PROPOSAL REQUIREMENTS IN TECHNICAL, COST AND MANAGEMENT FACTORS

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Previous speakers have provided a broad picture of the preparation required to bring a program to that point when Industry can be solicited for proposals. In most cases Industry by this time has had an awareness of the general program requirements by virtue of the synopsis announcement in the Department of Commerce Daily Bulletin. It is assumed that that segment of Industry which has an interest in the program begins at that point to prepare for the anticipated competition. And probably the most interested members of the Industry community started preparations earlier than the announcement time.

The comparison of the pre-solicitation efforts of a company to that of a finely trained team may be here applicable. Although impatiently waiting for the referee's whistle that marks the start of the game, the team, individually and collectively, must keep their skills sharpened. How successful the team will ultimately be depends on many factors. Some of the more obvious ones are:

a. The kind and degree of training received

b. The personal capabilities of the team members

c. The managerial direction given to the team

d. The personnel depth of the team

e. The efficiency of the team effort

f. The team spirit or the will to win

Leaving our analogy and returning to the subject of proposal requirements, those companies which have been determined to be the more qualified potential contractors will receive the official Request for Proposal which for brevity we will call the RFP. The normal RFP contains many documents and in the period of the competition additional documents may be generated. The successful offeror will of necessity be involved with many, many more documents during the period of contract compliance. Yet, gentlemen, I submit that there is no one single paper as important to you as the one item in the RFP called the "Technical Proposal Requirements" (TPR).

The manner and degree to which you, Mr. Industry, respond to the TPR will be the most significant factor in determining whether you or your competitor will get as far as the negotiating table. My objective today is, therefore, to provide as much information as I can about the format and application of the TPR. Your technical and cost proposals will prove to be the more responsive to the requirements if there is greater mutual understanding of what the TPR specifies and how it is used.

First, and probably foremost, the TPR is designed to give the people who must review and evaluate the proposals the basis for a fair comparative analysis. For this reason proposals which deviate from the format required by the TPR are not encouraged. I therefore think it will be of considerable benefit if we examine a typical Technical Proposal Requirement. The TPR will generally contain three major sections and these are:

I The Technical Approach

II The Implementation Plan

III The Integrated Logistics Support Plan

The Technical Approach and Integrated Logistics Support Plan Sections of the TPR will always specify weighting factors that have been assigned to each major chapter and in many cases the sub-chapters of the two sections. It is therefore evident that we expect you to know the relative importance of the various elements within the technical and logistics support areas and to make judicious use of this knowledge in your proposals.

The TPR, as you receive it, will be quite detailed in the specifics required for the proposal presentation. Your responsiveness to these specifics and simultaneously the technical quality of your proposal are the basic factors that will be weighed and judged. You can be assured that no proposal will be judged by this Center's technical personnel on the basis of requirements which are not delineated in the TPR nor will revisions be introduced without giving each of the offerors a fair amount of time in which to respond.

Now, let us look at the Technical Approach Section. I do not propose to discuss the details except to note the similarity of the objectives with any other Technical Approach you may be called upon to write. Suffice it to say that, apart from cost considerations, there is no single element of your proposal which will require as much effort and consideration on your part as the Technical Approach Section. Your ability to formulate a workable, straightforward hardware system that is responsive to the specification requirements is here paramount. A further objective is to indicate your ability in making maximum use of existing technology in meeting the hardware requirement. This principle is particularly applicable when training device hardware must be developed within limited time periods - and it would seem that this situation almost always is the case.

Obviously, there is a relationship among the several technical elements, and it is your task to demonstrate your understanding of these relationships in the Technical Approach Section. In this connection, gentlemen, please note that no proposal is ever rated on prose or writing skill. Nevertheless, clarity in the text and good illustrations go a long way to insure that your message gets across to the reviewers.

The Implementation Plan Section of the TPR will usually require a presentation of your management plans, certain other considerations, and labor and material estimates. Although weighting factors will not be assigned to the elements of the Implementation Plan, a poor response here can easily negate all the good work you may have done in the other sections of the proposal. In other words, you will not gain points for doing your Implementation Plan homework, but evidence of poor management planning or inadequate consideration of the other factors could easily subtract from the total worth of your proposal. In this context your estimates of the engineering and manufacturing effort and material costs required to produce the hardware items of the proposed contract schedule will be carefully analyzed.

In every Request for Proposal, the offerors are required to provide breakdowns which are used by the Center's technical staff in comparing, judging, and evaluating the respective efforts which have been estimated for the hardware items of the proposed contract. The specific format for the breakdowns may vary with the particular Request for Proposal, but in every instance the offerors are expected to provide the effort breakdowns in the specified format.

It is appreciated that cost data may not be developed by any company exactly as required in the format. It is normal that each company would develop a work breakdown structure and would apply accounting procedures that differ from its competitors.

For this reason deviations from the required format cannot be permitted. Otherwise, the number of formats would be equal to the number of offerors.

The need for including all effort required to produce the hardware item cannot be overemphasized. A complete and reasonable effort breakdown for the hardware items will go a long way towards reducing or eliminating questions by the Center's technical people.

The estimated material costs for the hardware items are usually further broken down into basic quantities and average unit costs. The format for providing this information is shown in Figure 4. In the example the total material is divided into its principle elements: purchased parts, subcontract items, and other materials. The information presented in the slide is subject to audit procedures and again to avoid questions and challenges should be as accurate as possible.

The total effort breakdowns for the hardware items are now transferred to the Summary of Costs which is used for each item of the proposed contract schedule. As is evidenced from Figure 5, there is nothing complex about this table. After making the entries in the appropriate boxes and factoring in burden, G & A, and profit rates, the proposed total price for each item is quickly arrived at. Figure 5 shows only three items of a typical contract schedule. The TPR will delineate each item of the contract schedule for that particular procurement.

I almost feel embarrassed to show Figure 6 to you. But you would be surprised at the number of proposals we read which have one total for engineering effort in one table and a completely different total in another table. Or it might be manufacturing effort or perhaps material costs. It is obvious that some attention must be paid to the consistency among the various entries. It will, I assure you, be mutually beneficial to all parties.

The final section of the Technical Proposal Requirements is the Integrated Logistics Support Plan. As you will note from your program brochure, comprehensive presentations of all aspects of this Center's training device support program are scheduled for tomorrow morning. You will find that the document which defines the total support program is NTDC Bulletin 40-1, Integrated Logistic Support for Training Devices. The Integrated Logistic Support Plan is then basically the offeror's response to the requirements as set forth in NTDC Bulletin 40-1 in the format and specifics required by the TPR. The major chapters of an Integrated Logistic Support Plan Section would usually be:

a. Understanding the Problem

b. Definitive Program Plans

c. Maintainability Planning

d. Publications

e. Training Courses

f. Repair Parts Support and Provisioning

Each of the chapters of the Integrated Logistic Support Plan is reviewed by specialists in the respective areas. Since "a chain is no stronger than its weakest link," the obvious conclusion is that the care and attention given to the previous sections of the TPR must be equalled in this Section. Specialist counterparts in your organizations should carefully analyze the support requirements of NTDC Bulletin 40-1 as these relate to the peculiar hardware that is to be furnished. The TPR defines the detail information required in the individual chapters of the Integrated Logistic Support Plan, and your

TYPICAL DIRECT MATERIAL QUANTITY AND COST BREAKDOWN FOR HARDWARE ITEM OF SCHEDULE

MATERIAL LISTED IN ONE CATAGORY SHALL NOT BE REPEATED IN ANOTHER CATAGORY

MATERIAL	NUMBER REQUIRED	AVERAGE UNIT COST	TOTAL COST
I. PURCHASED PARTS			
A. ELECTRONIC & MECHANICAL EQUIPMENT			
1.			
2.			
etc.			
B. HARDWARE & STANDARD PARTS			
1.			
2.			
etc.			
PURCHASED PARTS SUBTOTAL			
II. SUBCONTRACT ITEMS (Specify materials, services, and proposed subcontractor)			
1.			
2.			
etc.			
SUBCONTRACT ITEMS SUBTOTAL			
III. RAW MATERIAL			
1.			
2.			
etc.			
RAW MATERIAL SUBTOTAL			
IV. OTHER MATERIAL			
1.			
2.			
etc.			
OTHER MATERIAL SUBTOTAL			
GRAND TOTAL			

Figure 4.

TYPICAL SUMMARY OF COSTS OF CONTRACT SCHEDULE ITEMS

CONTRACT SCHEDULE - ITEM DESCRIPTION	TECHNICAL DATA		HARDWARE ITEM		MOCKUP MODEL	
CONTRACT SCHEDULE - ITEM NUMBER	1		2		3	
COST ELEMENTS	HOURS	DOLLARS	HOURS	DOLLARS	HOURS	DOLLARS
1. DIRECT MATERIAL COST						
2. DIRECT ENGINEERING LABOR						
3. ENGINEERING BURDEN, % Item 2						
4. DIRECT MANUFACTURING LABOR						
5. MANUFACTURING BURDEN, % Item 4						
6. OTHER DIRECT COSTS (TRAVEL, SUBSISTENCE, SHIPPING, etc.						
7. PUBLICATIONS LABOR						
8. PUBLICATIONS BURDEN, % Item 7						
9. FIELD SERVICE LABOR						
10. FIELD SERVICE BURDEN, % Item 9						
11. SUBTOTALS						
12. G & A, % Item 11						
13. TOTAL ESTIMATED COST						
14. PROFIT OR FEE, % Item 13						
15. TOOLING						
16. ROYALTIES						
17. TOTAL PRICE - SUM OF ITEMS 13, 14, 15 and 16.						

Figure 5.

RELATIONSHIP OF EFFORT DATA DEVELOPED FOR HARDWARE ITEM OF SCHEDULE

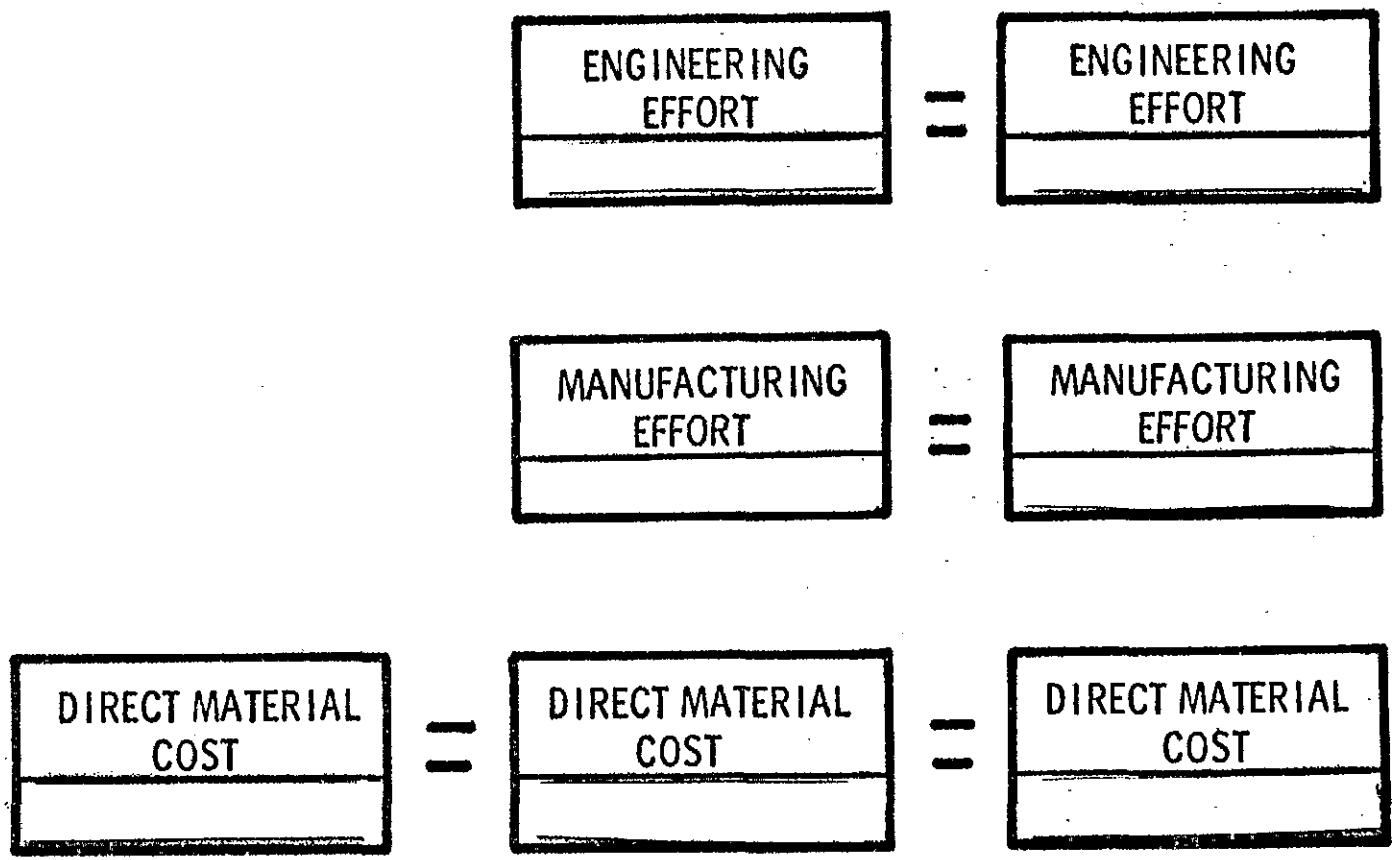

Figure 6.

responses will naturally follow the discussion format specified in the TPR.

The TPR represents the total task as seen by the Government. We will assume that the Government people have done their homework and the TPR is a complete and understandable document. It now becomes your task to respond as completely and as understandably in your technical and cost proposals. And to paraphrase an old and overworked cliche: "May the best proposal win."

VALUE ENGINEERING

Mr. R. L. Bidwell
Martin Company

Value Engineering is an organized approach for reducing costs. Value Engineering is the application of techniques to identify the function or functions of a product or service; determine the absolute necessity of all functions; establish a monetary value for the essential functions, and provide these functions reliably at the proper time and place at lowest overall cost. We believe it must apply to all operating levels from concept to grave - life cycle. It must also be organized - plant-wide, project-wide.

A typical finished analysis is probably the best way to show you what the definition really means. In Figure 7 you see an electronic tube clip. This is a three-piece assembly. Two pieces are of aluminum with silicon rubber coated on the inside and a spring steel clip slips over the assembly. It is a standard military product commonly used in the aircraft industry for electronic tubes. The clip provided the function it was suppose to provide. During the flight test other components on the circuit board developed vibration to an extreme extent. We either had to dampen the vibration of the individual parts or figure a way to encapsulate and dampen the vibration with single operation. The solution involved a closed cell material. It eliminated the vibration problem. It is well to understand the circuit designer had no responsibility in terms of solving the vibration problem. This was done in manufacturing engineering with advice from the original design group. Tube clips were really considered an inexpensive part. No effort was made to remove the tube clip cost at the time of the encapsulation. Upon examining our high cost areas, we found tube clips were costing this company $125,000 per year. This prompted a review of the item. In analyzing the functional capability, Figure 8 shows the four tube clip functions. Figure 9 indicates whether or not the particular functional capability of the tube clip is necessary in the existing situation. Figure 10 shows the functional worth assessed to each function.

The first function "mechanical fastener" could be accomplished by a stand-off clamp for two cents. This was the functional worth of this function. The second function "radio frequency shielding" could be accomplished by applying common aluminum foil. We estimated the worth of this function at one-half cent. The third function "heat sinking" was a more difficult one to accomplish. However, this function could be accomplished by increasing the thickness of the foil or by using a metal tube. We assess ourselves three cents as a functional worth in this case. The fourth function "vibration dampener" is shown as a functional worth slight of zero. This is no criticism of the vibration dampener capability of the tube clip. It is merely a practical assessment of this function's worth. The total, five cents, represents a cost to produce target against which the designer had to work in an attempt to secure a less costly yet equally reliable product. If the designer can design to meet these estimates of functional worth we will realize a major reduction in program cost. In this particular case we did accomplish a design but our buying operation could not meet the five cent target;