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TRENDS IN PROCUREMENT

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TRENDS IN PROCUREMENT

Since this is a contract management group, I will address myself to subjects I believe you are interested in. Basically, you are interested in what is happening in your area of responsibility and what is happening in procurement in Huntsville.

The procurement process is ever changing. As we know, before World War II we had formal advertising and that was about it. The national emergency caused many of the rules to be thrown out the window, but I believe I can safely say that the procurement activity was not prepared for such an effort. The procedures were not such that they would accommodate such an emergency.

But in 1947 the 80th Congress passed the Armed Services Procurement Act that recognized the old out-of-date methods and started us into a new era. This is still the basic act that is in use today. Out of this Act came the implementing regulations used by the DOD. In 1958, the National Space Act was passed which created NASA. In this Act, Congress incorporated the Armed Services Procurement Act as the way we would conduct our procurement business.

With the advent of the Armed Services Act of 1947 came the CPFF negotiated contracts. Also in this time period, through the 50's, we were deeper than ever before in research and development — The real scientific era in Government contracting.

Government contract law is a federal specialty. Its peculiar characteristics distinguish it from private contract law. The constantly increasing significance of federal procurement and federal contracts on the national economy, with striking effects on particular industries and localities, makes this specialty of particular current importance. Government contracting has many complexities and the lawyer who would counsel in this field must be informed about its special subject matter.

So much for the past. We still have CPFF, but we also now have incentives. NASA is carrying the message to industry that incentive contracting techniques have advanced considerably in the past two years; that the procedures for structuring and administering incentive arrangements are being amended and improved constantly; and that several in-depth studies found that cost incentives, when used properly, have not degraded contract performance. I can say that our experience has been that all aspects are slowly and thoroughly studied before placing an incentive contract. We find more cases in which it is not the thing to do than we find where it is the thing to do.

New and effective techniques are being developed for more profitable incentive contract management. Today, incentives are better related to the total environment, rather than being tailored strictly for target cost and target performance, with a range of incentive effectiveness established solely by the degree of uncertainty. Today's incentive structures are sensitive to the changing environment of a development contract.

The general direction of incentives is down in number and up in quality, and we have recommended continuing research in incentive contracting.

There is a relatively new cost-plus-award-fee contract. Awards of this type by NASA and DOD exceed \$1 billion and studies of CPAF experience have found that this type of approach has generated tangible benefits for both the Government and the contractor. This type of contract truly does not impact adversely on the engineering or management options of the Government or the contractor's organizations. We will continue to work to develop the most effective performance criteria and standards for this flexible and efficient contracting tool. NASA expects to issue a CPAF Contracting Guide shortly for both contractor and Government personnel.

Two years ago you heard from me about our new concept for contracting for support services. As you all probably know, these contracts are cost-plus-award-fee arrangements. I want to evaluate our experiences to date for you. During this two-year period of these contracts, the reaction of Marshall management and the contractors' management has increasingly favored the use of CPAF over previous methods for this type effort.

The first year of operation necessarily centered around orientation and proper management structure of each contractor organization, as it implemented the directives of the Government. The second year of operation saw the operation and, concurrently, the evaluations, becoming more oriented toward the performance of actual contractor effort. As a result of this gradual shift of emphasis, the Center is searching out more objective methods for measurement of work and efficiency.

There are many aspects which have contributed to the successful implementation of our CPAF support contracts. Some have been incumbent in the system since inception and others have been developed as our contracts have progressed.

Initial education of both contractor and Government personnel was necessary to elaborate on technical and business evaluation concepts. Much of this was accomplished prior to contract inception and resulted in relatively few problems from the outset, with respect to the evaluation process.

The Center initiated its concept with one Performance Evaluation Board consisting of three members, two of whom are common to the Boards. This concept has been extremely effective in dealing with the many evaluation procedures utilized by the various laboratories and offices and has certainly lent continuity to the support effort.

Many view the membership of the Board as the best or most desirable composition. The major difference, of course, is whether the contractor's performance should be looked at by a disinterested third party or should those who have intimate day-to-day knowledge of the contractor's operation be the masters of his fate? In fact, Marshall has utilized a combination of the two opposing views, in that the Board Chairman is a substantially disinterested party and the other two members are the Responsible Officials (which is the Director of the Lab or Office) and the Contracting Officer, having knowledge of day-to-day contractor activities. The officers of the Board, in addition to review and evaluation, lend their experience and assistance to the establishment of evaluation criteria and improved techniques used by the operating labs or offices.

The use of the CPAF contract has accomplished much in the way of increased contractor emphasis on business management as well as continuing the importance of technical competence. Past experience under CPFF contracts indicated, in many cases, minimal consideration for such items as accuracy and timeliness of reporting, utilization of overtime, prudent use of indirect expenses, and general management awareness. The major business area affected by the use of award fee concept has been cost control. Evaluation of contractor cost as a means of earning fee has made Marshall contractors a more integral part of the Government's acknowledged plan to receive the highest value for dollar expended. Under the present concept, not only are Government personnel vitally concerned with cost, but the contractor, more than ever before, is also interested in this crucial aspect of contracting.

The review and evaluation procedures utilized to date have not only yielded increased knowledge of all phases of contractor activity, but have greatly increased the Government's knowledge of its own operations. Thus, CPAF is seen as an additional tool of management for both contractor and Government, which has heretofore been unavailable and which is yielding splendid results.

In most instances, the Marshall contractors under CPAF have asserted much more technical and business responsiveness than previously. Weaknesses in the system are recognized. However, it is felt that where there are such weaknesses, improvements or remedies are possible and desirable.

The main weakness of the CPAF concept, as it applies to the Marshall effort, is the scarcity of objective evaluation techniques. Initially, it appeared impossible to quantify requirements, but as we have progressed, it was found

that such quantification could be derived. More and more techniques such as formulas, statistical analysis, graphs and other meaningful tools for work measurements are being utilized to reduce the necessity for subjective judgement. Those areas which are repetitive and where short term fabrication efforts are involved have been the most productive in establishment of work measurements. Areas such as pure research and development have been extremely difficult to measure although limited use of schedule criteria has been applied. We are making improvements in the development of meaningful evaluation measurement criteria in all areas.

The contractor is encouraged to discuss the ratings at scheduled meetings. If the rating presented seems unclear or unjust, the contractor can contribute to a more workable system by requesting additional definitive description of performance. Every attempt is being made to completely apprise the contractor of the Government's position in all areas. These evaluation meetings were held monthly the first year of the contract, and they are held quarterly the second year. We feel this is providing the contractor and the Government with in-depth appraisals, which more accurately reflects the results of the effort. This does not in any way reduce or detract from day-to-day exchanges of information as to the trends in performance.

The CPAF support concept at Marshall has yielded significant favorable results over previous modes of operation. Increased awareness of the problems encountered by both parties has resulted in more response to each other's needs and has measurably increased overall performance in business and technical areas. We still do not have a perfect system, and for this reason we continue to call on the contractors to utilize their management talents and propose better and advanced ways of carrying on our mission. Under this concept, the contractors are masters of their fate — they can exercise management ability and prerogative and are earning more fee for a better job done.

Another undertaking you will be interested in, and encountering if you have not already, is Phased Project Planning and the resulting procurements.

As we all know, a major research and development project is one that requires significant resources or involves important external relationships and will encompass design, development, fabrication, test and flight operation of major hardware. Over the past two years, considerable attention has been devoted to the improvement of the program/project management and, particularly, the planning and processes related thereto. This effort has developed an incremental or phased approach which has demonstrated many potential benefits. Examples are — Voyager, Apollo Application, Hypersonic Ramjet Experiments and others. Phased Project Planning is not an end in itself, but represents a major step in evolving a management pattern of maximum effectiveness in the application of resources to its task.

Each phase is a coherent focused effort with definable end objectives and represents a specific limited commitment. Projects will be normally conducted in four sequential phases: Phase A - Advance Studies, Phase B - Project Definition, Phase C - Design, and Phase D - Development and Operations.

Phase A effort involves the analysis of a proposed technical objective or mission in terms of alternate approaches or concepts and the conduct of that research and technology development requisite to support that analysis and to assist in determining whether the proposed technical objective or mission is valid. This phase is accomplished by feasibility studies performed both by Marshall employees and study contracts. In this phase for study contracts we seek maximum competition. These contracts are usually in a well-defined area. They are of short duration, usually one year or less, and of rather low dollar — but in this phase there are many, many studies relating to alternate concepts — and it is to be understood by all that a follow-on Phase B contract will not accrue to a contractor based on Phase A study. These are usually fixed price.

The results of the studies trigger Phase B, which involves detailed study, analysis, and preliminary design directed toward the selection of a single project approach from among the alternate approaches resulting from Phase A activities.

All the available studies reports are used to define Phase B, and made available to any firm interested in making a proposal for Phase B. Fullest competition is sought and proposals are evaluated, not with the purpose of reducing to one contractor, but in most cases this effort will be performed by two or more in parallel. But from the phase competition usually results the contractor that will continue the project to completion. These contracts are usually cost-type contracts.

From the Phase B contractors, one or more contractor is selected to do Phase C, which includes the detail definition of the final project concept, including the systems design and the breadboarding of critical systems and subsystems, as necessary, to provide reasonable assurance that the technical milestone schedules and resources estimates for the next phase can be met, and that a definitive contract can be negotiated for Phase D.

For Phase D the contractor or one of the contractors for Phase C is usually selected, which includes final hardware design and development, fabrication, test and project operations.

The specific content and timing of any phase is a function of the project itself, and maximum flexibility is provided in this regard. There must, however, be strict adherence to the fundamental concept of top management participation at all major decision points. These decision points are prominently identified: The desired benefits Phase Project Planning will yield are — develop the maximum number of options and opportunities for future aeronautical and space projects; provide options that will give the maximum annual and long-term budgetary flexibility; provide the means for critical investigations of the most feasible project approaches; permit the final selection of projects for execution on the basis of sound technical concepts; establish in-house management and contractor teams, and with full understanding of the resource schedules and other pertinent factors involved, provide a framework for clearly understood delegations of authority and responsibility down to the lowest level of management; permit more effective and flexible allocation of existing resources as well as planning for their future use; minimize the agency's risk as well as those of the contractor's; provide a major tool in the control of schedules and costs without compromising technical objectives or penalizing participating contractors; provide the basis for better integration of project planning and execution with overall agency programming and more effective approaches to procurement and contractor selection and provide for more effective interagency coordination in development of a total project plan.

Recently the Atomic Energy Commissioner, James T. Ramey, cited the problem of obtaining qualified contractors and called on the legal and contracting fraternity and industry to see what could be done about contracting methods that would be equitable, but at the same time would improve the quality of performance.

He stated that, "We have learned the hard way that formal competitive bidding on a fixed-price basis for complex development hardware does not necessarily result in obtaining quality products, but sometime even in devising a component that will not work. We learned early in the game that the chances of getting quality performance are greatly enhanced by obtaining competitive proposals from a selected list of qualified contractors."

I believe that this experience is not just limited to the AEC. What makes a qualified contractor? What can we do to assure that you are a qualified contractor? We all will concede that you must have technical know-how and capability. You must have adequate facilities and manufacturing capability. You must have financial stability and management. But, also, to be assured of being a qualified contractor, you can do a great deal in proposal preparation and contract administration to assure future success.

We look back at the ways that the past generations conducted procurements. We swell with pride at what we have accomplished. But in only a few minutes I will try to show you that we have created more unsolved problems than we realize.

These problems are in the proposal preparation and contract administration areas and closely associated areas. We have problems, though to mention a few, which I will discuss in estimating systems, purchasing systems and overhead control.

In light of being a qualified contractor let's look at your estimating procedure.

The General Accounting Office has recently completed a survey of a large group of contractors' estimating systems. And the Comptroller General has reported to Congress that contractors do not have adequate estimating systems that will support the contractors' cost estimates used to support the prices in the contracts. He went further to state that the cost and pricing data questioned by the pricing personnel in contract pricing proposals may total \$1 billion annually. While some amounts questioned are later upheld during negotiation, nevertheless, a substantial amount of Government resources have been, and still are, required to review in detail and to identify and support items questioned for the purpose of negotiations. We get off to a shaky start with the contract with this uncertainty of pricing.

He went further with the recommendation and spelled out what he would consider an acceptable system. He recommended that the contractors have written methods and procedures and stated the absence of detailed current written procedures, and lack of uniform practices is a major contributing factor to the conditions noted through out the survey. Without the written procedures, the practices employed do not provide the assurance that the amounts proposed are reasonable. The absence of management direction and guidance, which should be provided in the procedure, is a leading cause of the adverse conditions found.

The estimating function is such an important one that direction and guidance for its implementation must be in a form that not only assures its complete understanding but also precludes any possibility of misunderstanding. The formal written statement of policies and procedures, rather than the informal one based on established customs of the organization, is almost mandatory for the purpose of multi-division, and multi-plant companies, and in companies where a considerable number of people participate in the estimating function. Both the policies and the related implementing procedures should fully reflect the application of sound financial management.

Proper management seems to require that all important procedures and methods be reduced to writing and, periodically, reviewed and tested to ensure compliance and effectiveness and that top management's policies are carried out at all levels of the organization. How does your company estimate cost?

You should ask if your procedures provide for (1) consistency in the application of policies, (2) use of the most accurate, complete and current cost and pricing data at the time the estimate is prepared, (3) specific guidance and policy direction for the development of each element of cost making up an estimate and proposals, (4) a requirement for disclosure and explanation of any substantial deviations from the established procedures, (5) a prescribed organizational structure for review and approval of estimates, and (6) established procedures for the orderly flow of documentation and data in buildup and support of the estimates.

The Congress passed a law, which is Public Law 87-653, September 10, 1962, and this law attaches extreme importance to accurate and current pricing data.

If you think your estimating systems meet all the prescribed standards, here is one of two ways you can be sure. Tomorrow review the profit and loss results of each of your last 100 contracts, if fixed price, and look at your underrun and overrun history of your cost type. I will be pleasantly surprised if you don't find a saw-tooth pattern that floats from plus to minus and minus to plus. It will not be such with an effective estimating system that accumulates reliable data. Of course, you will have some problems due to materials and manufacturing problems. But nothing like the picture you get from a lack of an estimating system.

I said there are two ways to find out if you have an adequate system. Well, the second way is that the Government will tell you, if you are a Government contractor. There will be estimating systems surveys performed and you can expect to have one in the not to distant future.

An acceptable system will spell out who has the responsibilities within the contractor's organization for originating, reviewing, and approving estimates. It will show what procedures are followed in developing estimates for each of the direct and indirect elements of cost. It will show the source of data used in developing the estimates and in assuring that such data is current, complete and accurate. It will also show the documentation developed and maintained by the contractor to support the estimate, management support of the program review including approval of the estimate controls established to assure consistent compliance with estimating procedures and the extent of coordination and communication between the various elements of the contractor's organization responsible for the estimate.

I am sure the negotiator and contract administrator will welcome such a system. Negotiators will be on firm ground.

The perfection of an estimating system will not make you a completely qualified contractor, but it is a step in the right direction.

We also believe that the contractor's purchasing systems should be reviewed. The reviews that have been made are not favorable. We believe further reviews will benefit the contractor. Correction of deficiencies enable you to become more competitive.

Since a large portion of NASA contract dollars are expended by prime contractors or subcontractors, NASA considers it essential that close surveillance be maintained over prime contractors' purchasing system. In the near future each of your systems will be surveyed.

We feel improved contract placing and administration of subcontracts is one of the most important challenges still to be met. The subcontract placing and administration has not kept pace with the advances made in procurement management and contract management. Case after case will show that cost overruns were primarily attributable to subcontract overrun and late deliveries. This indicates significant deficiencies in subcontract administration.

Industry has not attached the necessary importance to subcontract management that it should have. It has not attacked the subcontract change order problems. Many of the subcontract change orders are not definitized in a timely manner and this impacts on the integrity of the incentives. The negotiated profit rates are up, but realized profit rates have not matched the potential that is available.

Pricing contracts under the "buy" program leaves a lot to be desired. Who does the contracting in your company? Who does the contract pricing? Who makes the decision to "buy"? What basis is used in making this decision? Who obtains the quotations? Who evaluates the response? What criteria is used to evaluate the quotations? How is the determination made that the response meets the technical needs and that the price is reasonable? What standard is used to determine if the price is reasonable? Who does this? Or is a note or phone call made by an engineer telling you to place a contract with company X and here is the price? I am not losing sight of the fact that you must be responsive to the needs to meet delivery and performance, but a well managed organization can serve and better meet its obligations at a less cost. You always have desk covered and the boss wanted all yesterday.

Management should examine to determine if it has established a well thought-out mode of operation and spelled out the roles and responsibilities to the various elements of the purchasing organization. They should go further and determine how important the purchasing function is to the operation. Are purchasing specialists needed? Do purchased materials, components, and services represent a large percentage of the product cost? Do items purchased have technical complexity? What is the annual value of purchases? Are adequate controls exercised on commitments? In what manner are controls maintained? Do you consider the purchasing function a profit-making operation or is it used only as a facilitating service?

This will give you some idea of the areas to be surveyed to determine if you have an effective purchasing system which is very essential for reimbursement under cost-type contracts — of course, this works in conjunction with your accounting system and your estimating system.

The next area that NASA is taking a long, hard look at is overhead cost. Overhead cost of contractors' represent roughly 50% of the NASA dollars expended under contracts — one out of every two dollars is overhead cost. We are convinced that many of the daily administrative processes now being painstakingly performed as a part of contract administration can be eliminated or at least drastically reduced and with no impairment of contract objectives.

One way to achieve this is for the contractors to perform in an efficient, businesslike manner, using, to name a few, established standards in the area of estimating purchasing, property management, accounting estimating and quality assurance. If the contractors can achieve this, then many of the present controls would be removed, money would be saved and perhaps there would be better performance. This would motivate contractors to seek greater efficiencies. I will address myself to one of the areas where increased emphasis can be expected.

In the near future, NASA will be devoting increased attention to the problems of overhead management. By this I mean trying to develop standards for determining when a contractor does or does not do that kind of management job which is consistent with performance of NASA contracts in the most efficient and economical manner. We must be careful not to intrude upon the contractor's legitimate exercise of discretion and decision making. Examples of cost elements customarily included within overhead are bid and proposals expenses, independent research and development expenses and other technical overhead expenses — relocation cost. In each of these areas, as well as others, contractors have costing and accounting practices which reflect firmly established management decisions. The practices of industry management, however, with regard to bid and proposal preparation and IR&D

undoubtedly reflect its assumptions as to what is necessary to meet Government needs to survive in the existing competitive environment.

If the assumption on which contractor management decisions have been made are not entirely valid, or if the environment for decision making can be changed without harm to the long-range interest of the Government's in having a broad industry R&D base, it may be that bid and proposal expenses and IR&D expenses can be reduced. Even if they cannot or should not be reduced, it is still possible that more effective communication between industry and Government could make the expenditures for these costs areas more productive or beneficial from the standpoint of both the Government and industry.

We are intensively studying the desirability and feasibility of controls over contractor overhead cost. While the questions being raised imply the need for greater control by the Government, we are not at all sure that such greater control is necessarily the best answer. We can, in part, reduce expenditures for bid and proposal preparation, for example, by being very clear in our requests for proposals as to what we want and the criteria which we will use in evaluating proposals.

So many times with capable management and technical personnel the contracting and proposal preparation is disorganized and one really doesn't know what the other is doing and it certainly is reflected in the proposal.

In the RFP's the contractors are admonished that unnecessary elaborate brochures or other presentations beyond those sufficient to present a complete and effective proposal are not desired.

The technical evaluation of proposals in some instances indicate that the proposers have not given sufficient consideration to the criteria outlined in the RFP, to afford a comprehensive evaluation of the proposer's intent I wonder why.

Contractors' proposals which do not fully express the depth desired by the criteria furnished them may be construed as lack of understanding for the successful completion of a desired study and may be considered as a basis for a proposal being considered non-acceptable. Conversely, some proposals are too detailed and may convey to the reviewer that the proposer does not have a real grasp of the desired objectives and intended approach.

It would appear to behoove the proposers to scrutinize all RFP's in which they are interested, to see that all requirements of the RFP have been

complied with and all factors of the outlined criteria explained in only sufficient detail to enable the evaluation to be accomplished in a fair and impartial manner and on a timely basis. But we really know what happens too often. The unorganized proposing scheme followed leads to individuals reading into RFP's what they want to best fit their organizational element capabilities, and slant to this end. Also, they follow conversations held with other Government technical people who do not always compare favorably with the RFP criteria. This practice can be fatal.

Now that we have looked at some of the major problems and realize that work must be done to reverse this trend and solve these problems, what are we going to do? We can solve them and we do not need public law to legislate the answers. But the first thing we all need to do is to realize our roles. I know you know that the position you hold as a contract administrator, negotiator, or purchasing agent is one of the most vital, far-reaching roles held by anyone. But we must assume this role by beginning to live in a real world. These are real problems. These are real responsibilities we have. We are dealing with real dollars for which we receive real dollars. I believe when you go to the market place to deal with your own dollars, that is real to you. You want to examine the quality, the construction, the price, and do comparisons of these factors before you shell out your real money. Why should the transactions you conduct at least forty hours a week be any different? But, I'm afraid in too many cases it is. We get into a mechanical exercise and the real green money is replaced by printed forms with words, figures, rubber stamps, and signatures, and we lose sight of the real dollars these papers, words and figures represent. We should not get into this mechanical routine. We should search, and explore, and apply judgment.

Everyday poor and unrealistic judgments are brought to the attention of management, which reflects that our contract management decision makers are living in two different worlds. For example, a decision maker submits a voucher for per diem, which we all recognize to be from \$16 to \$20 a day. What happens to us when we are billed for individuals at a rate from \$16 to \$60 a day? When a group can visit one city and the expense account has a range such as that, I believe the decision maker was looking at the form, words and figures. Does the same thing happen when we don't test to determine the reasonableness of price for an item. But you can be sure that the voucher auditors will associate the form, words and figures to circumstances, product and dollars, and reimbursement will be short.

You are important to your company, and in most cases, your company knows this. I hardly believe that there is an organization that could continue to function without contracts. Of course, the organization must have

all elements of technical, manufacturing and administration, but the efforts of all this is a result of a contract to buy or sell.

It should be realized that the contract is the conveyor upon which the products flows to the customer. How well this conveyor is constructed should be of major concern to you, and management should allow you to be concerned. Now you can find out what your management thinks of this conveyor by how well they have defined the specifications for this conveyor. What went into establishing these specifications? Did they use a good established estimating procedure, a good purchasing system, and good cost control measures?

What role has top management assigned the conveyor operator? To do the job desired you must have a well-oiled, all parts assembled, correct conveyor (contract).

All of these objectives can only be achieved by hard work and enthusiasm — especially enthusiasm.

You know, there seems to be a strange, almost magic power that emanates from people who have honest enthusiasm. We have seen instances of how enthusiasm seems to breed unbelievable energy and resourcefulness for those who have it.

Companies in which employees have enthusiasm for their work often seem to succeed in spite of unbelievable odds. Perhaps one reason is because customers enjoy doing business with enthusiastic people.

There is a difference between honest enthusiasm and high pressure salesmanship.

Many people have gained reputations as good workmen by simply developing the uncommon habit of putting everything they've got into everything they do.

I think it is safe to say that you are in the center of all the business conducted by your company.

Really what can be said about having capable, talented technical and manufacturing personnel with good equipment in ideal facilities if no one knows how to administer the contracts, or maybe I should say if management does not put the proper emphasis on the conveyor. Be the conveyor operator and not the repairman.