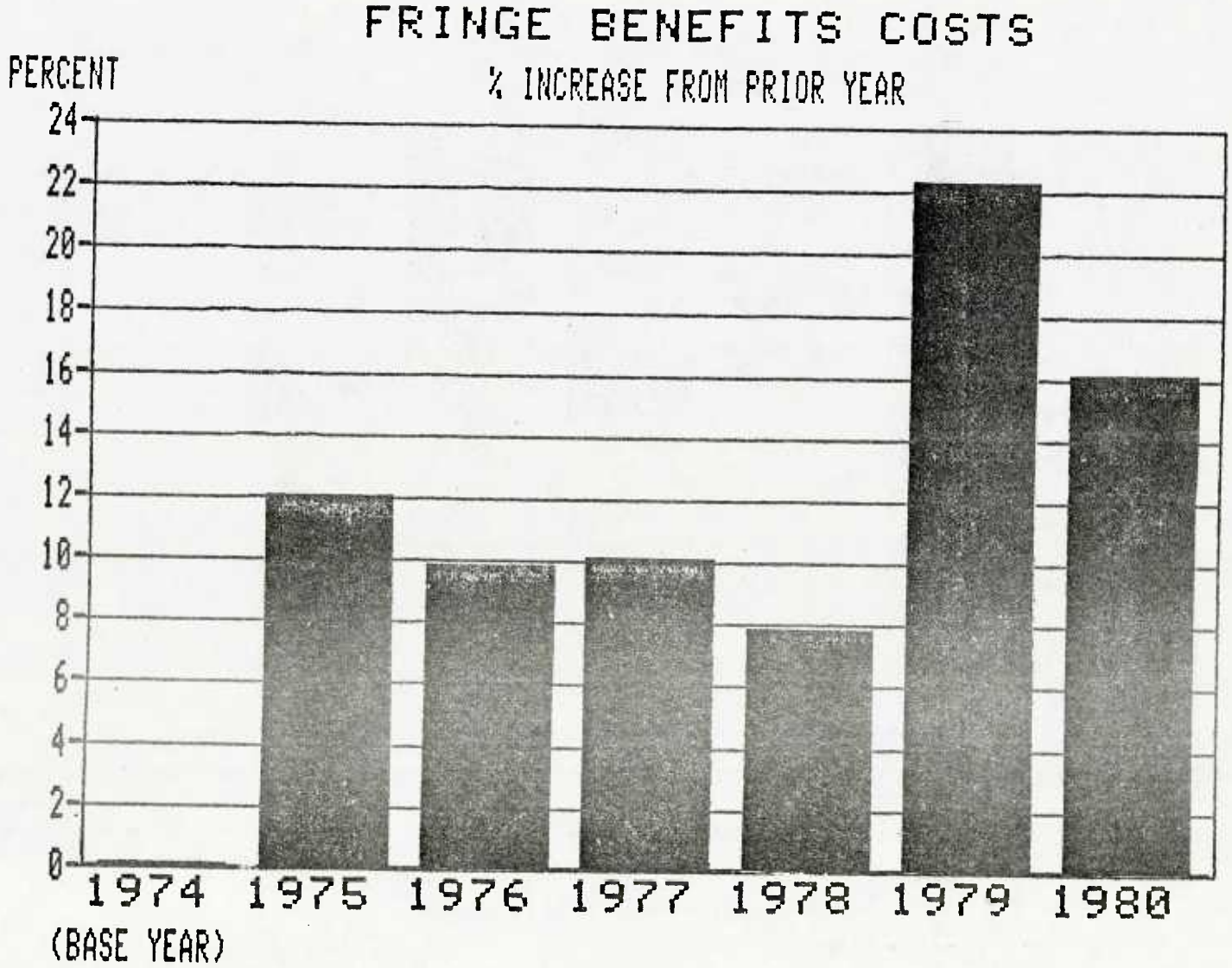

CUMULATIVE % INCREASE FROM 1974 BASE YEAR
TOTAL INDIRECT COST AND DIRECT LABOR
1.00 1.09 1.15 1.23 1.32 1.39 1.50CPI
7000
6000
5000
4000
3000
2000
1000
0
$ (000,000)
1.00 1.09 1.15 1.23 1.41 1.68 1.95
1.00 1.07 1.08 1.12 1.27 1.39 1.75
1974 1975 1976 1977 1978 1979 1980
TOTAL INDIRECT COST
DIRECT LABOR
(BASE YEAR)

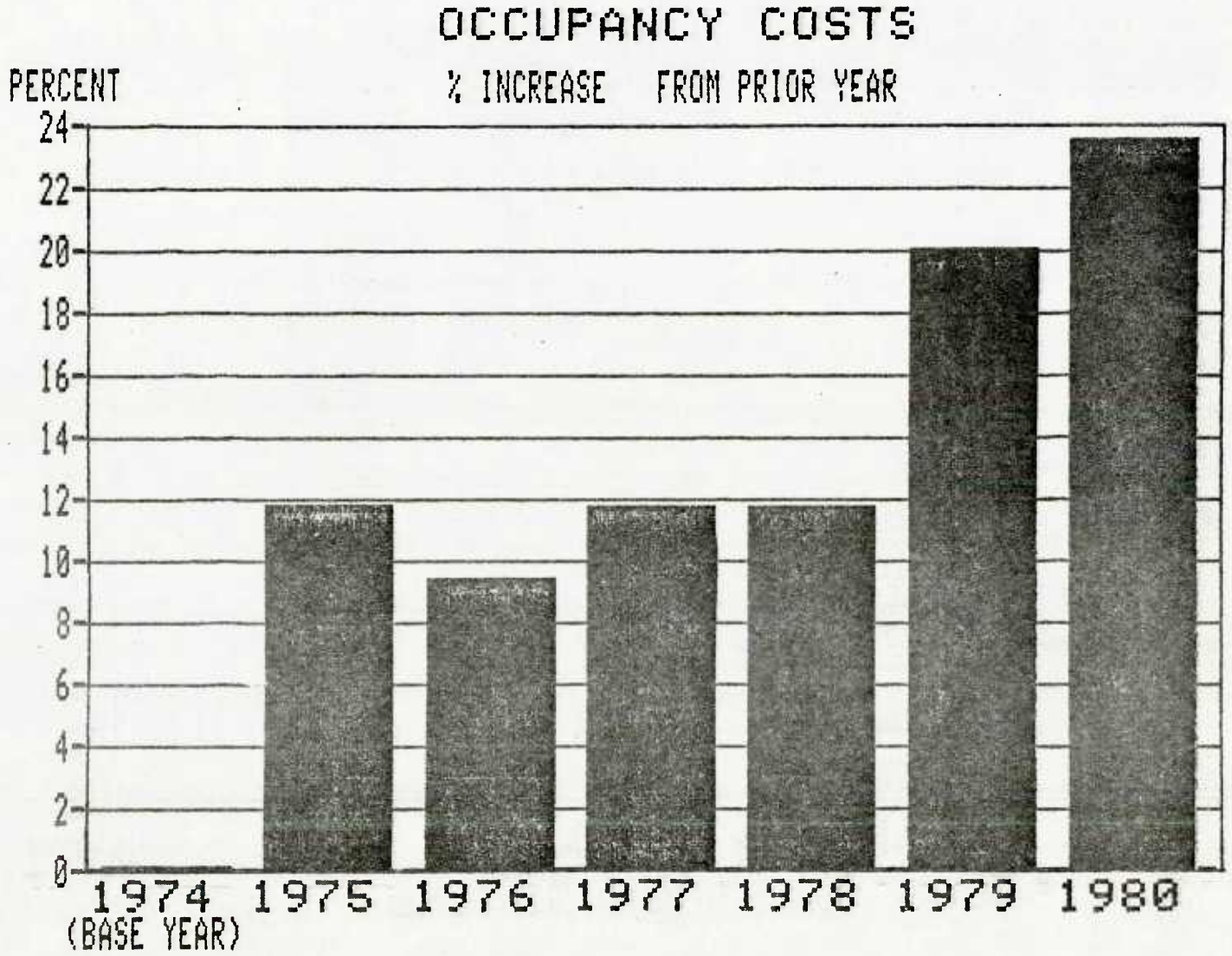
TOTAL INDIRECT COST COMPOSITION CHART

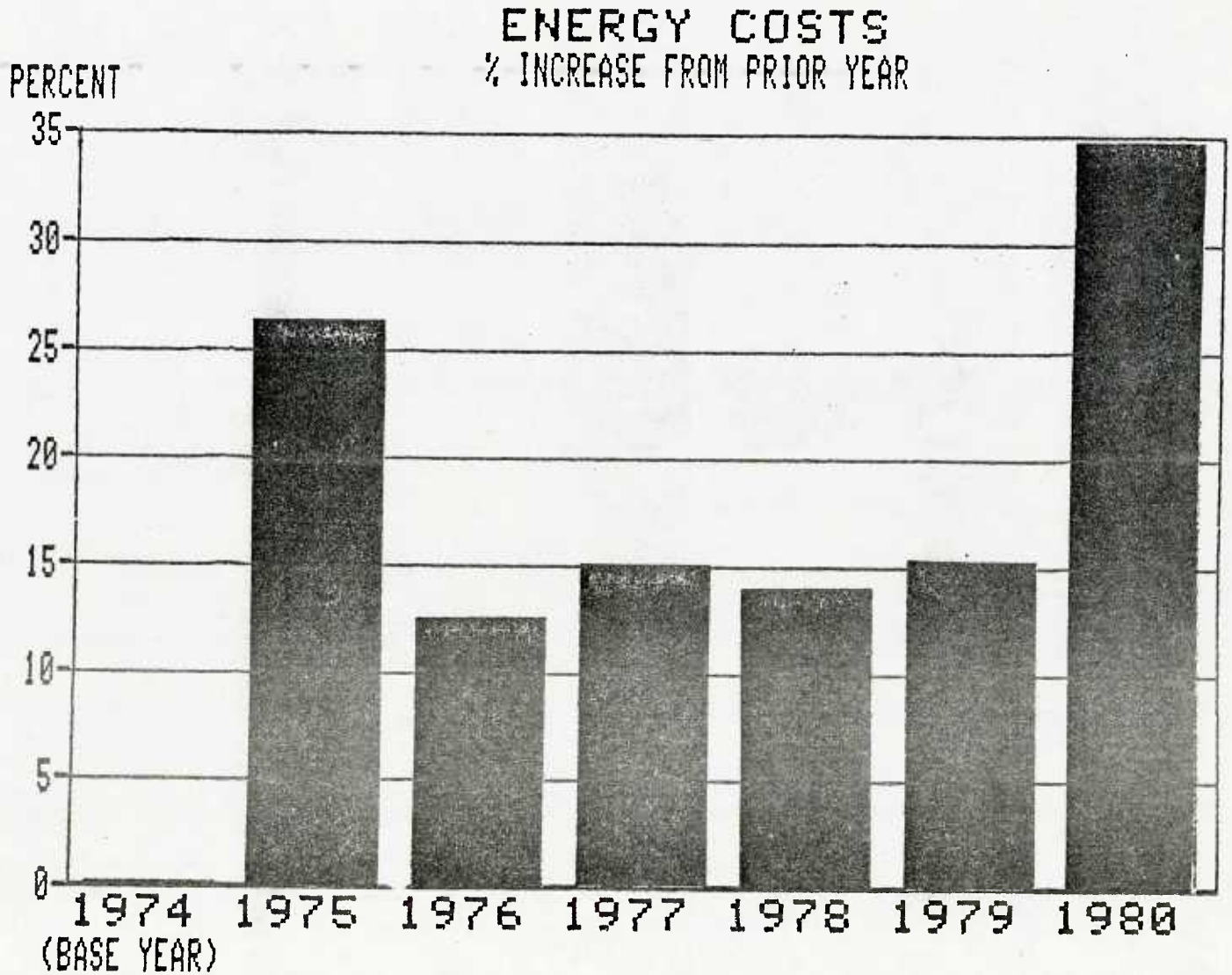


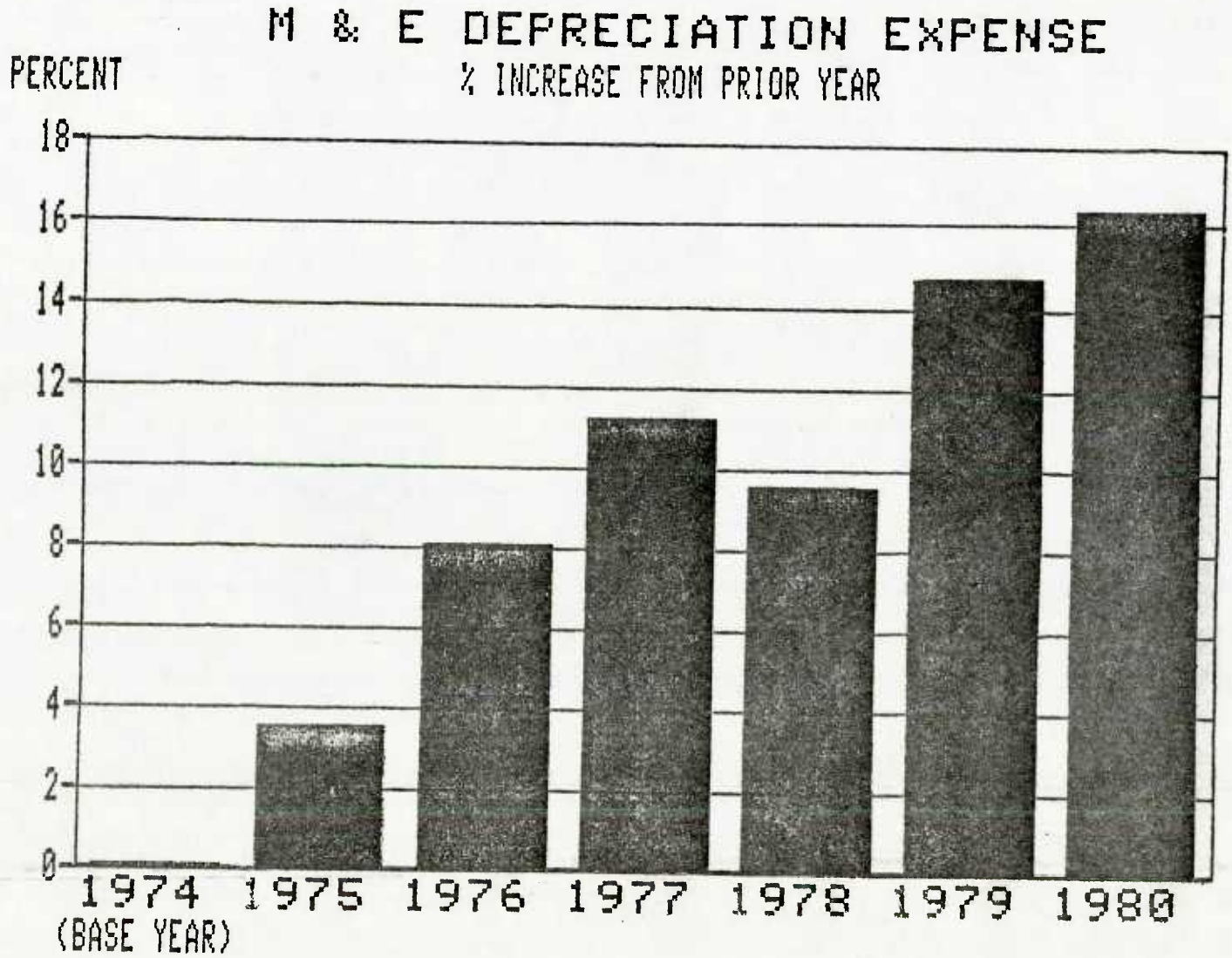

TOTAL INDIRECT COST
% INCREASE FROM PRIOR YEAR
PERCENT
20
18
16
14
12
10
8
6
4
2
0
1974
(BASE YEAR)
1975
1976
1977
1978
1979
1980


18
14
12
10
8
4
2
1974


FRINGE BENEFITS COSTS
% INCREASE FROM PRIOR YEAR
PERCENT
24
22
20
18
16
14
12
10
8
6
4
2
0
1974
1975
1976
1977
1978
1979
1980
(BASE YEAR)

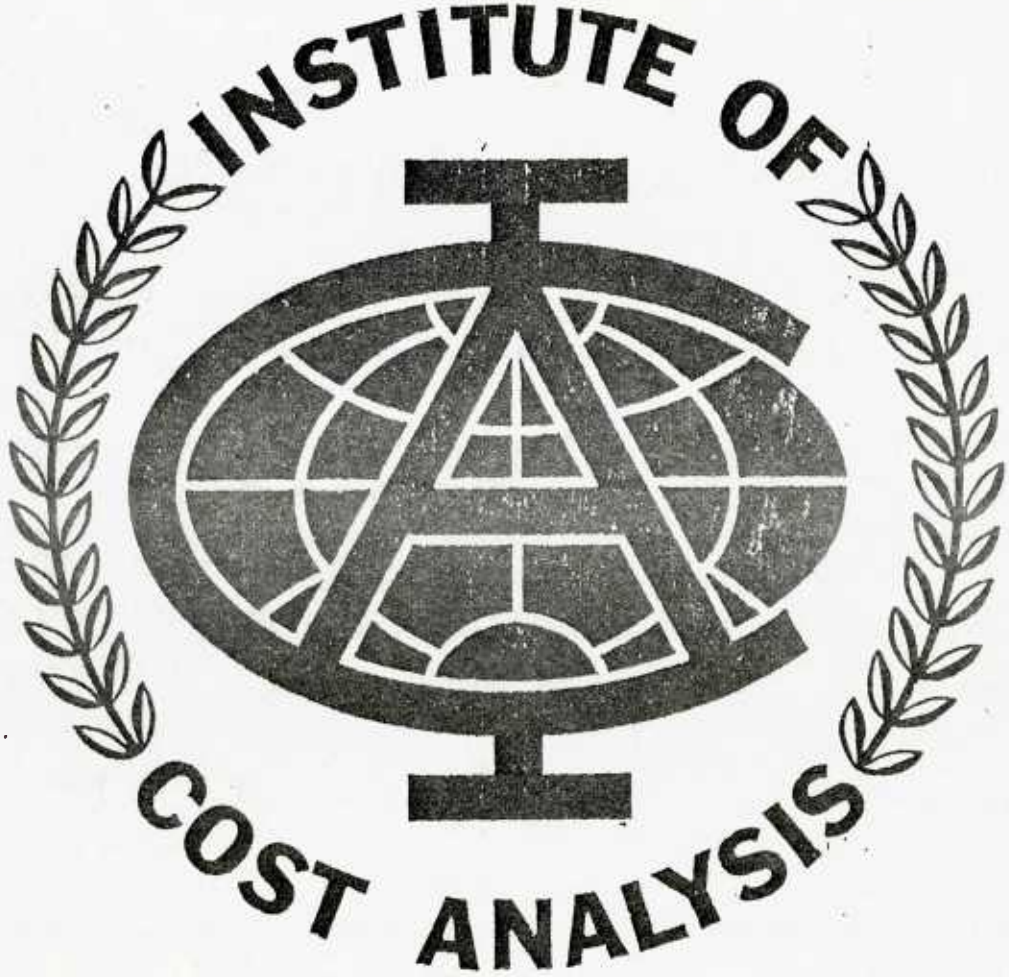

OCCUPANCY COSTS
% INCREASE FROM PRIOR YEAR
PERCENT
24
22
20
18
16
14
12
10
8
6
4
2
0
1974
(BASE YEAR)
1975
1976
1977
1978
1979
1980


ENERGY COSTS
% INCREASE FROM PRIOR YEAR
PERCENT
35
30
25
20
15
10
5
0
1974
(BASE YEAR)
1975
1976
1977
1978
1979
1980


M & E DEPRECIATION EXPENSE
% INCREASE FROM PRIOR YEAR
PERCENT
18
16
14
12
10
8
6
4
2
0
1974
(BASE YEAR)
1975
1976
1977
1978
1979
1980

Col Richard C. Goven

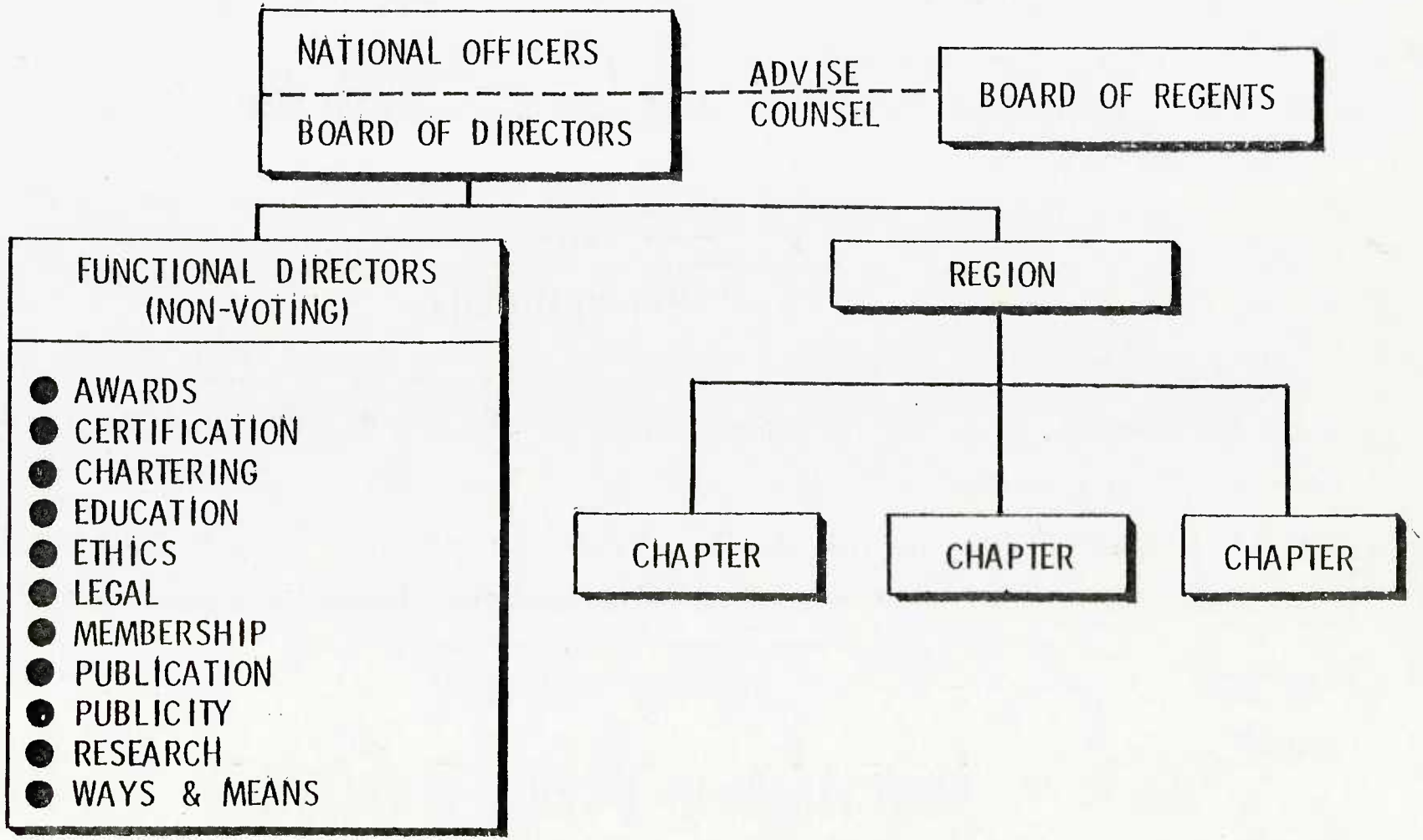
Office of the Assistant Secretary of the Air Force, Financial Management


INSTITUTE OF
COST ANALYSIS

ICA GOALS

- ESTABLISH TECHNICAL AND ETHICAL STANDARDS FOR THE COST ANALYSIS COMMUNITY
- PROMOTE EDUCATIONAL AND LITERARY ENDEAVORS TO ASSIST ANALYSTS IN ACHIEVING ESTABLISHED CRITERIA
- FORMALLY RECOGNIZE ANALYSTS WHO MEET ICA STANDARDS
- MAINTAIN A CENTRAL LIST OF CERTIFIED ANALYSTS FOR USE BY GOVERNMENT AND INDUSTRY
- PROVIDE A FORUM FOR THE EXCHANGE OF COST/PRICE ANALYSIS AND RESEARCH INFORMATION

INSTITUTE OF COST ANALYSIS



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CERTIFIED COST ANALYST
PROGRAM STATUS (GRANDFATHER PHASES)

- "GREAT GRANDFATHER" PHASE
  - -- OUTSTANDING INDIVIDUALS WITH SIGNIFICANT CONTRIBUTIONS
  - -- FIRST AWARDS PRESENTED AT DOD COST ANALYSIS SYMPOSIUM IN OCT 81

- "GRANDFATHER" PHASE
  - -- PERSONNEL WITH COST/PRICE (C/P) ANALYSIS RELATED EDUCATION & EXPERIENCE
    - --- APPROPRIATE ADVANCED DEGREE/COURSES AND 5 YRS OF C/P ANALYSIS EXPERIENCE
    - --- APPROPRIATE DEGREE/COURSES AND 8 YEARS OF C/P ANALYSIS EXPERIENCE
    - --- APPROPRIATE COURSES AND 12 YEARS OF C/P ANALYSIS EXPERIENCE
  - -- PROGRAM BEGAN 1 OCTOBER 1981 -- ENDS 30 JUNE 1983

ICA MEMBERSHIP

- MEMBERSHIP OPEN TO GOVERNMENT AND PRIVATE SECTORS
  - -- MEMBER
  - -- ASSOCIATE - STUDENTS/INTERNS
  - -- FELLOW - SIGNIFICANT CONTRIBUTIONS TO INSTITUTE/ COST ANALYSIS
  - -- HONORARY - NOTEWORTHY CONTRIBUTIONS TO INSTITUTE'S GOALS
- MEMBERS OWN INSTITUTE STOCK THROUGH CHAPTERS

MAJOR ACTIVITIES

- CERTIFIED COST ANALYST (CCA) PROGRAM
- PROFESSIONAL DESIGNATION (PD) PROGRAMS
- COST ANALYSIS EDUCATION AND CAREER IMPROVEMENTS
- COST ANALYSIS RESEARCH SYMPOSIA
- PROFESSIONAL JOURNAL, NEWSLETTER, AND ARTICLES
- CHARTERING OF CHAPTERS

CERTIFIED COST ANALYST

(CCA) PROGRAM

PURPOSE

- ESTABLISH PROFESSIONAL STANDARDS FOR ANALYSTS IN AREAS OF COST/PRICE ANALYSIS AND RELATED DISCIPLINES

- ESTABLISH PROGRAMS TO ASSIST ANALYSTS IN ACHIEVING RECOGNIZED STANDARDS

- AWARD PROFESSIONAL CERTIFICATION TO THOSE WHO MEET ESTABLISHED STANDARDS

CCA PROGRAM DESIGN

- SIMILAR TO LOGISTICS/CONTRACT MANAGEMENT PROGRAMS
- MANAGED BY THE INSTITUTE OF COST ANALYSIS (ICA)
- QUALIFICATIONS BASED ON EDUCATION, EXPERIENCE AND TESTING
  - -- PROVISIONS FOR "GRANDFATHER" CERTIFICATION
- FOR GOVERNMENT AND PRIVATE SECTOR ANALYSTS

CCA CANDIDATE OCCUPATIONAL AREAS

- COST ANALYSTS
- COST ESTIMATORS
- PRICE ANALYSTS
- PRICE ESTIMATORS
- BUDGET ANALYSTS
- COST REPORTING ANALYSTS
- COST CONTROL ANALYSTS
- PARAMETRIC ESTIMATORS
- ENGINEERING COST ANALYSTS
- ECONOMIC ANALYSTS
- FINANCIAL ANALYSTS
- LIFE CYCLE COST ANALYSTS
- COST ACCOUNTANTS
- DESIGN-TO-COST ANALYSTS

PROPOSED CCA
EXPERIENCE/ELIGIBILITY REQUIREMENT OPTIONS

- UNDERGRADUATE CERTIFICATION PROGRAM
  - -- 8 COST/PRICING COURSES (AFIT OR EQUIVALENT) (PD CRITERION)
  - -- 3 YEARS COST/PRICE ANALYSIS EXPERIENCE
  - -- ICA COMPREHENSIVE EXAMINATION
- MASTER OF SCIENCE (COST ANALYSIS)
  - -- 2 YEARS COST/PRICE ANALYSIS EXPERIENCE
  - -- ICA COMPREHENSIVE EXAMINATION
- INCUMBENT COST ANALYSIS PROGRAM
  - -- 10 YEARS COST/PRICE ANALYSIS EXPERIENCE
  - -- ICA COMPREHENSIVE EXAMINATION
- "GRANDFATHER" CERTIFICATION
  - -- APPROPRIATE EDUCATION AND SIGNIFICANT EXPERIENCE IN COST/PRICE ANALYSIS
  - -- ICA PANEL CERTIFICATION

CERTIFIED COST ANALYST
PROGRAM STATUS (TESTING PHASE)

- DEVELOPING BODY OF KNOWLEDGE AND EXAMINATION GUIDE
- ESTABLISHING EDUCATION AND EXPERIENCE CRITERIA
- DESIGNING A TEST AND PROCEDURES
- IMPLEMENTING TESTING/EXPERIENCE CERTIFICATION PHASE BY 1983

ICA STATUS

- COMPLETED DEVELOPMENT OF THE INSTITUTE'S STRUCTURE
- ESTABLISHED BOARD OF REGENTS MEMBERSHIP
- DEVELOPED AND INITIATED CERTIFICATION PROGRAM
- CHARTERED FIRST CHAPTERS
- CO-SPONSORING AFIT COST/PRICE ANALYSIS PROFESSIONAL DESIGNATION PROGRAM (PD PROGRAM)

PROFESSIONAL DESIGNATION (PD) IN COST AND PRICE ANALYSIS

- RECOGNITION FOR EDUCATIONAL ACHIEVEMENT
- SPONSORED BY AFIT AND INSTITUTE OF COST ANALYSIS (ICA)
- FOR COST/PRICE ANALYSTS AND THOSE IN RELATED FIELDS
- AWARDED UPON COMPLETION OF 8 AFIT OR EQUIVALENT COURSES
- IDENTIFIES BASIC ANALYTICAL TECHNIQUES AND SUBJECT AREAS

PD PROGRAM SPECIFICS

- OPEN TO GOVERNMENT, MILITARY AND CIVILIAN PERSONNEL
- PROGRAM PROCEDURES OUTLINED IN AFIT/LS INFORMATION DIGEST AND DMET MANUAL
- FIRST PD-AWARDS PRESENTED IN OCT 81 AT THE DOD CA SYMPOSIUM
- PARTIAL REQUIREMENT OF THE CCA PROGRAM

PD COURSE REQUIREMENTS

SUBJECT AREAS	COURSES REQUIRED
● QUANTITATIVE TECHNIQUES	4
● FINANCIAL MANAGEMENT	1
● QUANTITATIVE METHODS/ANALYSIS	1
● ACCOUNTING/COST CONTROL	1
● COMPUTER APPLICATION/PROGRAMMING	1

AFIT COST ANALYSIS MASTERS PROGRAM

- AIR FORCE COMPTROLLER INITIATIVE
- MASTERS IN SYSTEMS MANAGEMENT (COST ANALYSIS)
- FIRST CLASS BEGAN IN JUNE 1982
- PARTIAL REQUIREMENT FOR THE CCA PROGRAM

SUMMARY

- INCORPORATED THE INSTITUTE OF COST ANALYSIS
- DEVELOPING THE CCA PROGRAM
- SPONSORING COST ANALYSIS PD PROGRAMS
- SUPPORTING COST ANALYSIS MASTERS PROGRAMS
- ESTABLISHING COST ANALYSIS STANDARDS AND PROGRAMS TO ACHIEVE THEM
- CERTIFYING ANALYSTS WHO MEET ESTABLISHED STANDARDS

ATTENDEES

ATTENDEES

Name	Organization
AABY, DONN V.	HQ AFSC/PMM Andrews AFB DC 20334
ADAMS, CLARK G.	US General Accounting Office ATTN: PLRD/GP, Room 5832 441 G Street, NW Wash DC 20548
ALLEN, G. L.	Department of Energy ATTN: MA-931.3 1000 Independence Ave Wash DC 20582
AMIDAN, MICHAEL	OO-ALC/PMWFA Hill AFB UT 84056
BEARR, RICHARD J.	SA-ALC/PMF Kelly AFB TX 78241
BIGGINS, JOHN P.	AFCC/EPKS Scott AFB IL 62225
BODDIE, JOHN W.	SAF/FMB Wash DC 20330
BRANDT, LINDA	HQ Naval Material Command (MAT 0211E) Wash DC 20360
BROWN, ARLENE	HQ NASA/HC-1 Wash DC 20546
CARIN, PHILIP	HQ Naval Material Command (MAT 0222B) Wash DC 20360
CHAMBERLAIN, WILLIAM M.	AFCMD/TMF Kirtland AFB NM 87117
CODY, JOYCE S.	WR-ALC/PMF Robins AFB GA 31098
CONNOLLY, JOSEPH H.	HQ USAF/RDC Wash DC 20330
COTNER, MICHAEL R.	HQ Naval Air Systems Command (AIR-21411T) Wash DC 20361

Name	Organization
CURTNER, HARRY C.	ESD/PKF Hanscom AFB MA 01731
DEEP, RONALD	AFBRMC/RDCB Wright-Patterson AFB OH 45433
DeLAUER, RICHARD D.	OUSD(R&D) Wash DC 20330
DRENKHAN, DONALD F., JR.	ESD/PKW Hanscom AFB MA 01731
DRIESSNACK, HANS H.	HQ USAF/CVA Wash DC 20330
DUMAS, ALBERT	HQ NASA/HC-1 Wash DC 20546
FADGEN, JOSEPH P.	HQ Naval Air System Command (AIR-2142) Wash DC 20361
FINKBINER, RONALD B.	OUSDR&E (Acquisition Management) Wash DC 20330
FORTNER, RICHARD	AFSC/PM Wash DC 20330
GERKEN, KENNETH L.	HQ AFSC/PMMC Andrews AFB DC 20334
GILLEECE, MARY ANN	Counsel Subcommittee on Investigations House Armed Services Committee Wash DC 20515
GOCKE, ROBERT	USAFA/DFM USAF Academy CO 80280
GOLDBERG, PETER	Department of Justice Wash DC
GOLDSTEIN, MICHAEL F.	ASD/PMF Wright-Patterson AFB OH 45433
GOODRICH, MORRIS	OO-ALC/PMF Hill AFB UT 84056
GRICAR, ROY J.	HQ AFLC/PMPP Wright-Patterson AFB OH 45433
HAMILTON, CHARLES	OUSDR&E/AM(CPF) Wash DC 20301

Name	Organization
HAMMOND, MARLENE	HQ AFSC/ACCI Andrews AFB DC 20334
HIGGINS, THOMAS F., JR.	ASD/AFK Wright-Patterson AFB OH 45433
HYLAND, CHARLES L.	MAC/LGC Scott AFB IL 62225
JOHNSON, RAYMOND T.	HQ AFSC/PMMP Andrews AFB DC 20334
KENNEDY, JOHN J.	University of Notre Dame Department of Marketing Notre Dame IN 46556
KNOTTS, JERRY	Washington Area Contracting Center Wash DC 20330
KOWALSKI, RICHARD J.	AFCMD/TM Kirtland AFB NM 87117
KUC, ANDREW M.	HQ Naval Material Command (MAT 0224) Wash DC 20360
LEONARD, RONNIE K.	HQ USAF/RDCP Wash DC 20330
LIEBERMAN, RICHARD D.	OATSD (R&O) Wash DC 20301
LIPPENCOTT, GEORGE	HQ USAF/RDCM Wash DC 20330
LYNCH, JOHN C.	AFCC/EPK Scott AFB IL 62225
LYNCH, ROBERT W.	HQ NASA/HC-1 Wash DC 20546
LYNSKEY, JOHN H.	HQ USAF/RDC-DAR Wash DC 20330
MANDLER, ARTHUR J.	AMSAA/APRO Fort Lee VA 23801
McGINLEY, JAMES L.	HQ AFSC/PMMP Andrews AFB DC 20334
McLAUGHLIN, LINDA K.	AFBRMC/RDCB Wright-Patterson AFB OH 45433

Name	Organization
OLSON, JERRY F.	HQ USAF/RDCP Wash DC 20330
PELLEGRINI, BENJAMIN J.	DSMC/CC Fort Belvoir VA 22060
RAPP, RENITA	AFBRMC/RDCB Wright-Patterson AFB OH 45433
REARDON, GEORGE	HQ DARCOM (DRCPP-SC) 5001 Eisenhower Avenue Alexandria VA 22333
REECE, WARREN L.	OC-ALC/PMC Tinker AFB OK 73145
SANDS, ROBERT A.	HQ USAF/RDCP Wash DC 20330
SCHMIDT, THOMAS	3440 TCHTG/TTMXP Lowry AFB CO 80230
SELLERS, BEN	DSMC/SE-B Fort Belvoir VA 22060
SHAFER, ROBERT E.	HQ USAF/RDCP Wash DC 20330
SHIELDS, MATTHEW D.	AFIT/LSPA Wright-Patterson AFB OH 45433
SICHENZE, JOHN A.	OASD(C) 1300 Wilson Blvd Commonwealth Bldg Arlington VA 22209
SOWLE, DONALD E.	OFPP 726 Jackson Place, NW Wash DC 20503
STARRETT, CHARLES O., JR.	Defense Contract Audit Agency Room 4C346 Cameron Station Alexandria VA 22314
STRAIGHT, RONALD L.	HQ Naval Material Command (MAT 0223X) Wash DC 20360
TABOR, LARRY G.	OC-ALC/PMF Tinker AFB OK 73145

Name	Organization
TALLAN, NORMAN M.	AFWAL/MS Wright-Patterson AFB OH 45433
TANKERSLEY, MICHAEL C.	AFBRMC/RDCB Wright-Patterson AFB OH 45433
TAYLOR, ALLEN	SM-ALC/PMF McClellan AFB CA 95670
VUORI, R. E.	HQ AFSC/PMDE Andrews AFB DC 20334
WALL, RICHARD J.	HQ AFSC/PMMP Andrews AFB DC 20334
WEISS, BERNARD L.	HQ AFSC/PM Andrews AFB DC 20334
WOJTASZEK, FRANK L.	DLA/AF Cameron Station Alexandria VA 22314