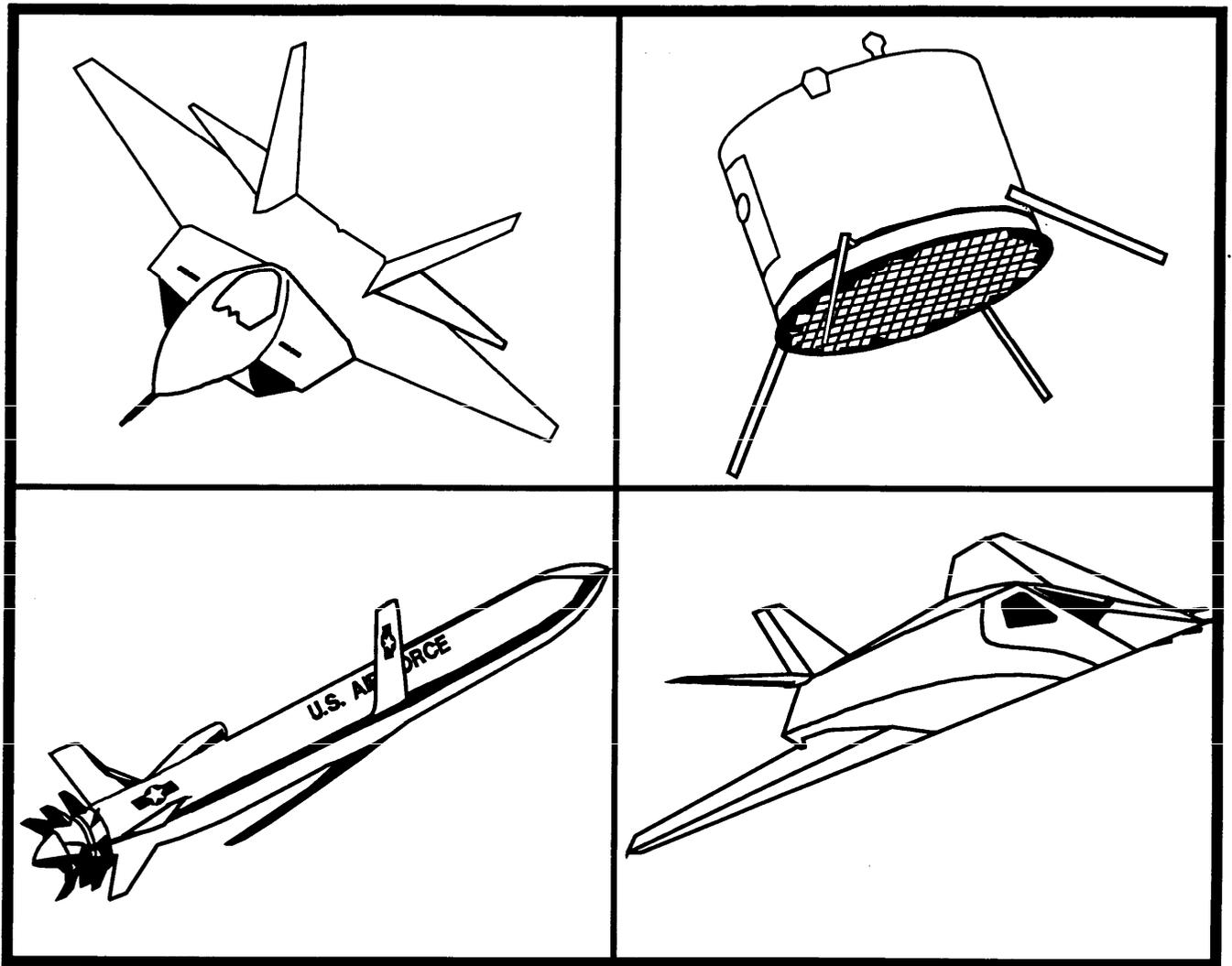


FINANCIAL MANAGEMENT

**GUIDE TO ANALYSIS
OF CONTRACTOR
COST DATA**





GUIDE TO ANALYSIS OF CONTRACTOR COST DATA

This pamphlet is designed to provide the tools necessary for better analysis of contractor cost/schedule information. It applies to all AFMC members. It does not apply to Air National Guard or to US Air Force Reserve units and members.

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Chapter 1

FOREWORD

1.1. Foreword:

1.1.1. The purpose of this pamphlet is to provide a source of suggested techniques to aid in the analysis of contractor-generated financial data. The use of such techniques will provide insight into the status of the program or contract and help forecast future cost performance based upon present trends. This guide was originally published in June 1977 with a major revision in September 1989. It contains a detailed analysis of a sample program utilizing sample Cost

Performance Report (CPR) data. Each analyst is encouraged to develop other techniques and do further research to find the techniques that best suit his or her needs.

1.1.2. This revision to the guide now includes a discussion of the Performance Analyzer charts and reports. Also, this update includes a new section on Over Target Baselines and on how to calculate fee using a share ratio. This guide is used by the vast majority of program analysts. Suggestions for further improvements to this guide should be directed to HQ AFMC/FMAC, Attn: Captain Tim Wallender (OPR), Wright-Patterson, AFB OH 45433-5006, (513) 257-3920 or DSN 787-3920.

Chapter 2

GENERAL GUIDANCE

2.1. Purpose. This pamphlet provides guidance in analyzing cost and schedule data provided by DOD contractors who submit a contract funds status report (CFSR), contractor cost data reporting (CCDR), cost performance report (CPR), or cost/schedule status report (C/SSR).

2.2. Scope. This pamphlet is designed to assist individuals responsible for dealing with contractor-generated financial data, either in the contract administration offices (CAO), product divisions (program office or staff), laboratories or headquarters.

2.3. Background Information:

2.3.1. The government has been trying to reduce cost growth and increase visibility over defense acquisition programs. In today's environment of reduced DoD budgets, it is even more important to manage every program's limited funding. The current policy for improving management visibility over program status through a criteria approach has been very effective.

2.3.1.1. This policy, as implemented by the Cost/Schedule Control Systems Criteria (C/SCSC) Joint Implementation Guide (AFMCP 173-5), requires the contractor's own management system to meet specific criteria instead of prescribing a specific management system to be used. The criteria permit the contractor to use their own initiative in developing a flexible management system suitable to the needs of their organization as well as meeting the requirements of the government.

2.3.1.2. In accordance with DoD Instruction 5000.2 and DoD Manual 5000.2-M, for major contracts which are estimated to require a total cumulative financing for research, development, test and evaluation in excess of \$60 million, cumulative procurement contracts or modifications in excess of \$250 million, the contractor is required to use a C/SCSC-compliant management system capable of providing data which:

2.3.1.2.1. Indicate work progress.

2.3.1.2.2. Properly relate cost, schedule, and technical performance.

2.3.1.2.3. Are valid, timely, and auditable.

2.3.1.2.4. Supply DoD managers with a practicable level of summarization.

2.3.2. Typically, the government will require a Cost Performance Report (CPR) for those contracts requiring C/SCSC compliance. The Cost/Schedule Status Report (C/SSR) is generally applied on contracts above \$5M up to the C/SCSC thresholds with slightly different thresholds between the various operating centers in AFMC and throughout the DoD community.

2.4. Analysis:

2.4.1. The techniques, charts, and tables used in this guide are not all-inclusive. The analyst should look at the data received from the contractor, decide what information should be emphasized, and then present this information in a manner meaningful to the project. The contractor is required to adequately explain in detail all significant variances (as specified in the contract data requirements list (CDRL)) shown in the CPR or C/SSR, leaving no doubt as to:

2.4.1.1. What is the cause of the specific problem?

2.4.1.2. What is the impact on the immediate task and on the total program?

2.4.1.3. What action has been taken to correct the problem?

2.4.1.4. When will the problem be corrected?

2.4.2. The data cannot be adequately analyzed without an understanding of the contractor's management systems and the item being produced. If the program or financial analyst was not a member of the C/SCSC review team which reviewed the contractor's management system, the analyst should study the contractor's system description and the demonstration review report and then request the team chief or other knowledgeable individuals to provide a briefing on the system. The briefing should include the contractor's method for establishing and maintaining the performance measurement baseline, the methods for earning budget for work performed, and the procedure for updating the latest revised estimate. Also, a description of how the contractor handles CCPs, ECPs and OTBs would be helpful.

2.4.3. The more common causes for unfavorable variances are listed below. The analyst must look for evidence of these and other similar problem areas.

2.4.3.1. Poor initial planning or estimating.

2.4.3.2. Technical problems.

2.4.3.3. Cost of labor or material higher than planned.

2.4.3.4. Inflation and new labor contracts.

2.4.4. Favorable variances must also be analyzed and may not be desirable. Poor initial planning could be the cause of a favorable variance. For this reason, the analyst must critically examine the reasons for underruns as well as overruns. Favorable variances can generally be attributed to one or more of the reasons listed below:

2.4.4.1. Poor initial planning or estimating.

2.4.4.2. Technical breakthroughs.

2.4.4.3. Cost of labor or material lower than planned.

2.4.4.4. Front-end loading (deliberate over budgeting early in the life of the program to create a more favorable cost variance (CV) early in the program.).

2.4.4.5. Method of earning BCWP affected by report cutoff dates.

2.4.5. The analyst must present contractor data in the most meaningful way possible. Some ways in which the meaning of data can be distorted or misleading in a presentation are: collapsing the vertical scale, which tends to level out or obscure variances; enlarging an axis which explodes the data and exaggerates the differences between lines; and dividing by an at-completion number rather than by the cumulative-to-date number to lessen the percentage of variance.

Chapter 3

COST PERFORMANCE DATA DISCUSSION

3.1. Cost/Schedule Control Systems Criteria (C/SCSC):

3.1.1. The basic manner in which the project manager can obtain cost and schedule performance information to monitor the status of a contract is through the use of CPRs and C/SSRs. However, in order for the project manager to obtain valid data from these reports, the contractor's management system must have meaningful disciplines understandable to both the contractor and the government. Without these disciplines, no management report can be considered trustworthy. To provide uniform guidance, a set of criteria was developed against which the contractor's management system must comply. Details of the criteria's application are explained in AFMCP 173-5. The CPR is then obtained from the contractor by specifying data item (DI) DI-F-6000C on DD Form 1423, Contract Data Requirements List. The report data elements are explained below.

3.1.2. The criteria require the contractor to plan work into detailed work packages. Based on the starting and stopping dates of each work package and on the budgets assigned, a budget is developed for each month of the contract. At the close of each reporting period, the contractor reports the dollar amount of work budgeted during each reporting period and the cumulative work budgeted to date (only cumulative values appear on the C/SSR). This is the budgeted cost for work scheduled (BCWS) to be completed.

3.1.3. In addition to the BCWS, the criteria require the contractor to provide a report of the budgeted dollar value of work completed during each reporting period and the cumulative total (only cumulative values appear on the C/SSR). This is the budgeted cost for work performed (BCWP). Regardless of the actual cost to perform the work, the BCWP includes only the budgeted cost (BCWS) for each element of work that the contractor has completed. The difference between the BCWP and BCWS is the dollar value of the schedule variance (SV), that is, the dollar value of work the contractor is ahead of or behind schedule. Significant variances (variances breaking the threshold defined in the CDRL) must then be analyzed to determine the cause, impact, and corrective action required.

3.1.4. The criteria also require the contractor to accumulate the costs for effort performed on the contract during each reporting period and the cumulative total (only cumulative values appear on the C/SSR). This is the actual cost of work performed (ACWP). The difference between the BCWP and ACWP is the cost variance (CV). Again, significant variances must be analyzed to determine the cause, impact, and corrective action required.

3.1.5. All data elements (BCWS, BCWP, and ACWP) must be collected and sorted in such a manner that they can be summarized both by the contractor's functional organizational structure and by the product-oriented work breakdown structure (WBS) (only the WBS is shown in the C/SSR).

3.1.6. Finally, the contractor must have a means for estimating costs at completion of the contract. Estimates at completion (EAC) must be generated at cost account, major functional, major subcontract, WBS element, and total contract levels.

3.2. Work Breakdown Structure (WBS):

3.2.1. MIL-STD-881 (latest edition) was developed in order to obtain a consistent reporting base from the varied defense contractors. MIL-STD-881 identifies government standardized WBSs and elements. A WBS is a product-oriented family tree composed of all the hardware, software, services, and other work tasks required during the development and production of a defense materiel item.

3.2.2. The criteria state that the contractor must be able to identify variances at the cost account level. The cost account level is the intersection of the WBS and the organizational structure where performance of the work is managed. However, the government must be provided with summarized data: summarized both for the WBS identified in the contract and for the functional organizations within the plant. Normally, the contractor is required to summarize progress at the third level of the WBS for reporting to the government. Because all costs can generally be

identified at a level lower than the lowest level of the WBS, the contractor can readily summarize such dollar values to any WBS level required for internal reporting or to any WBS level required for reporting to the government. In order to comply with the criteria, the contractor must analyze summarized dollar variances down to the cost accounts causing the variance.

3.2.2.1. Reporting at a summary level has the advantage in that small variances will usually "wash out" (positive and negative variances cancel each other), but larger variances will normally remain and be reported on the WBS or functional formats of the CPR.

3.2.2.2. If either the contractor or the government desires to know the cause of a variance, the precise area can be pinpointed by working progressively downward through the data. The use of a CPR, oriented around a common and consistent WBS, gives the government the visibility it needs over the item being produced and offers both the government and the contractor a common means of communication.

3.3. Cost Performance Report (CPR):

3.3.1. The CPR consists of five formats generated by the contractor to report performance to date, identify and explain significant cost and schedule variances, identify future man loading requirements, and explain changes to the performance measurement baseline.

3.3.2. The purpose of the CPR is to provide the program manager's office with the status of the program and the impact of problems, outline any trends that may be developing, and provide a basis for a detailed analysis of the financial health of the contract.

3.3.2.1. Format 1 - WBS: provides data to measure cost and schedule performance by summary level WBS elements.

3.3.2.2. Format 2 - Functional categories: provides data to measure cost and schedule performance by organizational or functional cost categories.

3.3.2.3. Format 3 - Baseline: provides the time-phased performance measurement baseline changes to the contract for the current month and a forecast of the BCWS for future periods.

3.3.2.4. Format 4 - Manpower Loading: provides manpower loading actual and forecasts for correlation with WBS/functional estimates at completion.

3.3.2.5. Format 5 - Problem Analysis: provides a narrative report used to explain significant cost and schedule variances and other identified contract problems.

3.4. Cost/Schedule Status Report (C/SSR):

3.4.1. The C/SSR was designed to fill the needs of programs too small for full C/SCSC application. The C/SSR uses similar terms and reporting formats as used in the full C/SCSC application. However, the system discipline and depth of reporting is more summary in nature. C/SSR is not intended to substitute for the CPR and is not used where a C/SCSC requirement exists. The C/SSR is not normally applied to firm fixed-price contracts.

3.4.2. C/SSR is basically a scaled-down version of format 1 of the CPR, although there are some important differences which should be clearly understood to avoid misapplication. For example, the C/SSR does not require performance reporting on a functional basis (CPR format 2) nor is incremental, current-period reporting required. In addition, the C/SSR does not require the man loading projections and baseline reporting which are a part of the CPR. The most important difference between the CPR and the C/SSR involves the definitions for the data elements BCWS and BCWP. For CPR reporting, BCWS and BCWP must be the result of the direct summation of work package budgets. The C/SSR provides for the determination of these values through means other than work packages. The specific methodology to be used is a negotiable item between the contractor and the DOD project manager. Thus, the C/SSR gives the contractor greater flexibility in the selection of an internal performance measurement technique than does the CPR.

3.4.3. The C/SSR format consists of two major sections: contract data and performance data. Contract data are intended to establish the overall contract value for baseline purposes. Since the C/SSR is primarily designed to reflect contract cost/schedule performance, a complete understanding of the contractual situation is necessary. The performance data provide contract status on a cumulative-to-date basis for selected elements of the WBS. In addition, the contractor's latest revised estimate (LRE) of cost at contract completion is provided for comparison with contract budgets. General and Administrative (G&A) budgets and costs, undistributed budgets (UB), and management reserve (MR) budgets are also shown separately from amounts applicable to the individual WBS elements. The bottom line should reflect total contract performance to date and projected contract overrun or underrun. However, this is only true if the sum of the lower level budgets at completion (BAC) equals the contract budget base (CBB) at the total contract level. If a situation should exist where the total lower-level budgets exceed the CBB, it means that an overrun has been built into the baseline plan. The report then must be viewed in a different perspective since the performance data no longer reflects contract cost performance, only performance against that overrun plan.

3.5. Contract Funds Status Report (CFSR). This report is submitted quarterly to provide the project manager and DOD with information to assist in updating or forecasting contract funds requirements, planning and decision-making on funding changes, and developing funds requirements and budget estimates. A useful feature of this report is the provision for reporting commitments and cumulative expenditures as of specific periods throughout the remainder of the contract. All changes to the CFSR must be explained by the contractor in accordance with the CFSR instructions. Chapter 7 of this guide discusses reconciliation of the CFSR to the CPR, C/SSR and CCDR.

3.6. Contractor Cost Data Reporting (CCDR). This is a series of cost reports designed to collect actual and projected costs of acquisition programs for DoD cost analysis use. The CCDR allows the collection of detailed internal contractor cost data which can be used in the development of feasibility studies, parametric cost analyses, and other cost analysis functions. The CCDR reports are described in AFMCP 800-15.

Chapter 4

ANALYTICAL TECHNIQUES

4.1. Purpose:

4.1.1. The government utilizes the Cost Performance Report (CPR) and Cost/Schedule Status Report (C/SSR) to make sound management decisions. The information contained in these reports is very useful but requires an in-depth analysis to determine the current status of the contract. This chapter will focus on how to analyze these reports using various analytical techniques that are essential to the analyst.

4.1.2. Additional analysis of contractor cost data can be attained from CAO and Defense Contract Audit Agency surveillance information. The standard information available is listed in AFMCP 173-6.

4.2. Contract Status Determination:

4.2.1. Contract Cumulative Performance:

4.2.1.1. Cumulative Contract Performance Status. Graphic displays of CPR or C/SSR cost and schedule data can assist in the analysis and understanding of the data. Figure 4.1 shows how to plot the cumulative contract performance status. This chart plots the time-phased BCWS, BCWP and ACWP on a cumulative basis from the beginning of the contract and does a good job of illustrating the total contract and current status. The BCWS shows the amount of work (in dollars) scheduled to be accomplished by that date. The BCWP line indicates the amount of work (also in dollars) actually accomplished. The BCWP can, therefore, be compared with the BCWS to determine the schedule status of the contract. The ACWP line indicates the actual cost to perform the work. The ACWP can be compared with the BCWP line to determine if costs are exceeding budgets. Since BCWP represents the work actually accomplished, all comparisons for both schedule and cost are made against the BCWP line. The example shown indicates a contract which is behind schedule and overrunning cost, with both the cost and schedule trends getting progressively worse.

4.2.1.2. Total Budget and Estimate at Completion. The Budget at Completion (BAC) of the Performance Measurement Baseline (PMB), shown in Figure 4.1 as the BAC, is the cumulative total of all lower level cost account budgets, Undistributed Budget (UB), Overhead Budgets, General & Administrative (G&A) budgets, and Cost of Money Budgets. The BAC of the PMB excludes Management Reserve (MR) and is synonymous with $BAC = CBB - MR$ (see Figure 13.1, column 14). The Contract Budget Base (CBB) is the total of all budget authorized on the contract, or Negotiated Cost plus Estimated Cost of Authorized Unpriced work (see Figure 13.1, header information) The CBB is also calculated by taking the BAC of the PMB and adding MR. It is important to note the difference between the BAC of the PMB and CBB, calculations will be made throughout this guide using both of these terms. The Estimate at Completion (EAC) is the estimate of final costs at the end of the contract. Typically, the contractor's EAC is defined as the Latest Revised Estimate (LRE). Figure 4.1 shows an EAC that is projected to be higher than the CBB meaning an overrun at completion is expected.

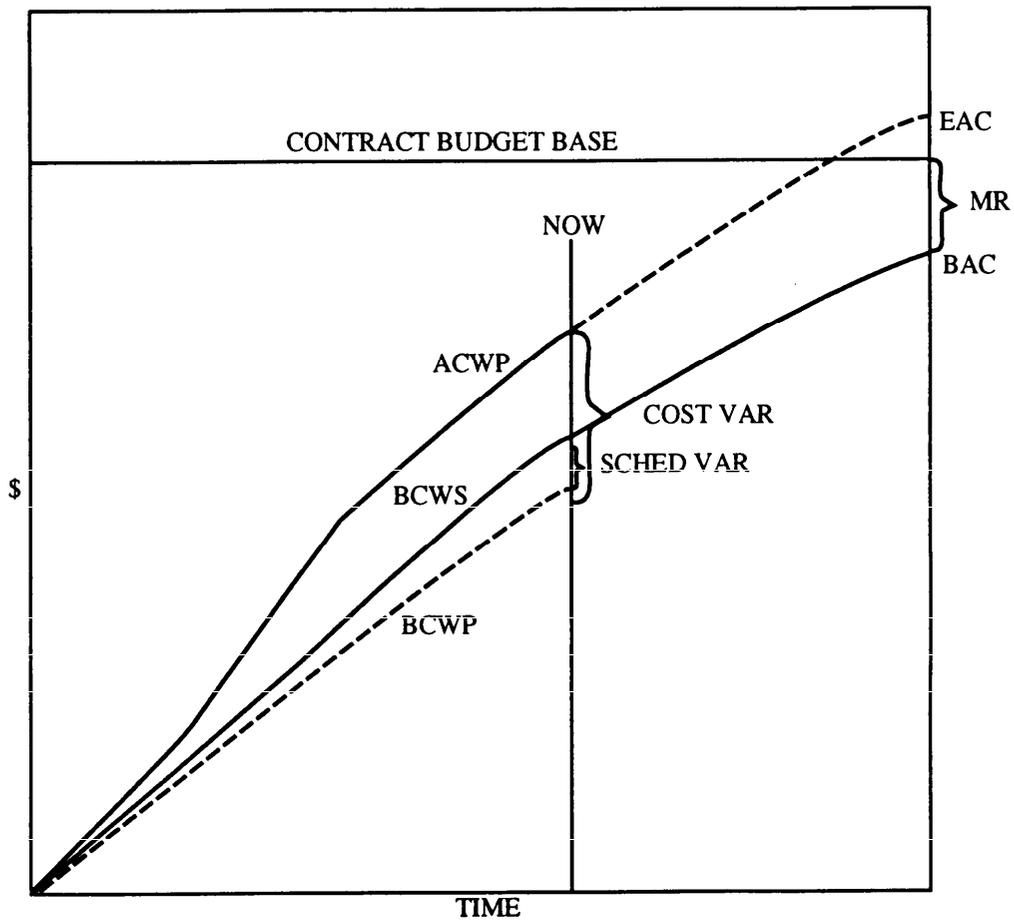


Figure 4.1. Cumulative Contract Status.

4.2.2. Dollar Variance Trend: The dollar variances plotted in Figure 4.2 are from our Advanced Fighter (FX) example using the information in Figures 13.2 through 13.12. The techniques described within this section use the Advanced Fighter (FX) CPRs in chapter 13 as the basis for all formula calculations. Where a single month's data is required, the information from the January 1993 report (December 1992 data, Figure 13.13) is used. Trend analyses employ all CPRs (Figure 13.2 through 13.12). In Figure 4.2, the difference between BCWP and BCWS is the SV; the difference between BCWP and ACWP is the CV. Note that both SV and CV are negative (unfavorable) meaning we are currently behind schedule and overrunning the budget. Figure 4.2 also shows MR decreasing over time meaning the contractor has been using MR to budget work which was not in the original baseline. It should be noted, the contractor should not use MR to mask cost variances. SV and CV can be analyzed either at the total program level or at any WBS or organizational level to which management attention is desired.

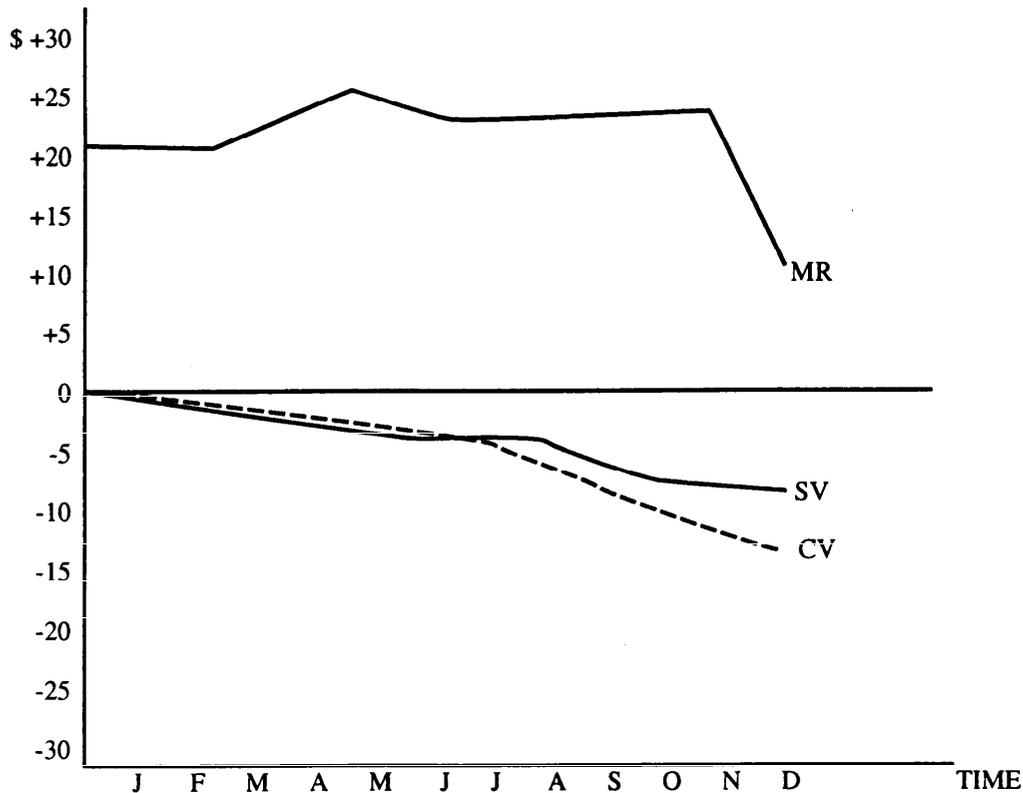


Figure 4.2. MR Comparison CV and SV.

4.2.3. Percent CV: Simply taking BCWP - ACWP to arrive at the dollar CV does not always tell the complete story. A variance is significant relative to some base. CV should be related to the amount of work accomplished. To calculate cumulative CV%, the following formula should be used:

$$CV\% = \frac{CV}{BCWP} * 100 = \frac{(12647)}{78875} * 100 = (16\%)$$

This means that the project is 16 percent over budget. CV percent can be calculated on a current period and/or cum-to-date basis. As shown in Figures 4.3 and 4.4, this data can be plotted over time to show a trend analysis. Figure 4.3 indicates current month variance trends. As you can see, current month trends tend to vary more than the cum-to-date data and can be useful in determining if the contractor is getting better or worse in the short term. Figure 4.4 indicates cum-to-date trend analysis. This data shows that the FX program has been overrunning since the first CPR. The overrun was getting better from March to July (CV% decreased), but in August the contractor experienced an increase in the CV% resulting in a more unfavorable overrun. A quick look at Figure 4.3 shows us there was a big negative increase in the CV% for the current months of August and September resulting in an unfavorable trend for those months with a trend towards a more favorable position starting in September.

4.2.4. Percent SV. Simply taking BCWP - BCWS to arrive at the dollar SV also does not always tell the whole story. Again, a variance is significant relative to some base. SV should be related to the amount of work planned to have been accomplished. To calculate cumulative SV%, the following formula should be used:

$$SV\% = \frac{SV}{BCWS} * 100 = \frac{(7858)}{86733} * 100 = (9\%)$$

This means that the project is 9 percent behind schedule. SV percent can be calculated on a current period and/or cum-to-date basis. Figure 4.3 and 4.4 shows the trend analysis of the SV for the current period and cum-to-date, respectively. The FX program has been behind schedule since the first CPR in January. There was a large downward trend in the SV for both the current period and cum-to-date data during the month of February resulting in a more unfavorable position. SV has been improving steadily since that time through July. August and September show a large negative increase in the SV% with a trend towards a more unfavorable position starting after September.

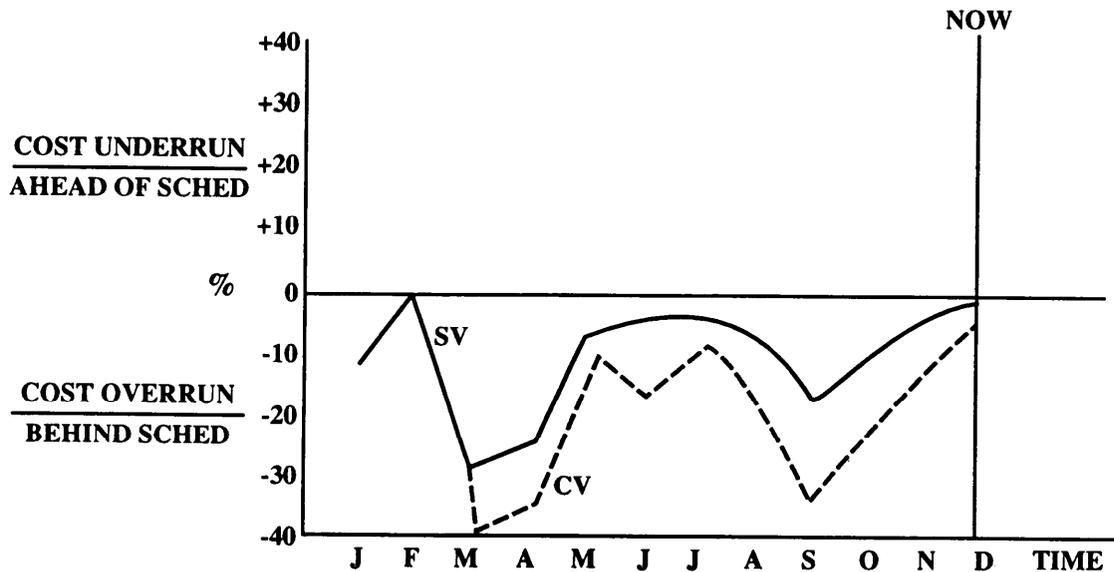


Figure 4.3. Current Month Variance Trend.

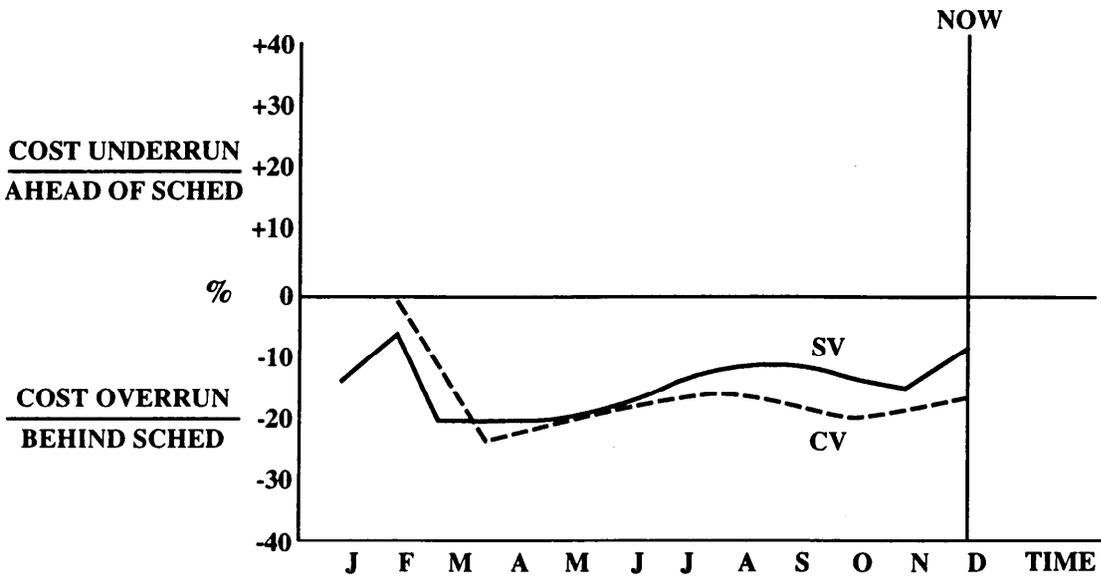


Figure 4.4. Cum-to-Date Percent Variance Trend.

4.2.5. Percent Complete. This is the relationship of the amount of budget (work) accomplished to date (BCWP) to the amount of budget (work) planned for the total contract. The usual base in determining percent complete is the BAC*.

*CBB may be substituted for BAC if all the MR is expected to be used. A portion of the MR expected to be used could be added to the BAC. CPR format 1, column (15), MR line will reflect the amount of MR expected to be consumed before the end of the contract. Reason: MR expected to be used will eventually become a part of the BAC of the PMB. In this example, CPR format 1, column (15), MR line reflects zero MR is expected to be consumed before the end of the contract. Therefore, the BAC amount of 280438 will be used in chapters 4 and 5 of this guide (see Figures 13.1 and 13.13). After completing the analysis using this BAC, the analyst may want to use the BAC (280438) plus MR (11982) if he/she projects the contractor to consume MR. In chapter 6 of this guide, we will assume the contractor will consume all of MR and you can see how this changes the results of our analysis as portrayed in the Performance Analyzer. Percent Complete should be calculated using the following formula:

$$\text{Percent Complete} = \frac{\text{BCWP}}{\text{BAC}^*} * 100 = \frac{(78875)}{280438} * 100 = 28\%$$

This should then be compared to the percent scheduled (planned) to have been accomplished to date $\frac{\text{BCWS}}{\text{BAC}^*} * 100$ and the percent spent to date $\frac{\text{ACWP}}{\text{BAC}^*} * 100$.

Always use the common denominator when doing this comparison. The conclusion drawn by this comparison should yield results compatible with the calculated SV percent and CV percent (see paragraph 4.2.3. and 4.2.4.).

4.2.6. Percent Spent:

4.2.6.1. This is the relationship of the amount spent-to-date (ACWP) to the budget amount specified on the contract.

$$\text{Percent Spent} = \frac{\text{ACWP}}{\text{BAC}^*} * 100 = \frac{(91522)}{280438} * 100 = 32.6\%$$

Again, CBB may be substituted for BAC if all the MR is expected to be used. A portion of the MR expected to be used could be added to the BAC (see discussion in paragraph 4.2.5.).

4.2.6.2. The use of LRE is predicated on the fact that we are in the realm of cost-type contracts and all (or almost all) of the costs will be accepted and borne by the government. For FPI contracts, the ceiling should be considered when determining LRE.

$$\text{Percent Spent} = \frac{\text{ACWP}}{\text{LRE}^*} * 100 = \frac{(91522)}{281960} * 100 = 32.5\%$$

4.2.7. Percent Scheduled: This is the relationship of the budget scheduled to date to the budget amount specified on the contract.

$$\text{Percent Scheduled} = \frac{\text{BCWS}}{\text{BAC}^*} * 100 = \frac{(86733)}{280438} * 100 = 30.9\%$$

Again, CBB may be substituted for BAC* as described above in 4.2e.

4.2.8. Cost Performance Index (CPI):

4.2.8.1. This is an indication of the cost efficiency with which work has been accomplished.

$$\text{CPI} = \frac{\text{BCWP}}{\text{ACWP}} = \frac{78875}{91522} = .862 \text{ or } 86\%$$

4.2.8.2. A CPI can be calculated for both current period and cum-to-date data. In the example above, cum-to-date data were used. This calculated CPI means that for each budget dollar spent, 86 cents in value was received. This indicates poor efficiency or cost overrun. An efficiency index of 1.0 would indicate that cost is on target whereas an index of 1.1 would indicate a cost underrun (higher efficiency). The monthly CPIs can be plotted on a performance trend graph (see Figures 5.6 and 5.7).

4.2.9. Schedule Performance Index (SPI):

4.2.9.1. This is an indication of the schedule efficiency with which work has been accomplished.

$$\text{SPI} = \frac{\text{BCWP}}{\text{BCWS}} = \frac{78875}{86733} = .909 \text{ or } 91\%$$

4.2.9.2. An SPI can be calculated for both current period and cum-to-date data. In the example above, cum-to-date data were used. This calculated SPI means that work has been accomplished at a rate of 91 percent of plan. Thus, a behind schedule condition exists. An index of 1.0 would indicate that the contractor is performing on schedule whereas an index of 1.1 would indicate an ahead-of-schedule condition (higher efficiency). The monthly SPIs can be plotted on a performance trend graph (see Figures 5.6 and 5.7).

4.2.9.3. SPI may also be derived from the following information found in the contractor's scheduling system:

$$4.2.9.3.1. \text{SPI} = \frac{\text{Critical Path Length (CPL)} + \text{Slack (t')}}{\text{CPL}}$$

Slack time (t') is equal to $T_L - T_E$ where T_L is the latest time you can finish an activity and T_E is the earliest time you can finish an activity. The CPL is the longest path in a network with the least amount of slack.

4.2.9.3.2. or a milestone system:

$$SPI = \frac{\text{Project Length} + \text{Time Ahead (or - Time Behind)}}{\text{Project Length}}$$

These indices should be compared to the SPI (BCWP/BCWS) and significant differences explained.

4.2.10. To Complete Performance Index (TCPI):

4.2.10.1. Many times the question is asked about the overrun or underrun at completion of a contract. This method helps to determine if actuals for a contract may exceed the BAC. This is done by calculating the CPI that must be achieved to bring the actuals in at budget. This is called the TCPI and is calculated by taking the Work Remaining and dividing it by the Budget Remaining as shown:

$$TCPI = \frac{BAC^* - BCWP}{BAC^* - ACWP} = \frac{280438 - 78875}{280438 - 91522} = 1.07$$

*CBB may be substituted for BAC if all the MR is expected to be used. Or a portion of the MR expected to be used could be added to the BAC (see discussion in para 4.2.5.).

4.2.10.2. To complete this contract within the BAC of 280438, the contractor must achieve a CPI of 1.07 throughout the remainder of the contract. Since the cum CPI through December is .86 (see para 4.2.8.), the contractor must drastically improve cost performance to come in at budget. If the CPI and TCPI do not start to approach each other as the months progress, the possibility increases that there will be an unfavorable variance at completion.

4.2.10.3. The TCPI to meet the LRE is calculated by:

$$TCPI = \frac{BAC^* - BCWP}{LRE - ACWP} = \frac{280438 - 78875}{281960 - 91522} = 1.06$$

*CBB may be substituted for BAC if all the MR is expected to be used. Or a portion of the MR expected to be used could be added to the BAC (see discussion in para 4.2.5.).

Note that it is about the same as the index to achieve the BAC*. There is a 23% difference between the .86 CPI through Dec and the 1.06 TCPI_{LRE}. Differences of more than 5% should be questioned and the contractor's LRE should be checked for reasonableness.

4.3. Problem Analysis:

4.3.1. Narrative Problem Analysis:

4.3.1.1. When a CPR or C/SSR is received, the problem analysis page (CPR Format 5 Problem Analysis or C/SSR Narrative Explanations) should be closely reviewed to determine if the contractor has provided the specific causes for significant variances, the impact the problem has, the action to be taken to correct these problems and the period of time needed to correct them. The contractor should take special pains to ensure this page is clear and complete. If the project manager or supporting personnel cannot fully understand the analysis from the written page, the contractor should immediately be so informed and be required to submit a more detailed analysis in writing.

4.3.1.2. The narrative analysis should include, although not necessarily be limited to, the following:

4.3.1.2.1. Identification and characterization of the problem. For example, labor variance, material variance, design problem, and test failure.

4.3.1.2.2. Impact of problem on cost, schedule, and technical and related contract performance.

4.3.1.2.3. Corrective action to be taken, including estimated get-well date.

4.3.1.2.4. Identification of the actual variance and percent deviation from plan.

4.3.1.2.5. Traceability of all MR/UB activity, as required by DI-F-6000C. The contractor will make all internal records of the MR/UB activity available for review by the system program office or surveillance personnel upon request.

4.3.1.2.6. Explanation of reasons for significant shifts in time-phasing of the PMB and or manpower as required by DI-F-6000C.

4.3.1.2.7. Reference CPR checklist, chapter 12.2, part h in this guide.

4.3.2. Variance Thresholds

4.3.2.1. It is the responsibility of the project manager to define significant variances. Generally, variance thresholds are stated as a set percentage and/or dollar amount on the DD Form 1423. Occasionally, the thresholds are established by contract stage. In this case, the thresholds may be relaxed during the first part of the contract due to the smaller statistical base, but during each succeeding stage the tolerance becomes more stringent.

4.3.2.2. Generally, thresholds are established requiring a variance analysis for any cost or schedule variance that exceeds a certain percentage of BCWS or BCWP and/or exceeds an established dollar minimum (for example, +/-__% of cum BCWS, or \$_____, whichever is greater). When initially establishing the thresholds, it may be advisable to provide for tightening these thresholds as the contract progresses, in view of the increased cumulative values of BCWS, BCWP, and ACWP.

4.3.2.3. Another approach is to establish the thresholds as a percentage of the BAC rather than as a percentage of BCWS and BCWP (for example, $100(\text{BCWP}-\text{ACWP})/\text{BAC}$ for CV threshold; $100(\text{BCWP}-\text{BCWS})/\text{BAC}$ for SV threshold). This results in a threshold which becomes a progressively smaller percentage of cumulative BCWS and BCWP as the contract progresses. Since this type of variance threshold may be relatively loose early in the contract, the threshold for early variances may be limited by adding a threshold based on a percentage of cumulative BCWS (for example, +/- ____% of BAC, or +/- ____% of cumulative BCWS, whichever is less).

4.3.2.4. Another approach that is commonly used is to report the "Top Ten" variances. This involves the identification by the contractor and the procuring activity of the top cost and schedule drivers (in terms of WBS and Functional reporting elements) on the program. The total number of elements identified will depend on the size and complexity of the program and can range from as few as five to as many as twenty. Based on this list, the contractor will provide analysis of the associated variances such that both the contractor and the program offices will have visibility into the cost, schedule and technical status of these elements. As the program progresses through its various stages, the list is updated to add elements that become drivers and to delete those no longer considered to be in this category. This approach reduces the volume of variance analysis included in format 5 of the CPR and ensures continuing focus by all parties involved on the important issues.

4.3.2.5. No matter what approach you use, put a statement in the CDRL/DID requiring thresholds to be reviewed once a year by the government and contractor and adjusted if necessary.

4.4. Forecasting:

4.4.1. HQ AFMC EAC:

4.4.1.1. Numerous studies have been conducted to determine useful EAC methods. AFMC recommends the use of an EAC trend extension using a .2 and .8 weight of SPIs and CPIs, respectively, because various studies have shown this to be a reliable forecasting formula. Specifically, the ASD reserve study, AFSC EAC study, and AD study of the AFSC EAC were used to validate the accuracy of the AFMC EAC.

HQ AFMC EAC Formula

The AFMC EAC trend extension formula is as follows:

$$\text{AFMC EAC} = \text{ACWP}_{\text{cum}} + \frac{\text{BAC}^* - \text{BCWP}_{\text{cum}}}{(.2)(\text{SPI}) + (.8)(\text{CPI})} = 91522 + \frac{(280438 - 78875)}{(.2)(.909) + (.8)(.862)} = 322831$$

Where:

EAC = Estimate at Completion

ACWP_{cum} = Cumulative Actual Cost of Work Performed

BAC* = Budget at Completion of the Performance Measurement Baseline
(excludes Management Reserve; synonymous with CBB - MR).

*CBB may be substituted for BAC if all the MR is expected to be used. Or a portion of the MR expected to be used could be added to the BAC. CPR format 1, column (15), MR line will reflect the amount of MR expected to be consumed before the end of the contract. Reason: MR expected to be used will eventually become a part of the BAC of the PMB (see discussion in para 4.2.5.).

BCWP_{cum} = Cumulative budgeted cost for work performed

SPI = Schedule Performance Index for efficiency

$$\frac{(\text{BCWP}_{\text{cum}})}{(\text{BCWS}_{\text{cum}})}$$

BCWS_{cum} = Cumulative Budgeted Cost of Work Scheduled

CPI = Cost Performance Index for efficiency

$$\frac{(\text{BCWP}_{\text{cum}})}{(\text{BCWS}_{\text{cum}})}$$

4.4.1.2. The AFMC EAC formula can be a useful tool to estimate final costs at completion. As with any trend extension EAC formula, the cost analyst should (1) calculate an EAC for each of the lower level WBS items on the CPR or C/SSR and then summarize to the contract total, (2) consult the expertise of the various technical experts (manufacturing, engineering, etc.) in the organization and use good judgment, and (3) use an independent DPRO/DCMAO input. The AFMC EAC is but one of many trend extension EAC formulas that can be used to estimate final costs at completion. Use of this formula does not waive the requirement for an independent cost analysis or a grassroots EAC annually as required in AFMCR 173-9, table 1, rule 5. Chapter 8 of this guide describes how to check the contractor's LRE. Further information supporting this AFMC EAC is presented in a cost research study titled "HQ AFSC EAC Formula Justification," dated Feb 86, by Capt Timothy J. Wallender. This study can be obtained from HQ AFMC/FMAC, Wright-Patterson AFB OH 45433-5006, (513) 257-3920 or DSN 787-3920.

4.4.2. EAC Projection Using BAC and CPI:

4.4.2.1. A commonly used EAC projection technique is a simple division of the BAC of the PMB by the cum-to-date CPI efficiency factor (see para 4.2.8.).

$$\text{EAC} = \frac{\text{BAC}^*}{\text{CPI}_{\text{cum}}} = \frac{280438}{.862} = 325334$$

* CBB may be substituted for BAC if all the MR is expected to be used. Or a portion of the MR expected to be used could be added to the BAC (see discussion in para 4.2.5.).

4.4.2.2. It should be noted that this formula does not consider schedule performance to date. This technique assumes that the efficiency with which the remainder of the work will be accomplished will continue at 86 percent. This should be compared to the contractor's indicated efficiency rate calculated from the CPR or C/SSR using the following formula:

$$\text{CPI} = \frac{\text{BAC}^*}{\text{LRE}} * 100 = \frac{280438}{281960} * 100 = 99.5\%$$

* CBB may be substituted for BAC if all the MR is expected to be used. Or a portion of the MR expected to be used could be added to the BAC (see discussion in para 4.2.5.).

Thus, to achieve the contractor's LRE, the work efficiency would have to increase substantially from 86.2% to 99.5%. Methods for achieving this increased efficiency should be investigated by the analyst. The analyst should also compare this to the TCPI for LRE discussed in para 4.2.10.

4.4.3. Three - Month Moving Average EAC

4.4.3.1. Another EAC formula that is used to project final costs at completion is the Three - Month Moving Average EAC. This EAC formula assumes the contractor will perform the remainder of the contract effort at the same level of performance that the latest Three - Month Moving Average CPI indicates. This projection is calculated for the Advanced Fighter (FX) example as follows:

$$\begin{aligned} \text{EAC}_{3\text{-Month}} &= \text{BAC}^* - \text{BCWP}_{\text{cum}} &&= 317236 \\ &(\text{Dec. 92}) \text{BCWP}_{\text{cum}} - (\text{Sep 92}) \text{BCWP}_{\text{cum}} \\ &(\text{Dec. 92}) \text{ACWP}_{\text{cum}} - (\text{Sep 92}) \text{ACWP}_{\text{cum}} \end{aligned}$$

* CBB may be substituted for BAC if all the MR is expected to be used. Or a portion of the MR expected to be used could be added to the BAC (see discussion in para 4.2.5.).

4.4.3.2. The three-month moving average CPI is .893, which is better than the .862 CPI_{cum} that we calculated in 4.4.2. above. Therefore, the three-month moving average EAC (317236) is lower than the CPI_{cum} EAC (325334). To achieve this three-month EAC, we are assuming the contractor will perform the remainder of this contract at a CPI of .893. A six-month moving average is also commonly used.

Chapter 5

OTHER ANALYSIS TECHNIQUES

5.1. Other Analysis Techniques:

5.1.1. Percent Complete Comparison. The sample CPRs in chapter 13 are used for analysis purposes. Note that in the air vehicle area for December, the cumulative-to-date CV is (\$6887). However, the contractor indicates that the variance at completion (Col 16) in this area will be (\$350). Division of BCWP by BAC for air vehicle reveals that this area is 33 percent complete. The analyst must investigate and the contractor must explain what actions are planned in the last 67 percent of the program to recover from the large cum-to-date variance.

5.1.2. Schedule Variance Verification.

5.1.2.1. The SV calculated from the CPR does not always give a true and complete indication of schedule status. This is because the CPR SV considers the overall schedule position without regard to areas of schedule criticality. For example, an ahead-of-schedule condition in a "slack" schedule area might offset or "wash out" a behind-schedule condition in a "critical" area of the schedule. It is necessary, therefore, to relate the CPR SV to some network or milestone scheduling system. One convenient way of doing this is as follows:

$$Sv \text{ (Months)} = \frac{Sv (\$)}{BCWS_{curr}} = \frac{(7858)}{13550} = (.58 \text{ mo.}) = 2\text{-}3 \text{ weeks behind schedule}$$

A comparison of this figure with the network "slack" or milestone condition will provide an indication of how well work is progressing in the "noncritical" areas. At the upper management or WBS levels, this is an indication of schedule performance in months and how much extra effort is required to catch-up. (So verification can also be calculated using cumulative-to-date values or a graphic interpolation as shown in chapter 12.1.)

5.1.2.2. Another schedule analysis technique that is being used by many of the program offices is to calculate how far behind schedule the contractor is according to the contractor's own plan. For any WBS element, find the historical point in time when the current month's cumulative BCWP equaled a previously reported cumulative BCWS. For example:

	BCWS _{cum}	BCWP _{cum}
April	5000	3000
May	7000	4000
Jun	9000	5000

In this example, the WBS element is two months behind schedule according to the Contractor's own plan (the Contractor was supposed to have performed \$5000 worth of work in April, but did not get it accomplished until June.) Try to go as low as you can in the WBS and try to find WBS elements that are on the critical path.

5.1.3. Cost and Schedule Versus Technical Performance:

5.1.3.1. This single graph (Figure 5.1), although somewhat "busy," brings together cost and schedule performance and plots them along with technical performance. This example utilizes the data from the Advanced Fighter program found in Chapter 13, however, it is one level lower than the CPR data to provide a more detailed analysis.

5.1.3.2. To display the data, plot a performance index chart for both cost and schedule. The monthly and cumulative-to-date index can be plotted on a single graph. Below these, plot a technical performance assessment for the WBS element being reviewed. The technical performance indicators are shown in the lower portion of the chart and are graphed to show trends as they develop.

5.1.3.3. Although this chart can be confusing at first, it can be very useful when used repetitively by the same group of people. Critical technical milestones can be inserted at the planned completion times and darkened as they are completed. This would provide a means for integrating technical performance with cost and schedule performance. Cost and schedule trends can be readily seen as technical accomplishment is made. This type of chart requires the coordinated efforts of engineers and manufacturing experts as well as cost analysts.

5.1.3.4. The key to meaningful correlation of technical achievement with cost and schedule control is the proper organization and supervision of effort. If a contract work breakdown structure (CWBS) matches the specification tree and also reflects the manner in which the contractor actually does the work, the problem of correlation is greatly simplified. In correlating cost, schedule, and technical achievement, it is apparent that unfavorable cost or schedule conditions are usually caused by technical difficulties. Therefore, quantitative information as to technical status is desirable and should be supplemented by narrative reports.

5.1.4. MR Analysis:

5.1.4.1. The MR acts as a "cushion" during the life of the contract against the predicted variance at completion (VAC). When a contract is 100% complete, any MR left will either "reduce" the cost overrun or "increase" the cost underrun. The MR can also be compared to the cumulative cost variance at any point during the contract to assess potential impact at contract completion. Figure 5.2 is a trend chart that displays this comparison over a twelve month period. The line entitled "MR + CV" is calculated by "adding" the positive budgeted MR value to the cumulative cost variance. When a negative CV value is greater than the budgeted MR, the line goes below the "PAR LINE" and shows that the contractor has insufficient MR remaining to offset the cost variance incurred to date. If action is not taken by the contractor to improve performance, then the contract will most likely overrun at-completion.

5.1.4.2. Also, the analyst must be aware that the application of MR by the contractor can have a "masking" effect on CV problems shown on trend charts. Application of large amounts of MR can create "fat" budgets for near-term work and the resulting positive cost variance will offset the existing negative variances and can make contract performance look like it is recovering. Since the chart in Figure 5.2 shows the combined effect of MR and cumulative CV, a true picture of contract performance is presented.

5.1.4.3. The application of a large amount of MR can be seen by the drop in the MR line on the chart. When all of the MR has been utilized, this line will go to the PAR line and the CBB will be equal to the PMB. In the event that the contractor chooses to establish an Over-Target Baseline (OTB) and additional MR is established, then this chart can still be utilized to track MR use against the OTB but will no longer portray the "true" cost variance position since it was most likely set to zero when the OTB was established.

5.1.4.4. Since the MR + CV line represents the sum of those two factors, when it is above the MR line this indicates that the CV is positive; when it falls below the MR line, then the CV is negative.

5.1.5. Manpower Loading Trend Analysis:

5.1.5.1. If the manpower required for the immediate future increases dramatically and the manpower required for a later date decreases accordingly, the contractor may be shifting work from the future to the near term. Simply looking at Format 4 does not give any indications relative to the budget baseline. The analyst should compare the movement of resources indicated in Format 4 to the movement of budget in Format 3. If there is a disconnect, then Format 5 analysis should explain both. If there is no explanation in Format 5, then the analyst should go to the contractor to get an answer. The general shape of the Format 4 and Format 5 budget curves could also suggest "front-end loading" of budgets. This could spell trouble in the latter part of the program if proper budget is not available for these future tasks. The EAC should also be checked to ensure it reflects any changes in planned work.

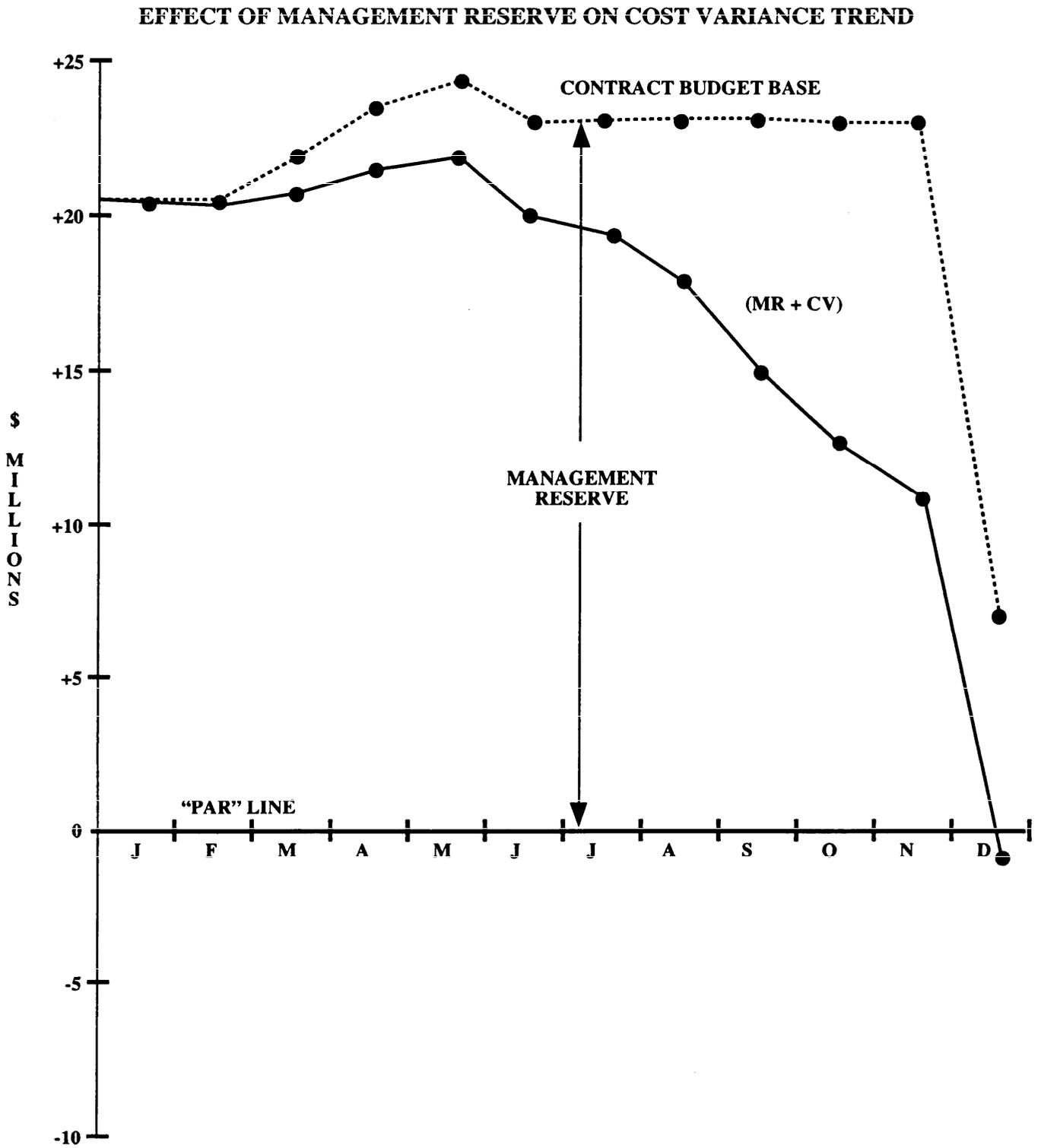


Figure 5.2. Effects of MR on CV Trend.

5.1.6. Percent Complete versus Percent Spent:

5.1.6.1. This is a comparison of the rate of expenditures relative to the rate of work accomplishment. To display this in graphical form, first draw a 45-degree line from the origin (0 percent spent, 0 percent complete) to the 100 percent spent, 100 percent complete point (see Figure 5.4). A point falling on this line indicates that accomplishment and spending are progressing together; above the line indicates accomplishment faster than spending (good); below the line, spending is faster than accomplishment (bad). Management should be notified whenever the trend direction changes, the 45-degree "normal" line is crossed, or there is an abrupt change in slope.

5.1.6.2. The EAC point is calculated from the following formula:

$$EAC = \frac{LRE}{BAC*} (100) = \frac{281960}{280438} (100) = 100.5\%$$

It represents the estimated percent spent at completion based upon contractor data. It is plotted at the intersection of a line drawn vertically from 100 percent spent and one drawn horizontally from 100 percent complete. Note that the percent spent line can exceed 100 percent while the percent complete cannot.

5.1.6.3. Another interesting point which can be added to this chart is the planned percent-complete-to-date. It is calculated as follows:

$$\frac{BCWS}{BAC*} = \frac{86733}{280438} = 30.9\%$$

* CBB may be substituted for BAC if all the MR is expected to be used. Or a portion of the MR expected to be used could be added to the BAC (see discussion in para 4.2.5.).

It is plotted at the intersection of the 45-degree line with a horizontal line drawn from 30.9 percent. It provides a reference point for a quantitative measurement of deviation from "normal."

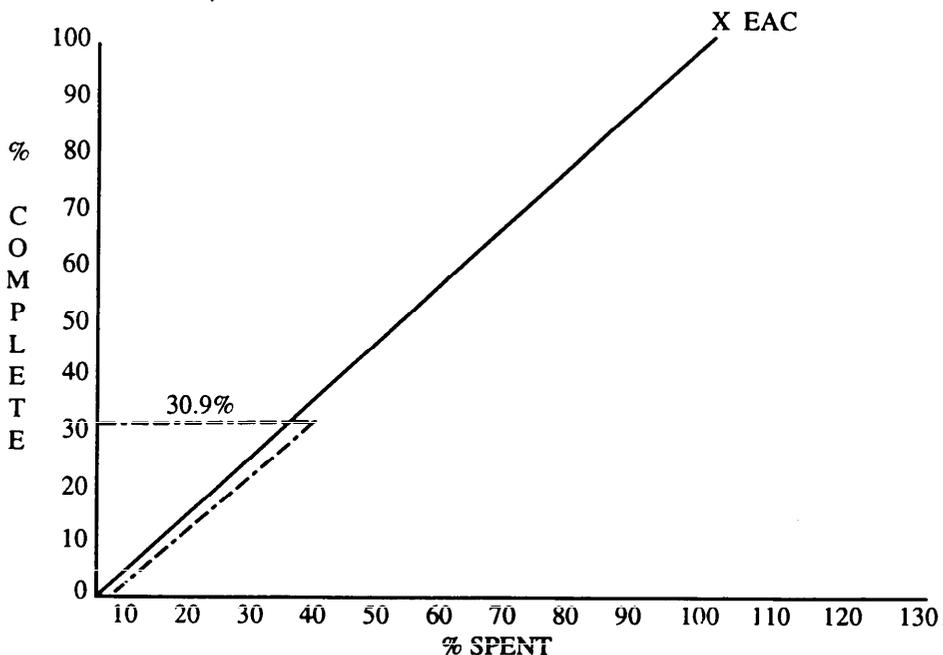


Figure 5.4. Percent Complete vs Percent Spent.

5.1.7. The "Bull's-Eye" or "Good-Good/Bad-Bad" Performance Trend Chart:

5.1.7.1. This is an additional performance trend chart which plots CV percent and SV percent against one another on a Cartesian coordinate graph. This graph is in Figure 5.5.

5.1.7.2. The upper right quadrant represents being ahead of schedule and under projected costs, or good-good (+ +). The lower left quadrant portrays the opposite, or bad schedule and cost performance (--). As a locus of points develops about the dead center bull's-eye, you can visualize the general direction or trend of cost and schedule performance. Permissible tolerances can be shown by drawing a ring of bull's-eyes about the center defining 5, 10, or 20 percent variances. As long as plotted points are within the ring defined as an acceptable performance level, management's attention can be directed to other areas. However, even though current performance is still within your ring of acceptable performance, you may still wish to draw management's attention to an obvious trend. Other methods of portraying the data may be employed to emphasize various problem areas.

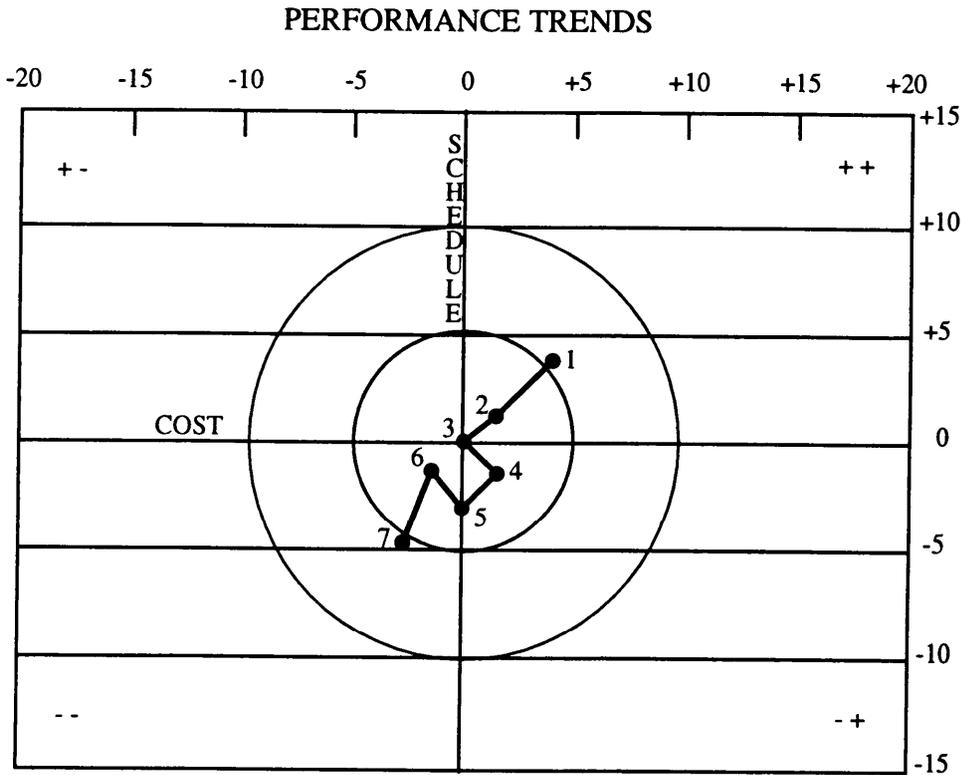


Figure 5.5. Bulls-Eye Performance Trend.

5.1.8. Plotting CPI and SPI:

5.1.8.1. The performance trend charts utilizing CPI and SPI can be plotted both on a cum-to-date and a current-period basis. Two such graphs should be developed for each WBS element which has been identified as a problem for management's attention (see Figure 5.6 and 5.7). Also, the total program CPI and SPI should be plotted on both a cum-to-date and current basis.

5.1.8.2. Figure 5.6 depicts the current period cost and schedule efficiency data and Figure 5.7 the cumulative efficiencies. The monthly chart should never be analyzed separately from the cumulative chart. Its only purpose is to give an early warning of possible trends. It does not provide an actual indication of the present situation. The number of current variables is so great that it would be erroneous to state that the contract situation is anything other than that shown on the cumulative chart. A possible solution to preclude such erroneous impressions would be to place the incremental chart adjacent to or below the cumulative chart so that it can never be seen without the cumulative chart.

5.1.8.3. Problem areas pointed out by the WBS element charts may be further narrowed through the use of organizational function charts on the CPR. A comparison between the WBS element charts and the functional charts may frequently indicate the precise hardware and functional problem area.

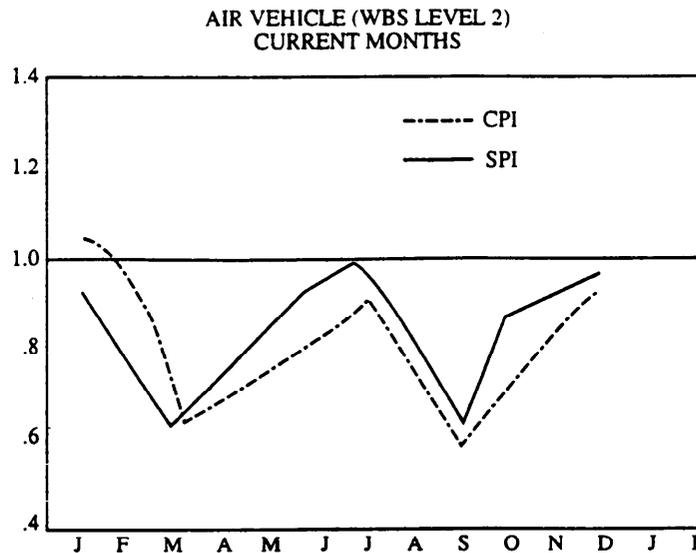


Figure 5.6. CPI vs SPI Current Month Trend.

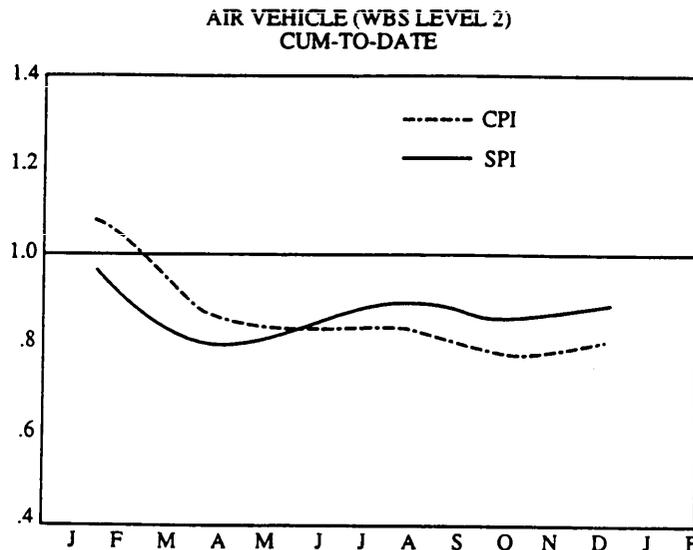


Figure 5.7. CPI vs SPI Cum-to-Date Trend.

5.1.9. Forecasting EAC by Function:

5.1.9.1. Point projections obtained by the use of factors like the CPI assume that the organization will operate at the same efficiency to conclusion that it has in the past. One fallacy in this assumption is that different functional organizations have different efficiencies and peak at different times. This effect is shown in Figure 5.8. Therefore, a more accurate approach to calculating the EAC would be to consider each function individually, as shown in the table below. The CPI_{cum} EAC is calculated for each function and then summarized. The AFMC EAC discussed in paragraph 4.4.1. could also be used to calculate each functional EAC.

Function	ACWP	BCWP	CPI	BAC	EAC
Engineering	40455	33493	.828	108798	131399
Manufacturing	3119	2997	.961	27463	28578
Quality Control	170	162	.953	876	919
Tooling	83	76	.916	4257	4647
Training	285	271	.951	2386	2509
Project Mgt	7470	7380	.988	18336	18559
Subcontract	26005	22117	.850	63418	74609
Other	2907	2875	---	21114	21114
MR	---	---	---	10538	---
G & A	11028	9504	---	35234	38680
TOTAL	91522	78875	---	292420	321014

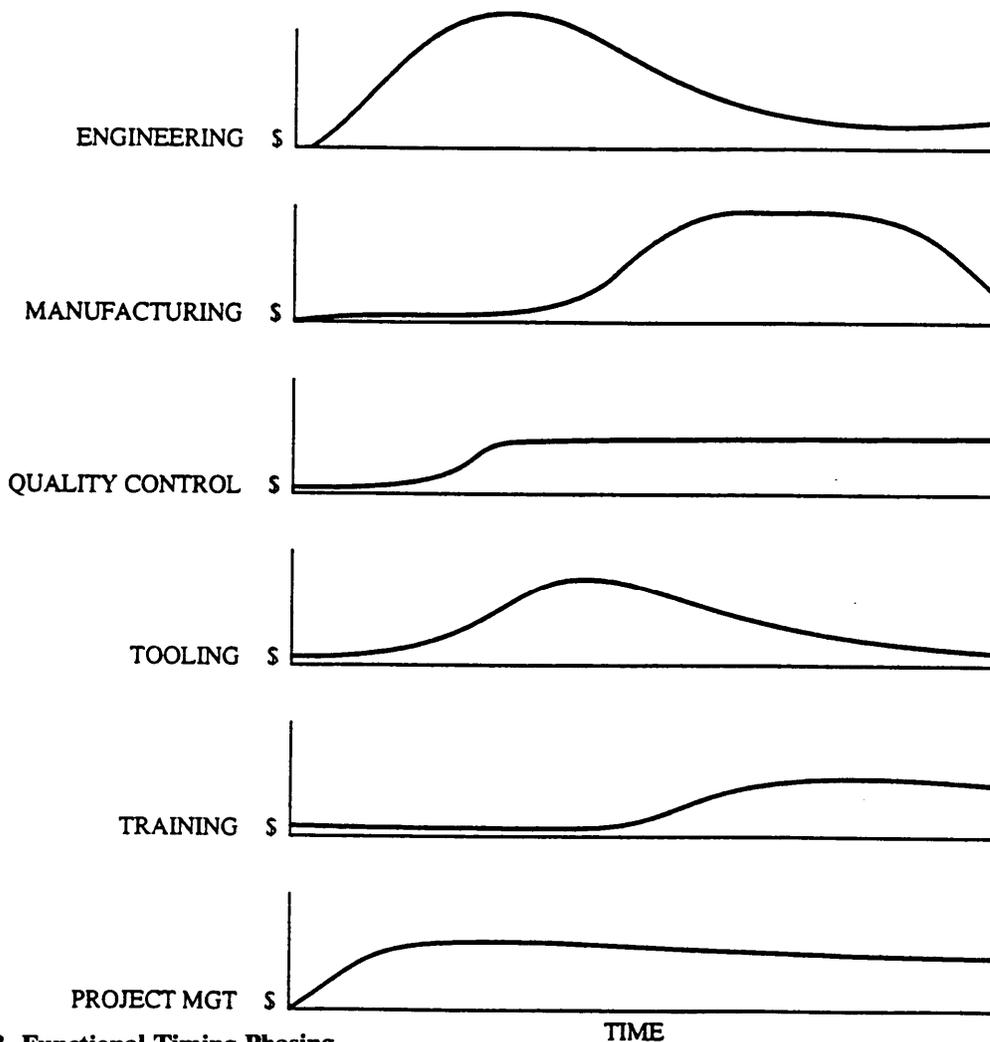


Figure 5.8. Functional Timing Phasing.

5.1.9.2. This EAC projection of 321014 is less than the 322831 calculation made in paragraph 4.4.1. because the more efficient manufacturing, tooling, quality control, and training functions are not as far along as the less efficient engineering and subcontract work. Had all functions been at the same percent complete or been equally efficient, the two EACs would have been equal. The effective CPI is, therefore:

$$\text{CPI} = \frac{\text{BAC}^*}{\text{EAC}} = \frac{280438}{321014} = .87$$

and is higher than the .86 calculated in paragraph 4.2.8. for the same reason.

5.1.10. Over-Target Baseline (OTB) Analysis.

5.1.10.1. In the rare case where a contractor requests an Over Target Baseline (OTB), careful consideration should be given before an approval is granted. OTB approval guidelines will vary but should include:

5.1.10.1.1. Request must be formally submitted and formally recognized.

5.1.10.1.2. A detailed Estimate to Complete (ETC) must be performed where $\text{ETC} = \text{EAC} - \text{ACWP}_{\text{cum}}$.

5.1.10.1.3. The difference between the ETC and remaining budget ($\text{CBB} - \text{MR} - \text{BCWP}_{\text{cum}}$) should be more than 15%.

5.1.10.1.4. Contract should have at least 6 months effort remaining.

5.1.10.1.5. Should only be one OTB in the life of the contract.

5.1.10.1.6. OTB process should be fully documented.

5.1.10.1.7. Internal documentation should be made available.

5.1.10.2. The analyst should be aware of the impact of the revised Performance Measurement Baseline (PMB) and be extremely careful in the use of the techniques described in this guide and the conclusions drawn from the analysis (this caution applies with all versions of the CPR). Figure 5.9 shows the original (PMB) prior to implementation of the Over Target Baseline (OTB). At this point, the $\text{PMB} + \text{MR}$ equals the Contract Budget Base (CBB) which equals the Total Allocated Budget (TAB). After the OTB has been implemented, the TAB is no longer equal to the CBB. As shown in Figure 5.10, the TAB is now higher than the CBB. Now, $\text{TAB} = \text{CBB} + \text{OTB amount authorized}$. In this example, all schedule variances and cost variances were eliminated. This is the most common authorization by program offices. However, some program offices have authorized the following OTB instructions:

5.1.10.2.1. Retain variances, rebudget future work.

5.1.10.2.2. Eliminate cost variances, retain schedule variances.

5.1.10.2.3. Eliminate schedule variances, retain cost variances.

5.1.10.2.4. Eliminate cost and schedule variances. (Most common)

5.1.10.2.5. Eliminate selected cost and schedule variances.

5.1.10.3. For OTBs implemented on FPI-type contracts, the new baseline (called the Over Target Baseline, OTB) or TAB that exceeds the CBB usually does not increase the total costs for which the government is liable due to the ceiling and share ratio. For Cost Plus-type contracts, the new baseline also increases the TAB. The contractor cannot change the contractual delivery schedule due to OTB without approval of a contract modification. Once approved, an Over Target Schedule can also be implemented. Care should be taken by the government in advance to minimize cost growth based on schedule modification.

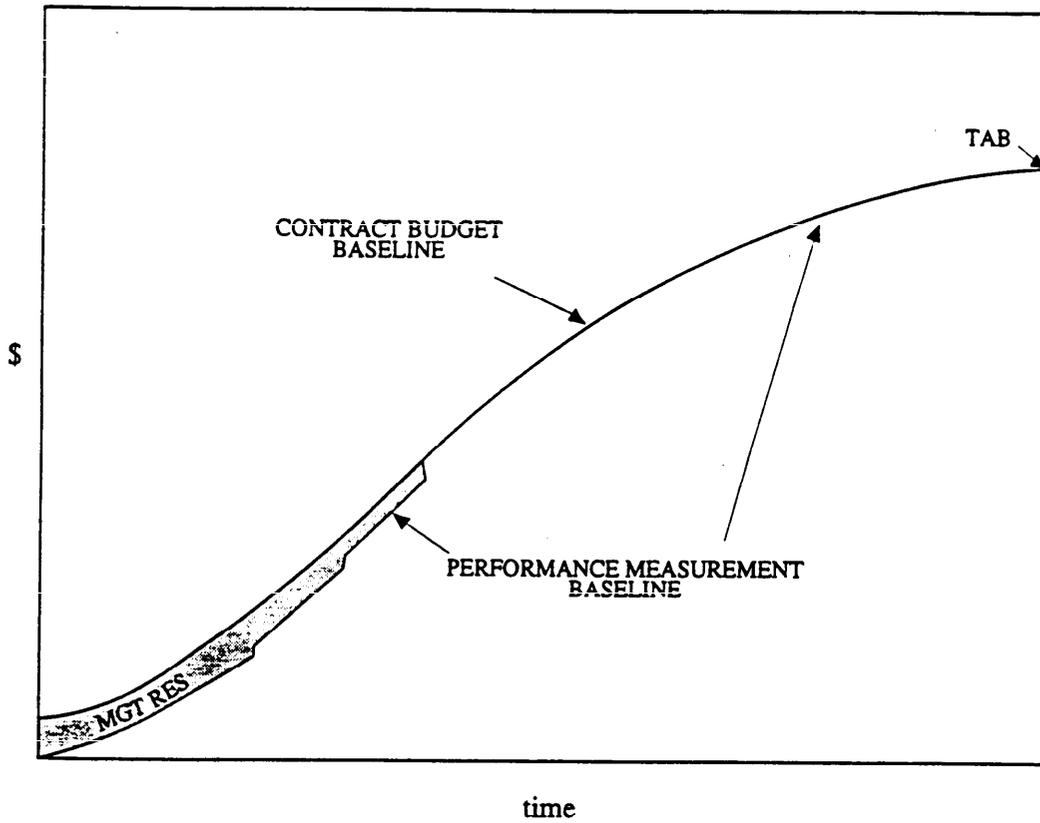


Figure 5.9. Original Baseline Prior to OTB.

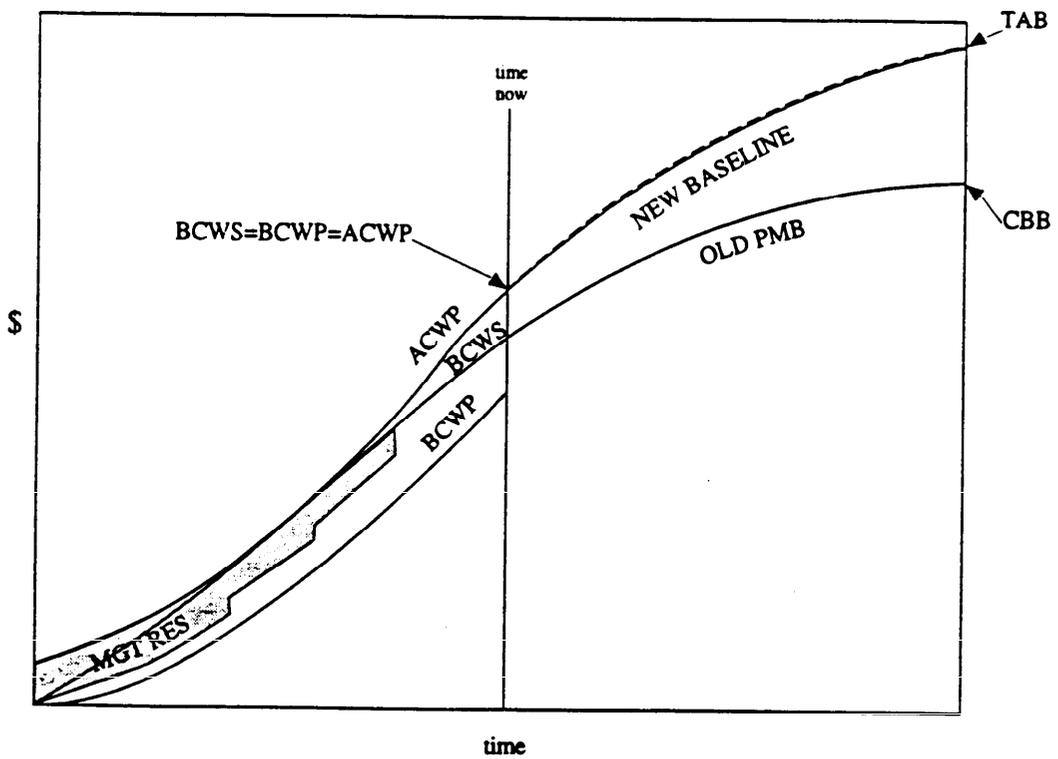


Figure 5.10. New Baseline After OTB.

5.1.10.4. You should request 2 CPRs in conjunction with OTB implementation- Pre and Post CPRs. These reports should include:

5.1.10.4.1. Pre-Implementation CPR:

5.1.10.4.1.1. Includes current and cumulative variances.

5.1.10.4.1.2. Includes old CBB and PMB values.

5.1.10.4.1.3. Includes updated grassroots EAC requested for OTB.

5.1.10.4.2. Interim-Implementation CPR (Optional):

5.1.10.4.2.1. Formats 1 and 2 - Zeroed Variances

5.1.10.4.2.2. Format 3 - Old PMB, time-phased budget changes and OTB.

5.1.10.4.2.3. Format 4 - Labor profile time-phased to OTB amount.

5.1.10.4.3. Post-Implementation CPR.

5.1.10.4.3.1. New baseline (OTB)

5.1.10.4.3.2. Variance adjustment columns (12 and 13 plus reconciliation to CBB) completed. CPR DI-F-6000C, format 1, total column (12) will equal the amount shown on the variance adjustment line in column (11). The total of column (13) will equal the amount the contract has been budgeted in excess of the CBB.

5.1.10.4.4. New variances that have occurred since OTB implementation.

5.1.10.4.5. As shown in Figure 5.11, the cost and schedule variances were eliminated after the OTB was implemented. The analyst should concentrate on current month data initially to understand the impact of changes to work packages after the OTB has been implemented. Figure 5.12 shows where the cost and schedule variances would be if an OTB was not implemented. Don't get lured into a false sense of security, your contract is being measured to a new baseline and you should remember that. The contractor is merely measuring their performance against a more realistic target for continued cost/schedule control through internal performance measurement. After OTB implementation, the mathematical performance indices and percent variance calculations may not be accurate for the new cumulative data. The formulas in chapter 4 can be used cautiously by substituting TAB in place of BAC* or CBB. The percent complete should be checked to ensure it accurately represents the status of the program. The analyst should ensure the EAC is accurate after the OTB has been implemented - this could have an effect on progress payments for fixed-price contracts. Reason: SF Form 1443 uses the EAC to calculate progress payments.

BEFORE AND AFTER REPROGRAMMING CV AND SV ELIMINATED

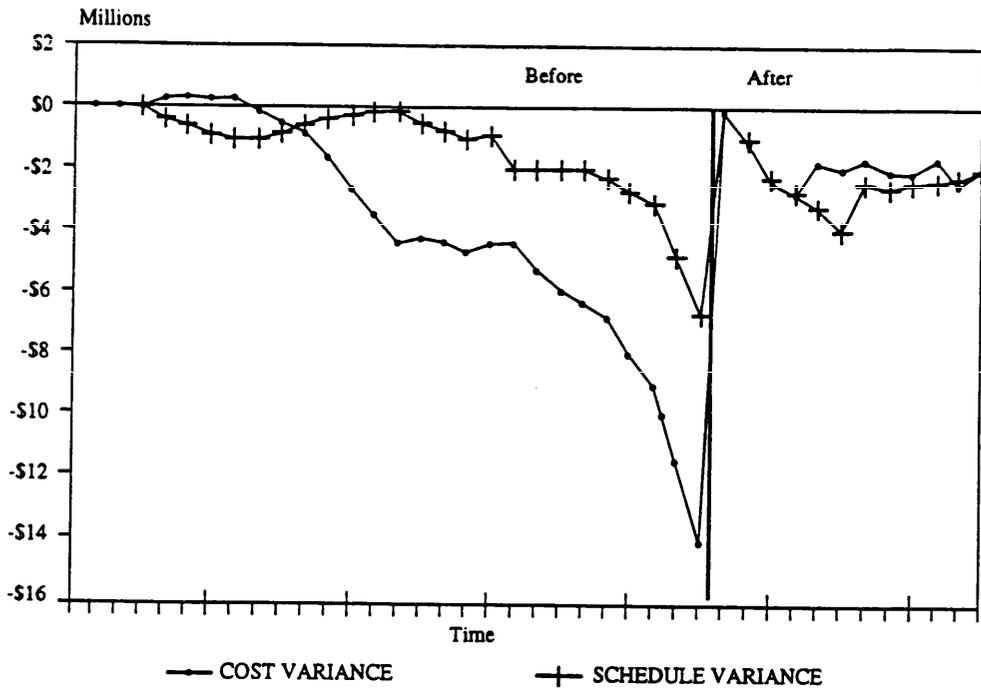


Figure 5.11. CV and SV After OTB Implementation.

BEFORE AND AFTER REPROGRAMMING COMPARED TO ORIGINAL BASELINE, WHERE ARE YOU?

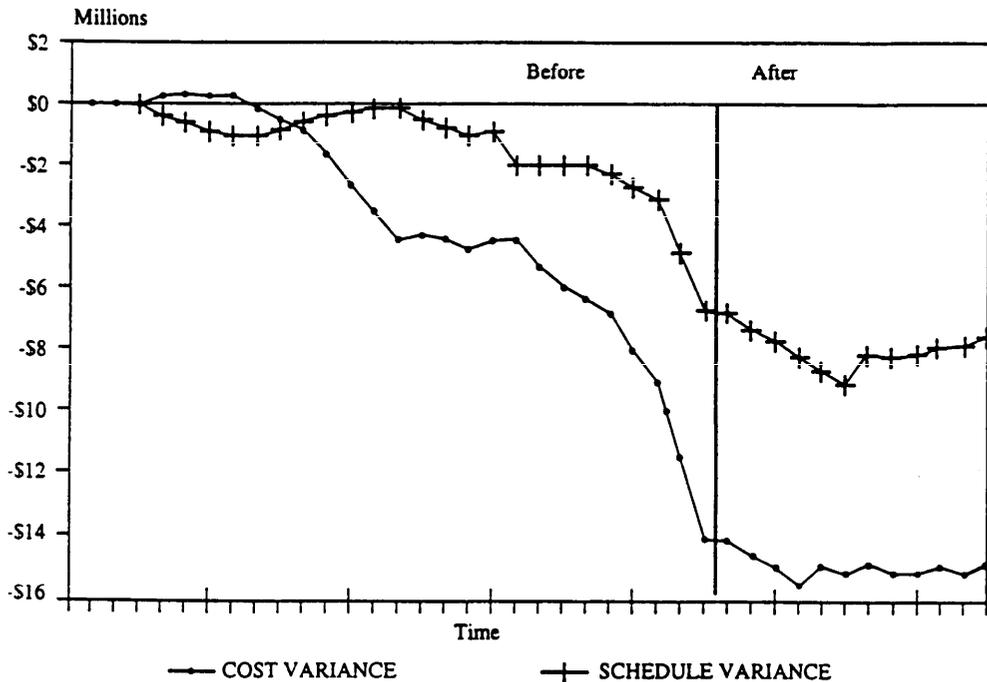


Figure 5.12. CV and SV if OTB Was Never Implemented.

5.1.11. Fee Calculation Using a Share Ratio

5.1.11.1. Figure 5.13 shows a sample Cost Plus Incentive Fee contract with a share ratio of 80/20 where the Government shares in 80% of the overrun/underrun and the contractor shares in 20% resulting in a decrease/increase in fee for the contractor. As shown in Figure 5.13, the Target Cost is 100, the Target Fee is 7, the maximum fee is 12 and the minimum fee is 2. The Target Fee is calculated using the following formula:

$$\text{Fee} = \text{Target Fee} - (\text{Overrun} \times \text{Contractor Share Ratio})$$

$$\text{Fee} = \text{Target Fee} + (\text{Underrun} \times \text{Contractor Share Ratio})$$

Using this formula, if our total costs at the end of the contract shown in Figure 5.13 were 110, our fee calculation would be:

$$\text{Fee} = 7 - (10 \times .2) = 5$$

Another way of calculating the fee for our example is to use the graph shown in Figure 5.13. First, find 110 on the cost axis. Note that 110 is in the range of incentive effectiveness (RIE) which ranges from 75 to 125. Second, from 110, follow the vertical line up to the intersection of the 80/20 share line. Then, horizontally follow the line to the fee axis. This results in a fee of 5, the same as our formula above. Note that a fee of 5 is within the fee pool or fee swing range of 2 to 12. Also, note that the point of total assumption (PTA) is 125. Any costs over the PTA of 125 are out of the range of incentive effectiveness which means the contractor will only receive minimum fee of 2. Keep in mind that the slope of the share line changes with different share ratios. Also, our example is for Cost Plus Incentive Fee contracts. Fixed Price Incentive Fee calculation is similar except there is a ceiling that usually has to be taken into account.

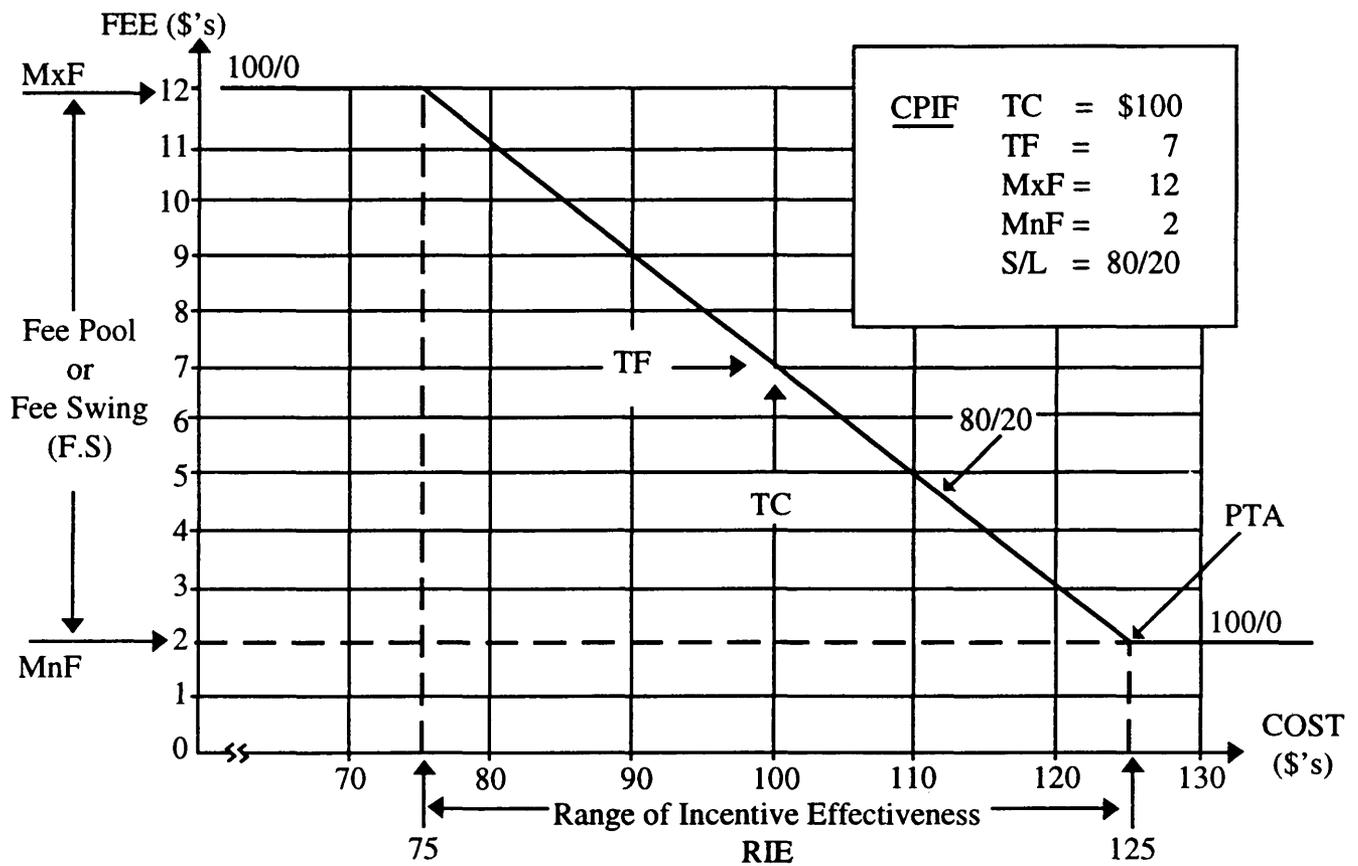


Figure 5.13. Fee Calculation, CPIF Contracts.

Chapter 6

AUTOMATED ANALYSIS PROGRAMS

6.1. Performance Analyzer (PA):

6.1.1. The Performance Analyzer (PA) was developed to streamline and automate the analysis and reporting processes associated with analyzing the contractor's CPRs and C/SSRs. This software has been enhanced to version 4.0 and is widely used throughout the DoD and industry. PA features intuitive menuing, a contract probe module, visual displays of the WBS and functional structure, and graphic displays of the performance data. It is designed to serve the needs of contract financial analysts, engineers, and program managers alike.

6.1.2. The analysis module has been designed to be extremely easy to use allowing the user to visually define the WBS and functional tree structure and enter and edit data. The user may probe down the tree structures using on-screen performance indicators; switch from WBS to functional structures, view charts, and reports from each element; or jump from one element to another. All graphs and reports can be displayed on the screen and printed or plotted to selected hard-copy devices.

6.1.3. PA displays, prints, and plots graphs such as analysis-level trend data at the lowest levels and quality briefing charts at the highest levels for program management reviews. It also produces hard-copy reports for internal program office use. Figures 6.1 through 6.19 are examples of the graphs and charts the Performance Analyzer version 4.0 creates. These graphs and charts were created utilizing the Advanced Fighter (FX) program CPRs shown in Figures 13.2 through 13.13. PA allows you to add MR to the BAC of the PMB by going into the Contract Analysis Section and selecting Analyst Input/EAC/MR. Input the MR number you would like to use as we previously discussed in paragraph 4.2.5. of this guide. Another feature of PA allows the analyst to sum forecasts from lower level elements to the contract total. When the Sum Forecast is set to "YES" and you recalculate your data, PA generates forecasts at the lowest level and then summarizes from these lowest levels up the WBS/Functional tree. By summarizing data from the lowest levels, you are enhancing your forecasts by using lower level data. We recommend you use the Sum Forecast YES for the majority of your analysis unless you have a lot of lower level elements with % complete less than 15%. If Sum Forecast is set to "NO", forecasts are generated at each level independently, based upon the element's performance data. One of the most frequent questions asked concerns the Six Period Reports. Analysts select the Sum Forecast YES and then take a calculator and by hand do the forecast EAC's at the total level and say that PA is not calculating correctly. If the analyst had done all of their EAC's at the lowest level WBS/Function and then summed them they would have achieved the same answer that PA shows in the Six Period Reports. An explanation for a sampling of PA graphs and charts follows. We chose MR YES and Sum Forecast NO for these examples.

6.1.3.1. Figure 6.1. Cumulative Cost and Schedule Variances-Dollars. In Dec, the FX Fighter System was behind schedule (-7.9) and over budget (-12.7). These calculations were done by PA using the formulas previously discussed in paragraph 4.2.2. of this guide. As shown in Figure 6.1, there has been an unfavorable trend ever since the contract started.

6.1.3.2. Figure 6.2. Cumulative Cost and Schedule Variances-Percent. In Dec, the FX Fighter System was behind schedule (-9.1%) and over budget (-16.1%). These calculations were done by PA using the formulas previously discussed in paragraph 4.2.3. and 4.2.4. of this guide. Note that the contractor had favorable trends in schedule variance % from Apr through Aug and again from Sep to Dec. Also, note that the contractor had favorable trends in cost variance % from Oct through Dec. These favorable trends were not visible in Figure 6.1, Cumulative Cost and Schedule Variances-Dollars. As mentioned earlier, a variance is significant relative to some base and can be more meaningful if portrayed in this manner. The CV and SV use BCWP and BCWS, respectively, as the base in the formula.

6.1.3.3. Figure 6.3. Current Cost and Schedule Variances-Dollars. In Dec, the FX Fighter System was behind schedule (-346) and over budget (-430) for the current period. These calculations were done by PA using the formulas previously discussed in paragraph 4.2.2. of this guide. This chart should be shown with the cumulative chart and can be meaningful in terms of showing current trends. For example, from Mar to May and from Sep to Dec, the unfavorable schedule and cost variance trend improved.

6.1.3.4. Figure 6.4. Current Cost and Schedule Variances-Percent. In Dec, the FX Fighter System was behind schedule (-2.8%) and over budget (-3.5%). These calculations were done by PA using the formulas previously discussed in paragraph 4.2.3. and 4.2.4. of this guide. This chart should be shown with the cumulative chart and can be meaningful in terms of showing current trends. For example, from Mar to May and from Sep to Dec, the unfavorable schedule and cost variance trend improved.

6.1.3.5. Figure 6.5. Schedule Performance Indices. In Dec, the FX Fighter System had a current SPI of .97 and a cumulative SPI of .91. This means the work has been accomplished at a rate of 91 percent of the plan and a behind schedule condition exists. An index of 1.0 would indicate that the contractor is performing on schedule whereas an index of 1.1 would indicate an ahead-of-schedule condition (higher efficiency). These calculations were done by PA using the formulas previously discussed in paragraph 4.2.9. of this guide. There has been a favorable trend in both the current and cumulative SPI from Sep to Dec.

6.1.3.6. Figure 6.6. Cost Performance Indices at Total Contract. In Dec, the FX Fighter System had a current CPI of .97, a cumulative CPI of .86, $TCPI_{LRE}$ of 1.12 and a $TCPI_{BAC}$ of 1.06. To complete this contract within the BAC, the contractor would have to achieve a CPI of 1.06 throughout the remainder of the contract. Since the contractor is currently experiencing a CPI_{cum} of .86 through December, the contractor must drastically improve cost performance to come in at budget. There is a 23% difference between the CPI and $TCPI_{BAC}$. The contractor must improve efficiency even more to achieve the LRE. There is a 30% difference between the CPI_{cum} and the $TCPI_{LRE}$. Differences of more than 5% should be questioned and the contractor's LRE should be checked for reasonableness. These calculations were done by PA using the formulas previously discussed in paragraph 4.2.10. of this guide. Note that PA added MR to the BAC (MR Yes in PA) to calculate a $TCPI_{LRE}$ of 1.12 instead of the 1.06 calculated in paragraph 4.2.10.

6.1.3.7. Figure 6.7. Percent Complete vs. Percent Spent at Total Contract. In Dec, the FX Fighter System was 27% complete and 31% of the CBB had been spent. Figure 6.7 shows this status resulting in a marker below the 45-degree line meaning the contractor is spending more money to complete the work to date than planned. A marker above the line would indicate less money being spent to date than planned. These calculations were done by PA using the formulas previously discussed in paragraph 4.2.5. and 4.2.6. of this guide. Note that PA used the CBB in the formula resulting in a % complete of 27% instead of the 28% calculated in paragraph 4.2.5. of this guide. Also, the % spent calculated in PA using the CBB resulted in a 31% spent instead of the 32.6% spent calculated in paragraph 4.2.6. of this guide.

6.1.3.8. Figure 6.8. Estimates at Completion at Total Contract. In Dec, the FX Fighter System had a CBB of 292420, a contractor LRE of 281960 and an EAC_{CPI} of 339234 using the CBB (not summed). This graph shows these three numbers plotted over 1992. The EAC_{CPI} is significantly higher than the contractor's LRE highlighting the LRE may be too low. Note that PA used the CBB in the formula resulting in an EAC_{CPI} which was higher than the EAC calculated using the BAC in paragraph 4.4.2. This graph is capable of displaying up to 5 different EACs.

6.1.3.9. Figure 6.9. Manpower Actuals vs. Forecast. In Dec, the FX Fighter System had a manpower budget of 2.4 as compared to manpower actuals of 3.5 and a forecasted LRE of 2.8. Increased levels of manpower have been used on the contract to improve the schedule variance as reflected in the budget versus actuals/LRE manpower overrun. This trend indicates there are problems on the FX program and the overrun should be reflected in the contractor's LRE. This manpower data is entered into PA from Format 4 of the CPR which is not included in this guide.

6.1.3.10. Figure 6.10. Standard Baseline. This graph shows the Target Cost plotted over time with the current value being at 292.4. Notice the stair-step of Target Cost from Jan 92 to Dec 92 with this budget spread through Jun 96 (contract end). The Target Cost (Negotiated Cost in the header of the CPR Format 1) is increased through contract additions (Est Cost Auth Unpriced Work in the header of the CPR Format 1 is increased as new contract modifications are added to the contract and it decreases as these changes are negotiated. After negotiation, the Negotiated Cost value will increase and the Est Cost Auth Unpriced Work will decrease). Notice the SPO is using an EAC of 332.1 based on the AFMC EAC (not summed) using the CBB instead of the BAC that was used in paragraph 4.4.1. This is significantly higher than the contractor's LRE shown of 282 on the graph. The SPO has set aside extra funding (358.7) to cover this higher EAC. The 358.7 converts the SPO's 332.1 EAC to price.

6.1.3.11. Figure 6.11. Enhanced Baseline. We have selected the Jan 92, Aug 92 and Dec 92 CPR Contract Budget Baselines for comparison. This graph shows that the CBB has grown from 228900 in Jan 92 to 292420 in Aug and Dec 92 (see discussion in paragraph 6.1.3.10. above, also, as shown in Figure 13.1, $CBB = \text{Negotiated Cost} + \text{Est Cost Auth Unpriced Work}$). This is helpful in seeing how the baseline has changed over the program. CPR Format 3 is also useful in seeing how the baseline has changed and for future projections of where the baseline will be in 6 months or more.

6.1.3.12. Figure 6.12. Cost Variance vs. Management Reserve. In Dec, the FX Fighter System had a cumulative cost variance (CV) of -12.7 and management reserve (MR) of 12. This graph shows that $MR + CV$ is -.7. This means the MR remaining is not enough to offset the CV and unless the contractor improves efficiency, there will be an unfavorable variance at completion. This graph is also discussed in paragraph 5.1.4. of this guide.

6.1.3.13. Figure 6.13. Cost/Schedule Variance Program Summary. This is a very useful graph that is a favorite among many program managers because it has so much information available on it. Notice the at completion variance of positive 4% that is projected by the contractor versus the SPO at completion variance of negative 14%. This is a wide difference and further explanation should be required from the contractor. The SPO is projecting funding requirements of 358.7 but they only have 292.4 in funding currently available.

6.1.3.14. Figure 6.14. Cost/Schedule Variance Trends. This graph shows where the SV and CV are relative to a plus/minus variance threshold. In this example, the CV is outside of the negative threshold line while the SV is right on the negative threshold line. The start/completion dates are also indicated on the graph as well as the EAC dollar variance difference between the CBB and the EAC/LRE. Note the wide range between the SPO and KTR EAC/LRE variances, further explanation should be required from the contractor.

6.1.3.15. Figure 6.15. WBS Narrative (AI). This is a very useful report because it explains a lot of the analysis that PA calculates. Everything from % complete to EAC are described in a user friendly format. This is a useful report to give to someone who knows little about analysis data because it provides some good explanations of what is going on. This, along with the Business Manager's report described in chapter 9 of this guide will help management understand what the current status of a program is along with future projections. This report can be created for any of the WBS or Functional elements and can save the analyst a lot of work.

6.1.3.16. Figure 6.16. Six Period Summary. This report provides the last six months of both current period and cumulative data. This report is useful for verifying the most recent data that is loaded into PA and for having a quick reference of cost data so you do not have to get out the CPR or C/SSR. It can be created for any level of the WBS or Functional element.

6.1.3.17. Figure 6.17. Validity Report. This report produces a list of analysis comments concerning the potential validity of data and the contractor's LRE for each WBS and Functional element. For example, Figure 6.17 shows that the SYS TEST & EVAL element has a potential problem with the LRE because the CV overrun is (1320) while the LRE VAC is only (314). Perhaps the LRE needs to be updated or some explanation is needed from the contractor. Also, the difference in the $TCPI_{LRE}$ and the CPI for this element is more than 5%, indicating there is potentially something wrong with this element's LRE.

6.1.3.18. Figure 6.18. Management Reserve Status. This report gives a quick summary of Management Reserve (MR), $CV + MR$, CBB/TAB, LRE, % Complete, % Spent (CBB), % Spent (LRE) and MR as a % of Budgeted Cost of Work Remaining (BCWR). In Dec, the FX Fighter System has a cumulative CV that exceeds the remaining MR-this is readily apparent by seeing that the $CUM CV + MR$ is less than zero in Figure 6.18. Notice that the MR as a % of BCWR has dropped from over 10% in Jan to less than 6% in Dec.

6.1.3.19. Figure 6.19. Program Manager Summary. This report provides a good summary level view of how the program is going and includes a variance flag feature which shows variance thresholds that have been tripped and that require written analysis from the contractor. This report would make a good supplement to the Business Manager's Report discussed in chapter 9 of this guide along with some of the graphs previously described.

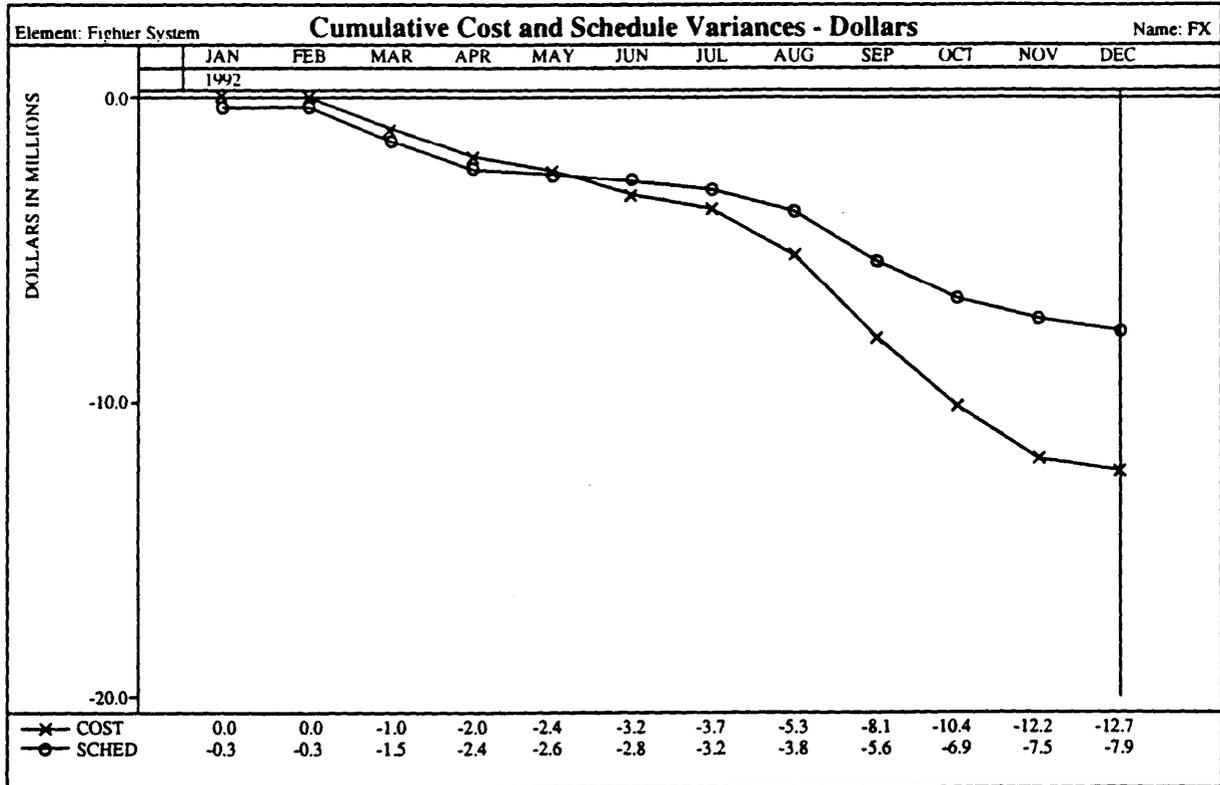


Figure 6.1. Cumulative Cost and Schedule Variances - Dollars.

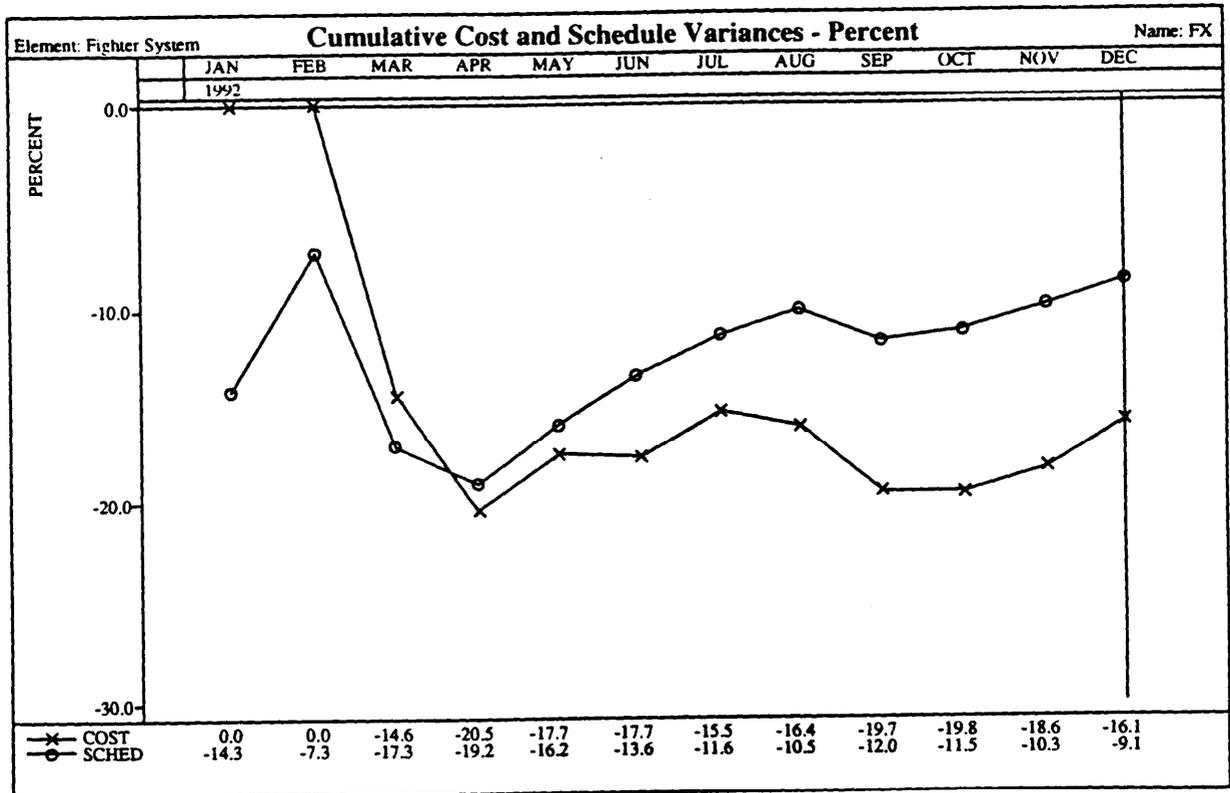


Figure 6.2. Cumulative Cost and Schedule Variances - Percent.

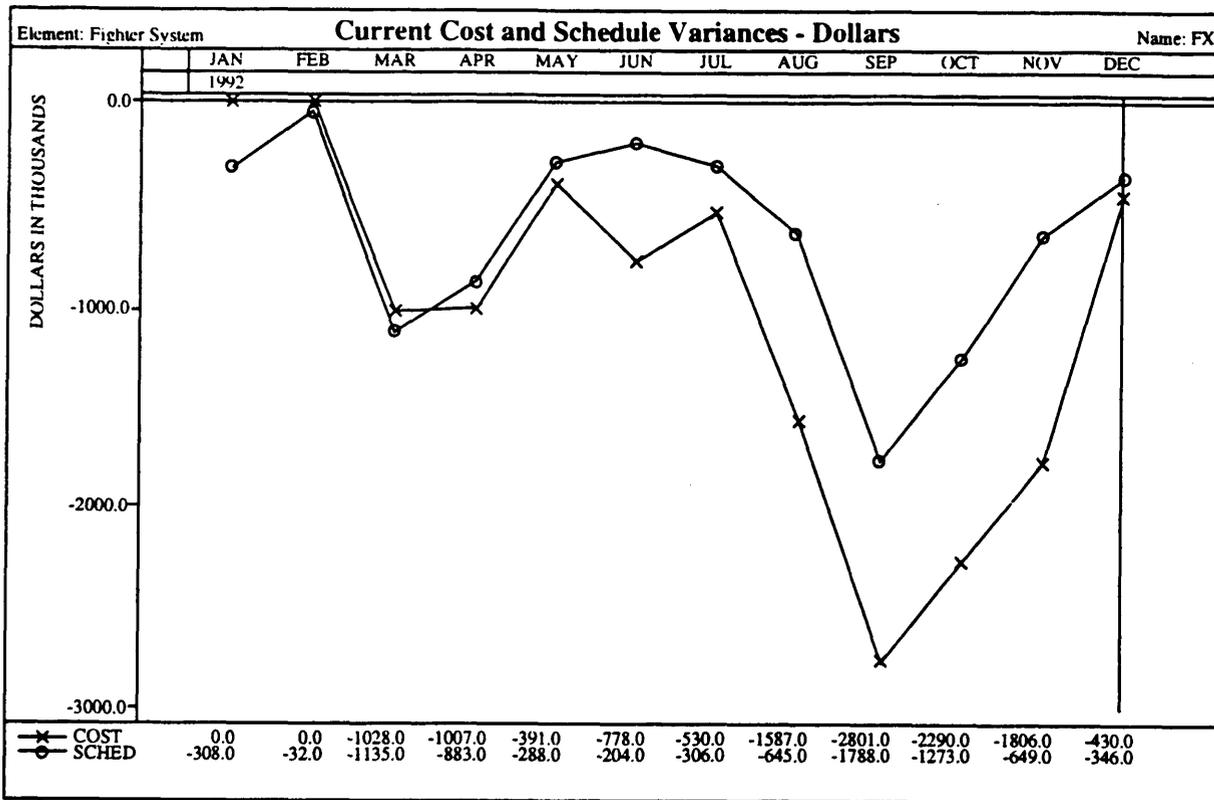


Figure 6.3. Current Cost and Schedule Variances - Dollars.

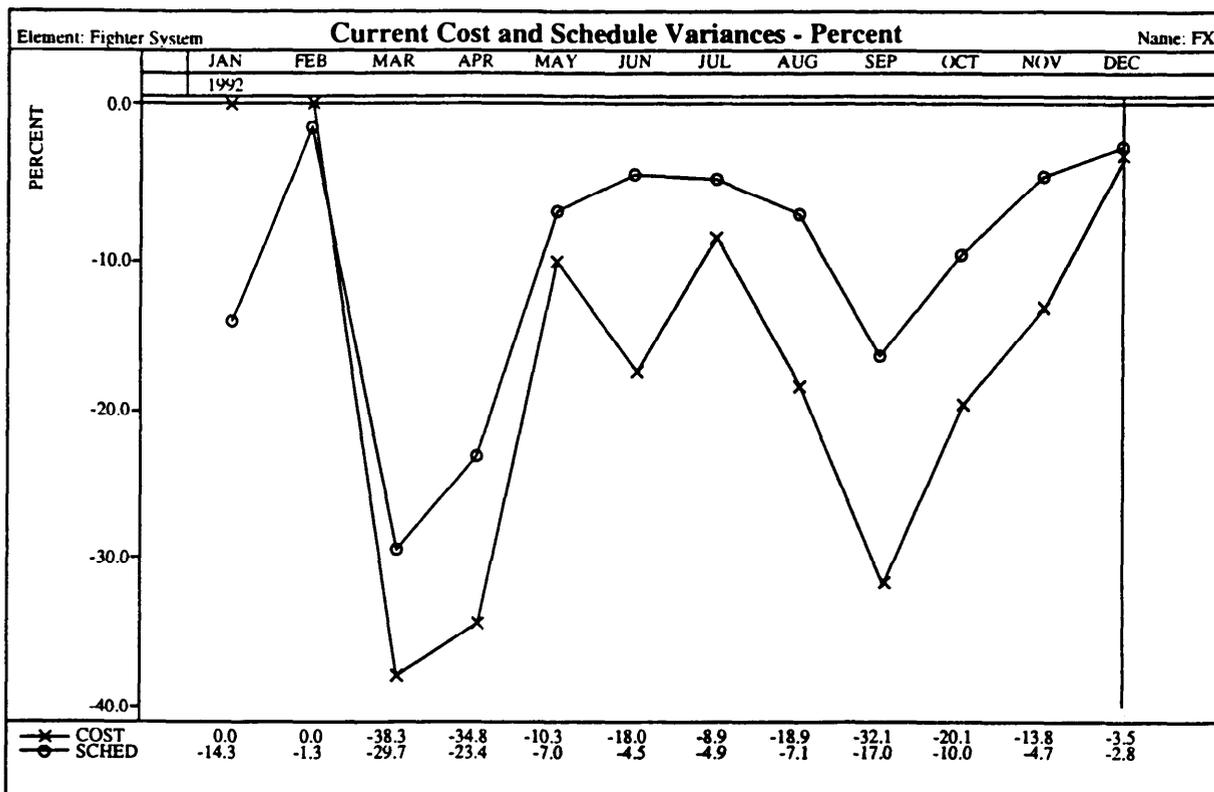


Figure 6.4. Current Cost and Schedule Variances - Percent.

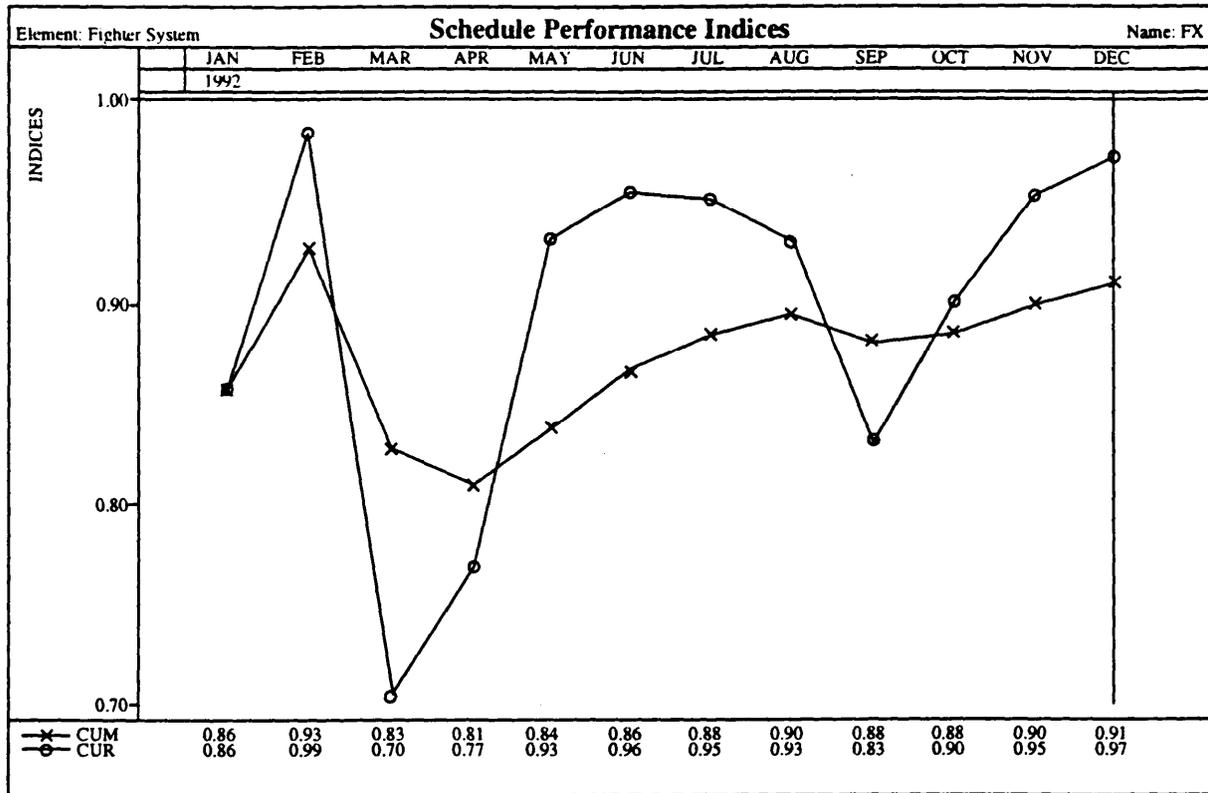


Figure 6.5. Schedule Performance Indices.

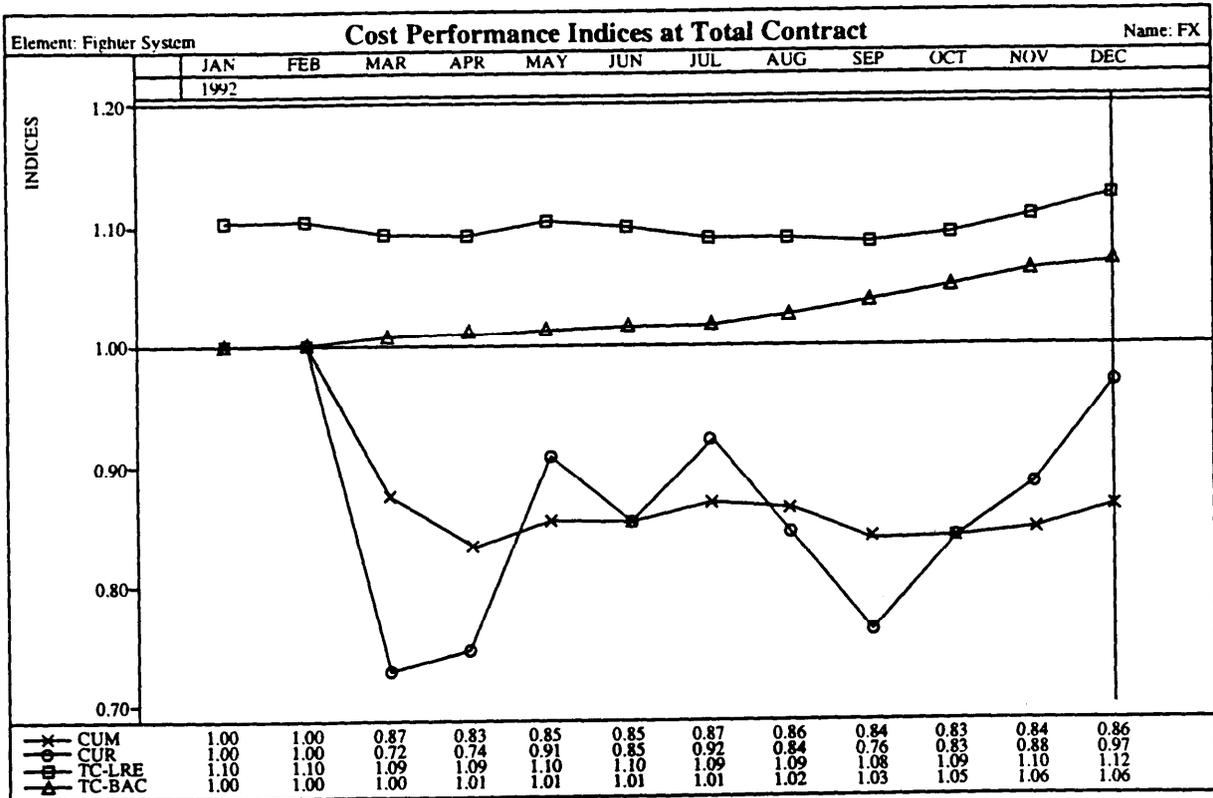


Figure 6.6. Cost Performance Indices at Total Contract.

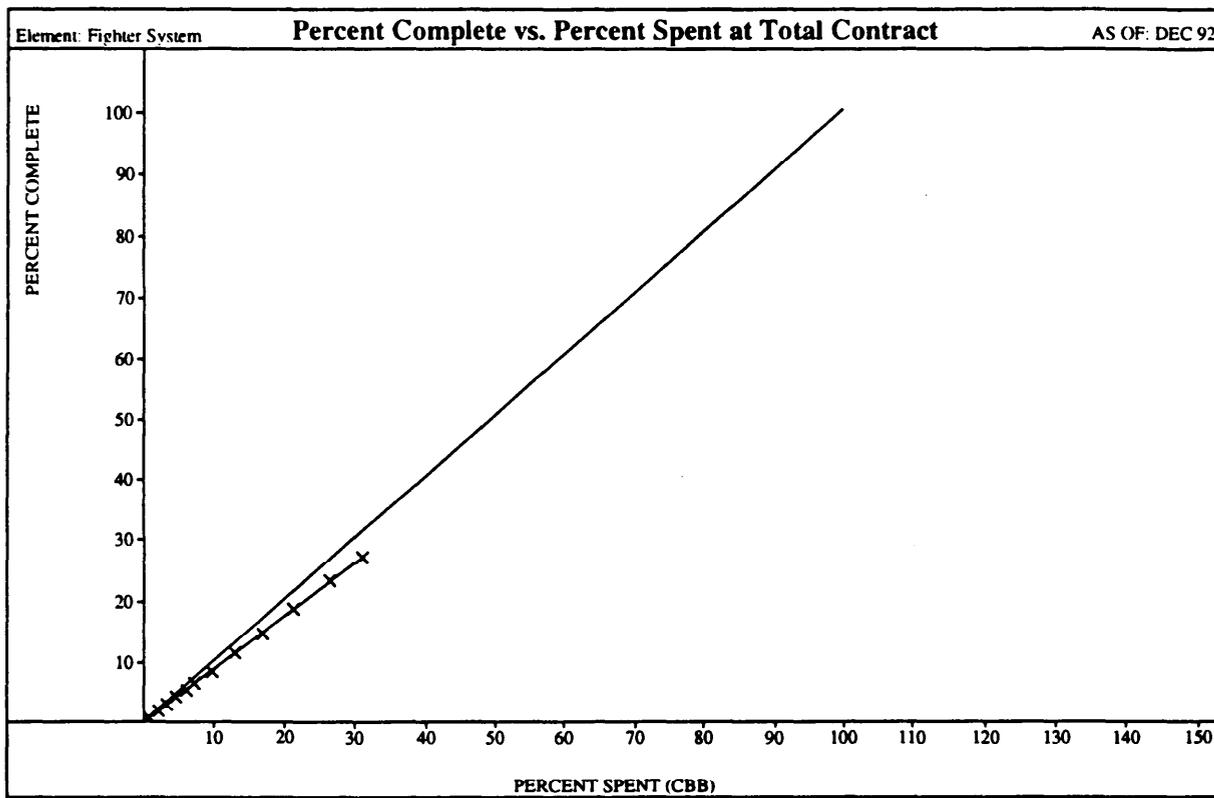


Figure 6.7. Percent Complete vs. Percent Spent at Total Contract.

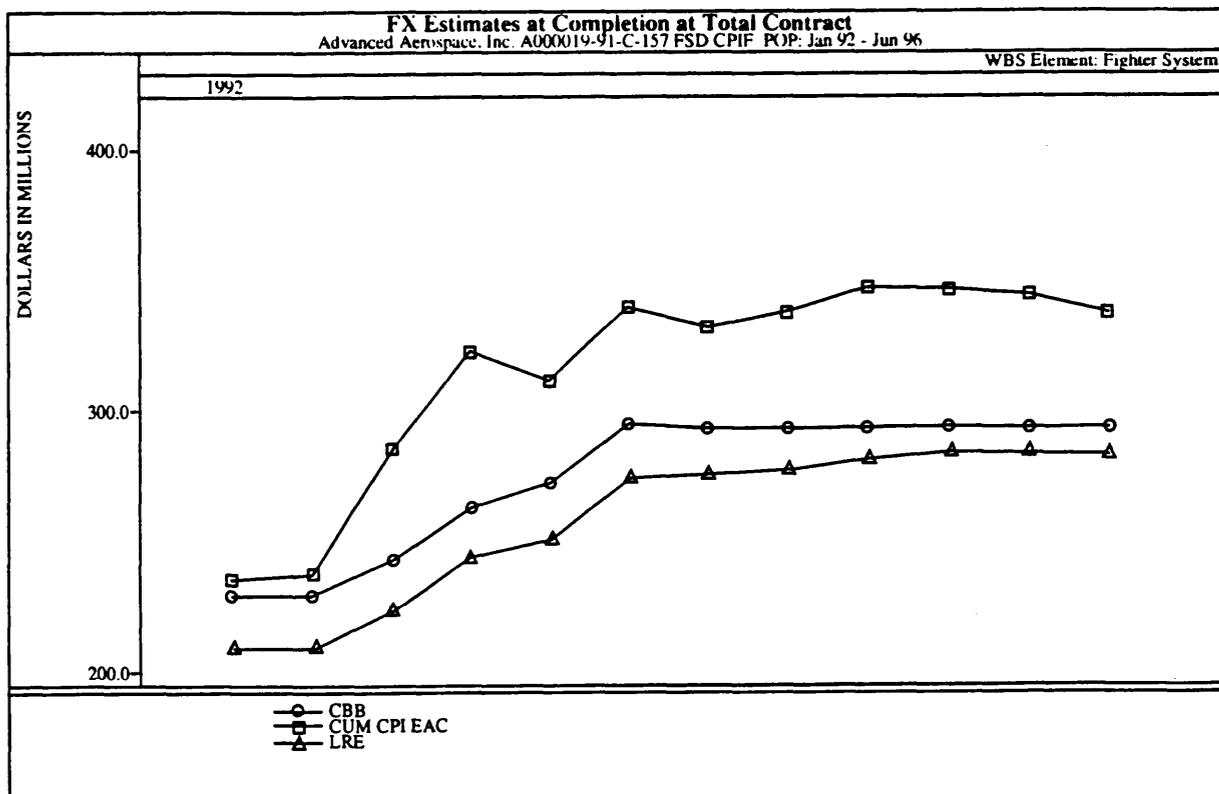


Figure 6.8. Estimates at Completion at Total Contract.

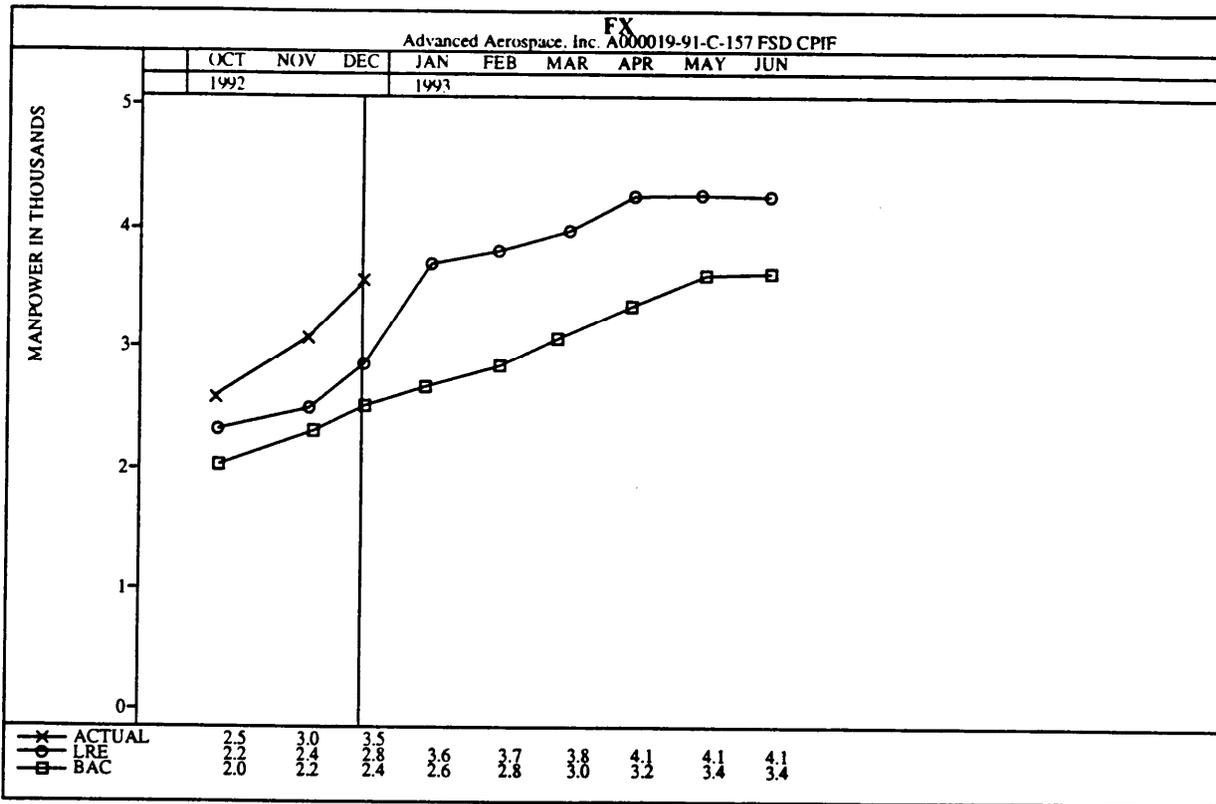


Figure 6.9. Manpower Actuals vs. Forecast.

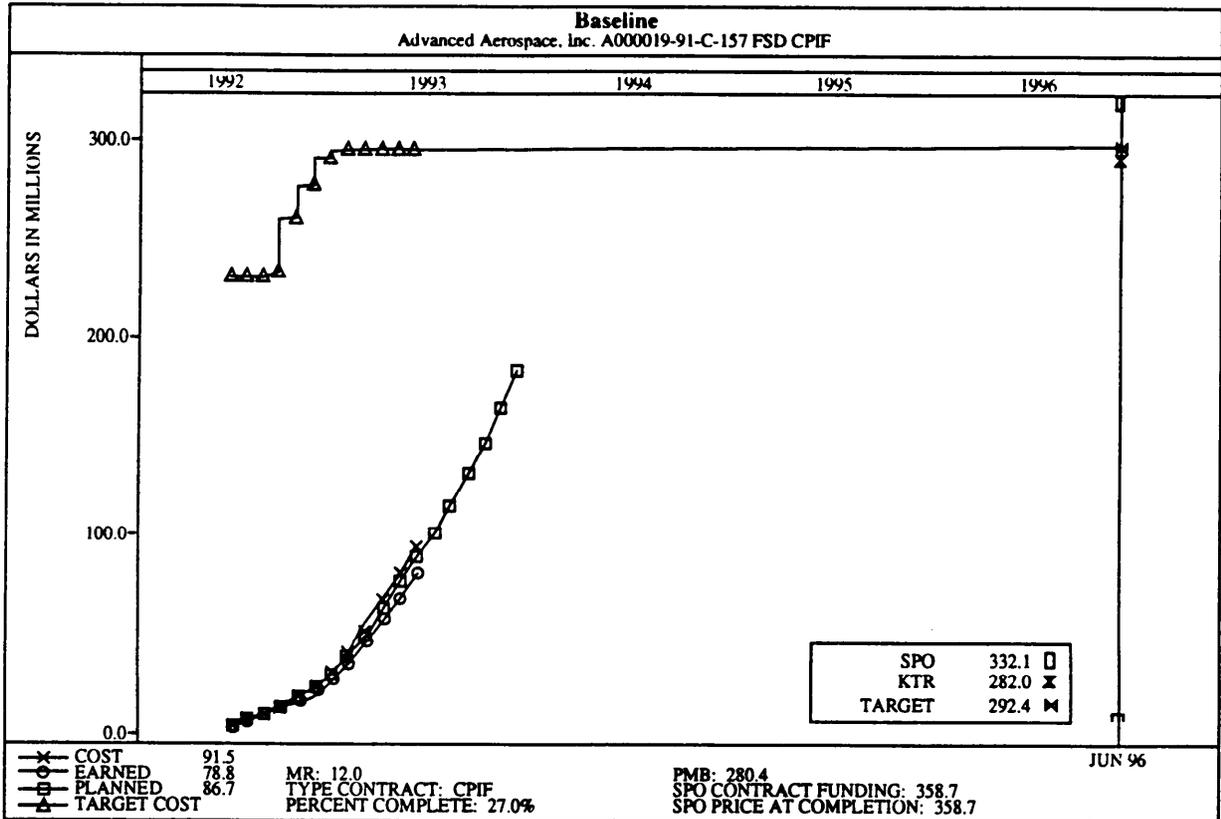


Figure 6.10. Standard Baseline.

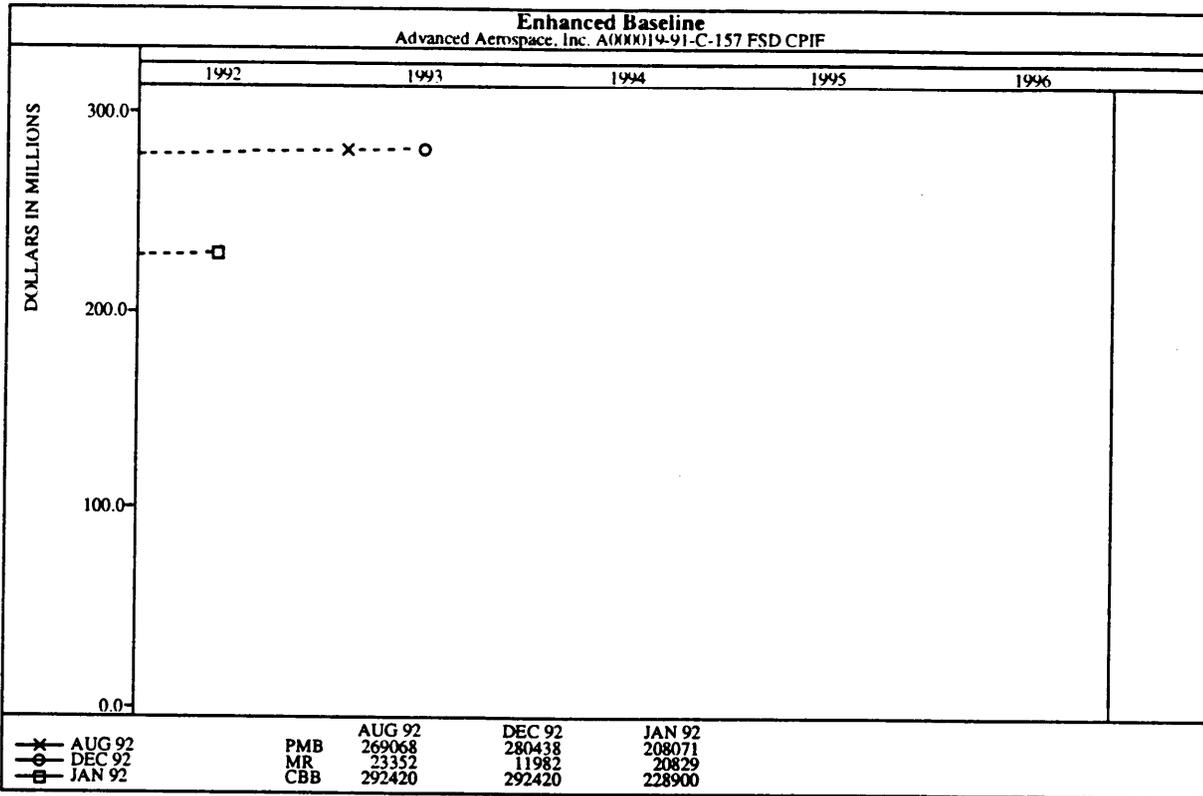


Figure 6.11. Enhanced Baseline.

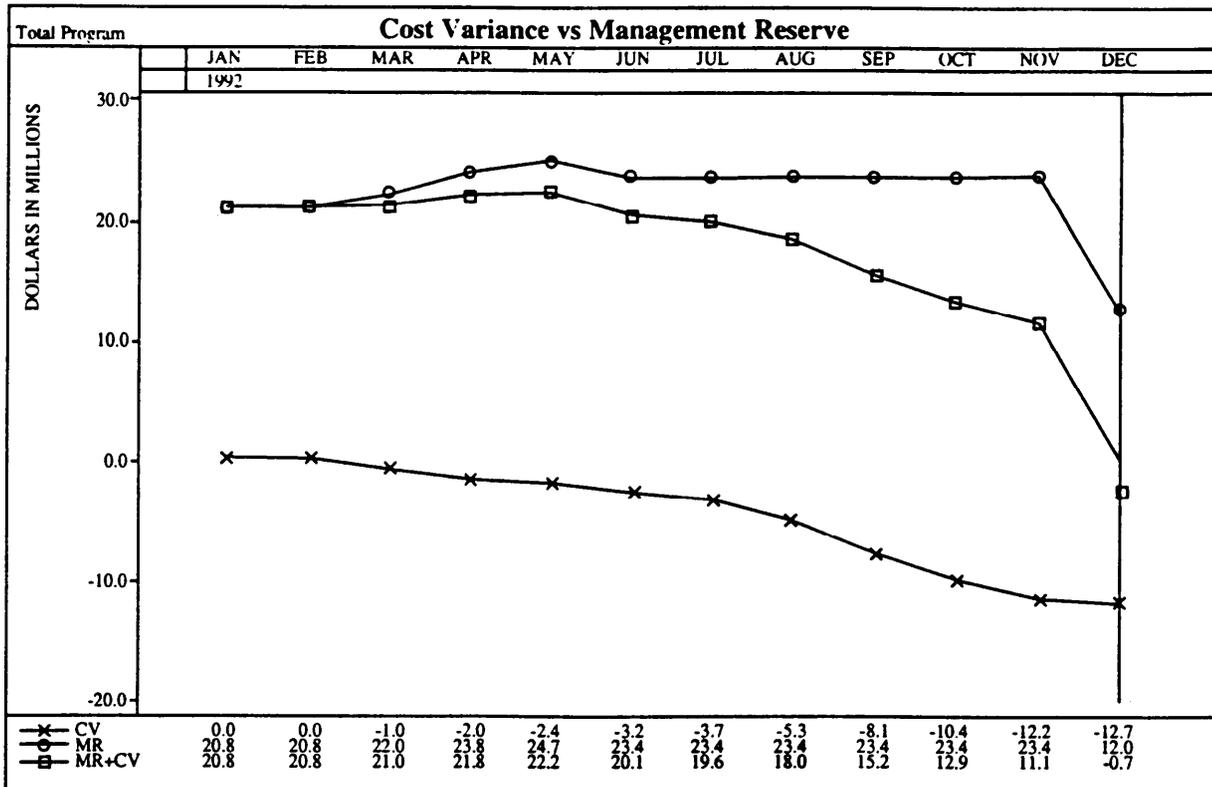


Figure 6.12. Cost Variance vs. Management Reserve.

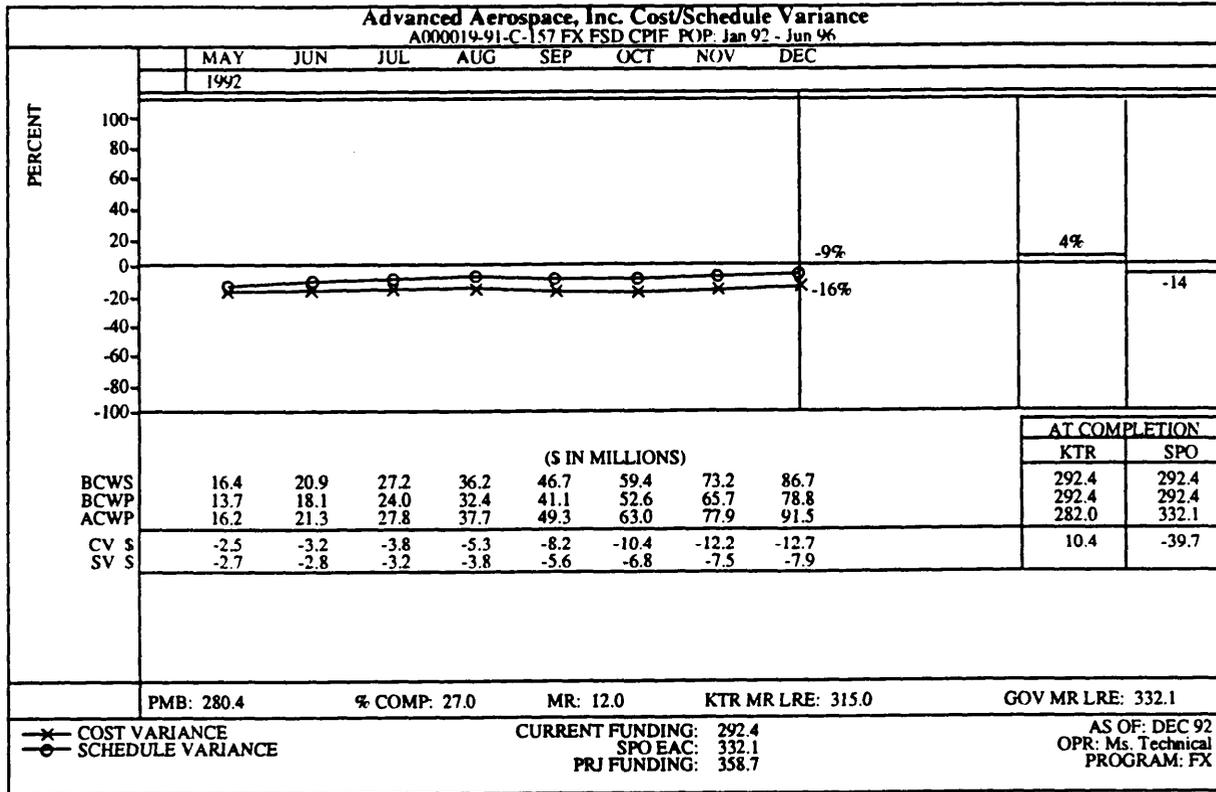


Figure 6.13. Cost/Schedule Variances Program Summary.

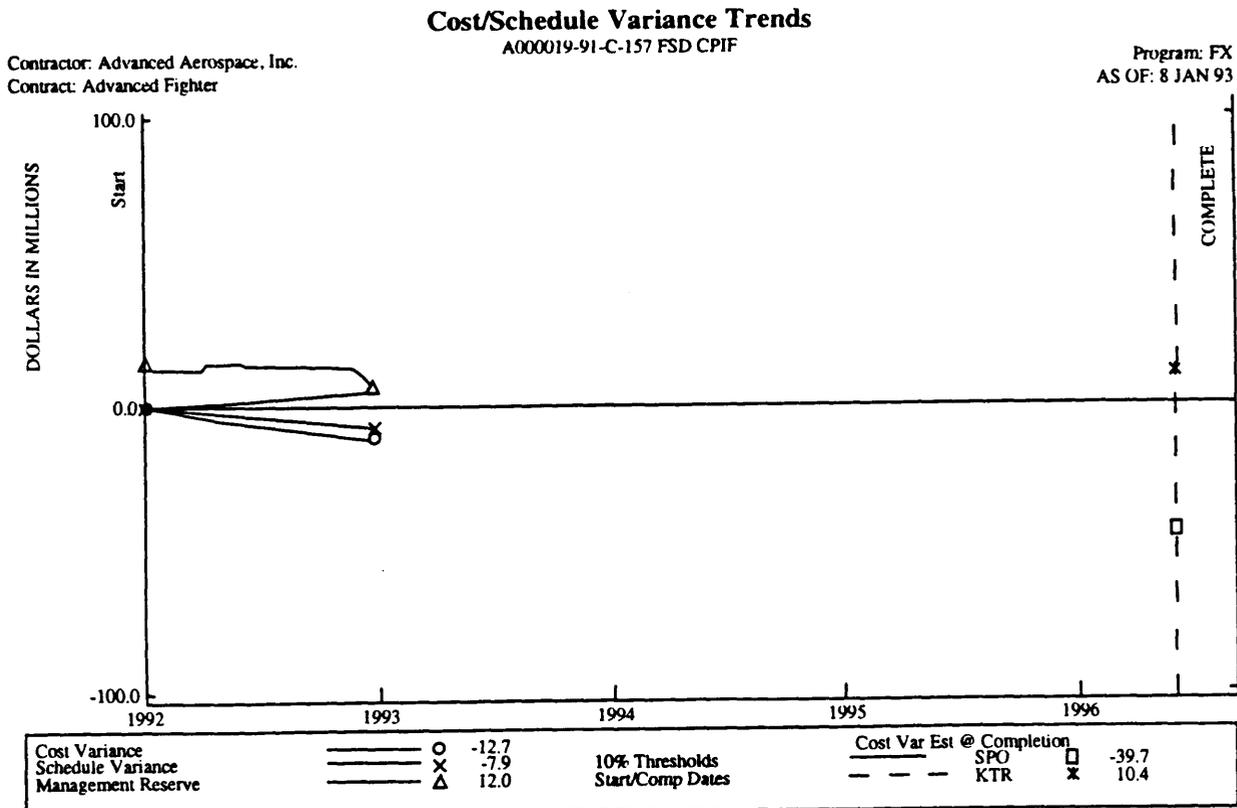


Figure 6.14. Cost/Schedule Variances Trends.

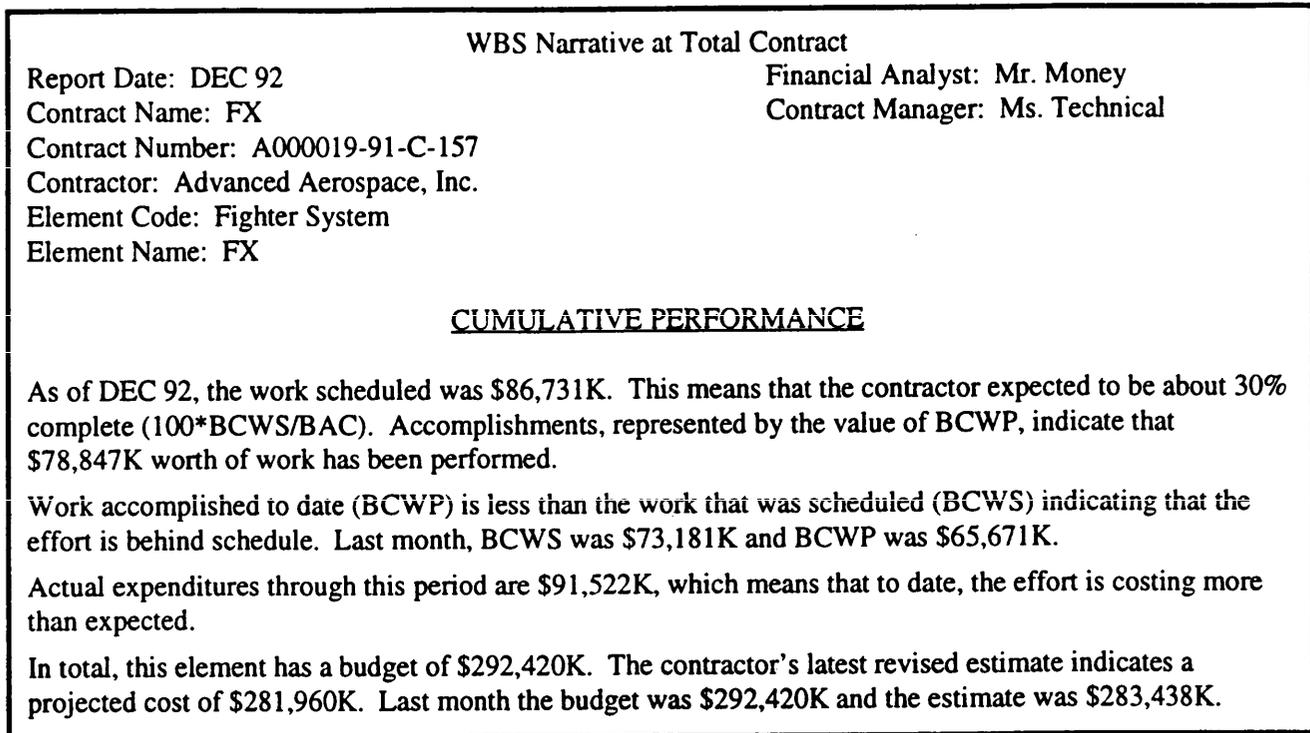


Figure 6.15. WBS Narrative (AD).

Six Period Summary - Work Breakdown Structure - Calculation at Total Contract

Report Date: DEC 92
 Contract Name: FX
 Contract Number: A000019-91-C-157
 Contractor: Advanced Aerospace, Inc.
 Element Code: Fighter System
 Element Name: FX

Financial Analyst: Mr. Money
 Contract Manager: Ms. Technical
 Project Officer: Mr. Tech
 Office Symbol: CNW

MONTH	JUL 92	AUG 92	SEP 92	OCT 92	NOV 92	DEC 92
			Current			
BCWS	6291	9028	10507	12684	13762	13550
BCWP	5985	8383	8719	11411	13113	13176
ACWP	6515	9970	11520	13701	14919	13634
SCH VAR \$	-306	-645	-1788	-1273	-649	-374
SCH VAR %	-4.86	-7.14	-17.02	-10.04	-4.72	-2.76
SPI	0.951	0.929	0.830	0.900	0.953	0.972
COST VAR \$	-530	-1587	-2801	-2290	-1806	-458
COST VAR %	-8.86	-18.93	-32.13	-20.07	-13.77	-3.48
CPI	0.919	0.841	0.757	0.833	0.879	0.966
			Cumulative			
BCWS	27200	36228	46735	59419	73181	86731
BCWP	24045	32428	41147	52558	65671	78847
ACWP	27778	37748	49268	62969	77888	91522
SCH VAR \$	-3155	-3800	-5588	-6861	-7510	-7884
SCH VAR %	-11.60	-10.49	-11.96	-11.55	-10.26	-9.09
SPI	0.88	0.90	0.88	0.88	0.90	0.91
COST VAR \$	-3733	-5320	-8121	-10411	-12217	-12675
COST VAR %	-15.53	-16.41	-19.74	-19.81	-18.60	-16.08
CPI	0.866	0.859	0.835	0.835	0.843	0.862

Figure 6.16. Six Period Summary.

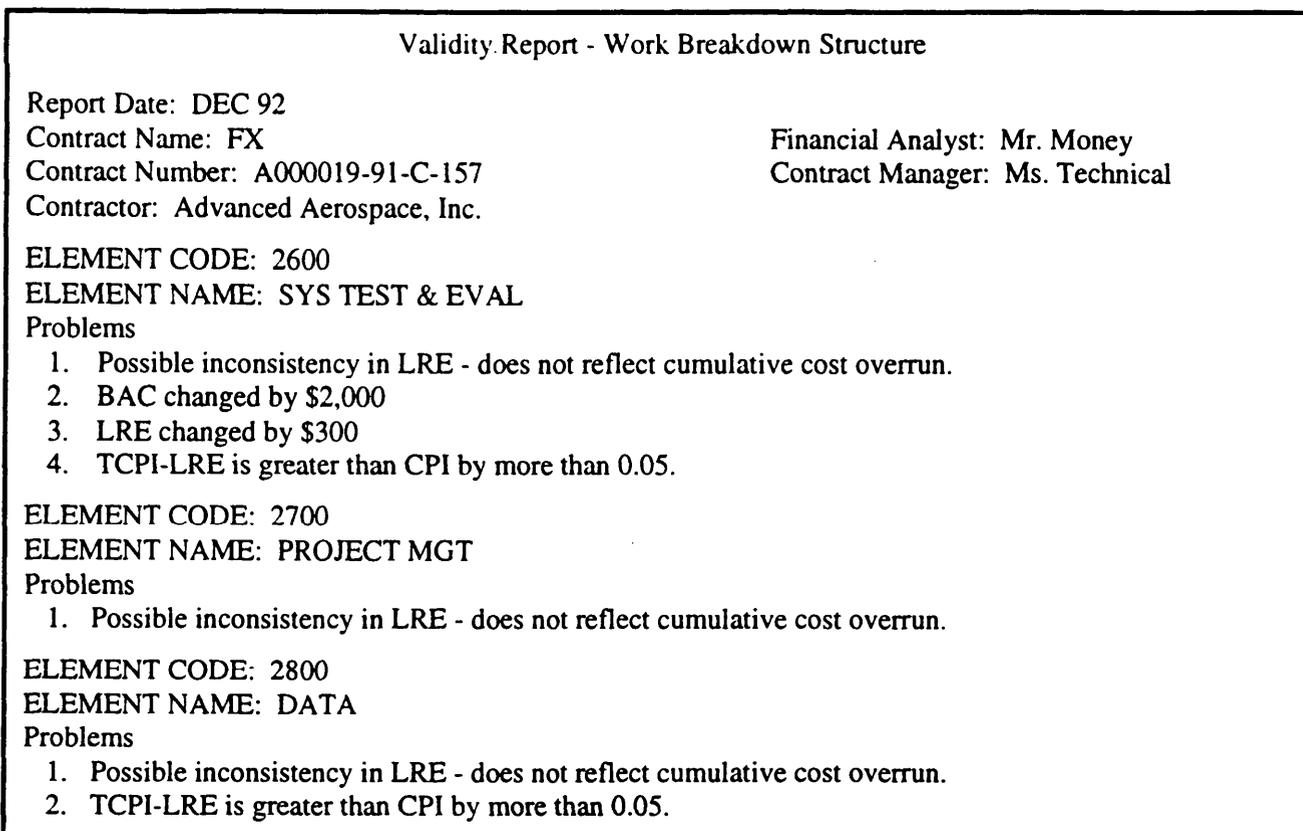


Figure 6.17. Validity Report.

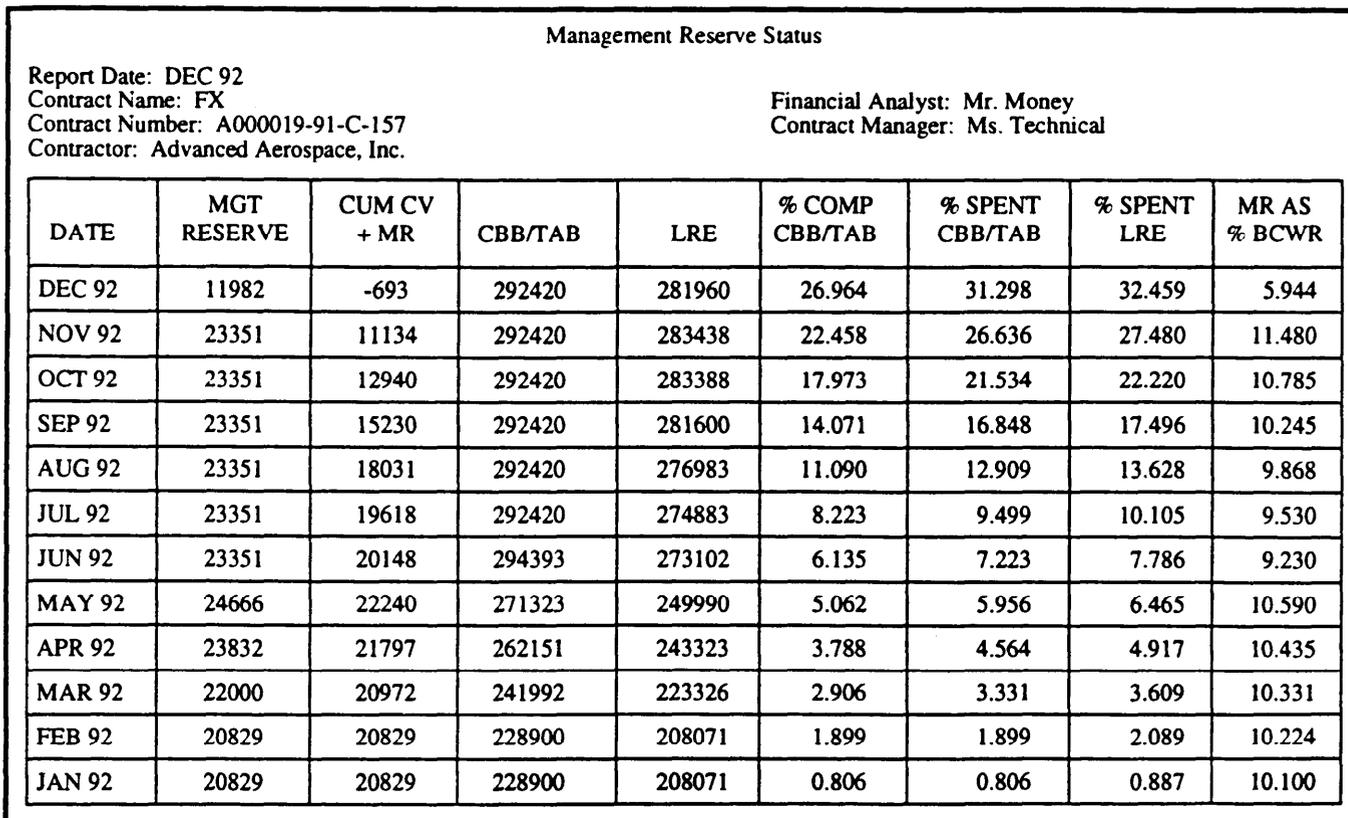


Figure 6.18. Management Reserve Status.

PM Summary Report - Work Breakdown Structure												
Report Date: DEC 92				Financial Analyst: Mr. Money								
Contract Name: FX				Contract Manager: Ms. Technical								
Contract Number: A000019-91-C-157												
Contractor: Advanced Aerospace, Inc.												
LEVEL	ID NUMBER DESCRIPTION	VAR FLG	BCWS	BCWP	ACWP	SV	CV	CPI SPI	BAC LRE	TCPI-BAC TCPI-LRE	COMPL VAR	
1	1000 FX	CUM CUR	SCV SC	86733 13550	78875 13204	91522 13634	-7858 -346	-12647 -430	0.862 0.909	292420 281960	1.063 1.121	10460
2	2100 AIR VEHICLE	CUM CUR	SCV SC	29775 3887	25348 3655	32235 3880	-4427 -232	-6887 -225	0.782 0.848	76234 76584	1.164 1.155	-350
2	2200 CMD & LCH EQUIP	CUM CUR	SCV SC	24772 5076	23506 5064	26008 5147	-1266 -12	-2502 -83	0.904 0.949	82494 83255	1.044 1.030	-761
2	2300 TRACKED VEHICLE	CUM CUR	SCV S	6399 1080	6185 1055	6496 1055	-214 -25	-311 0	0.949 0.963	23026 23239	1.020 1.007	-213
2	2400 TRAINING	CUM CUR		274 72	271 75	285 80	-3 3	-14 -5	0.951 0.989	1930 1930	1.009 1.009	0
2	2500 PEC SPT EQUIP	CUM CUR		119 24	115 23	114 23	-4 -1	1 0	1.009 0.966	2386 2386	1.000 1.000	0
2	2600 SYS TEST & EVAL	CUM CUR	SCV SC	6487 760	5655 685	6975 788	-832 -75	-1320 -103	0.811 0.872	26681 26995	1.067 1.050	-314

Figure 6.19. Program Manager Summary.

6.1.4. PA fully supports the automated transfer of data from the contractor to the program office, to the headquarters staffs, to the Executive Management System (EMS), and then to OSD through the Defense Acquisition Executive Summary data base. By placing a standardized CDRL on the contracts, the contractor will submit the CPR and/or C/SSR on a network system or a floppy disk in a structured ASCII format to the program office. The program offices will then import the data into their PA systems and do their analysis. Each analyst can input their program office EACs for each lower-level WBS and/or functional element along with narrative text explanations of the EAC methodology they used.

6.1.5. PA supports IBM PC/AT compatible computers. An 80386 microprocessor or better is recommended. RAM requirements include 530K of conventional memory at PA start-up and expanded memory is automatically used to increase program performance. A hard drive with at least 5 megabytes of free disk space and approximately 1 megabyte of disk space is required for each new contract. A fast hard drive (20 ms) or better is recommended. DOS version 3.2 or higher is recommended. An EGA, VGA or Hercules compatible graphics card (color VGA is highly recommended) and EGA/VGA color or monochrome monitor is recommended along with a Microsoft compatible mouse. To produce hard copies, a printer, plotter or other device is recommended including:

6.1.5.1. IBM graphics printer or a printer that can print IBM characters.

6.1.4.2. Hewlett Packard Laserjet, all models (2 Mg required for graphics)

6.1.4.3. Postscript compatible printer.

6.1.4.4. Hewlett Packard (HP) Deskjet/Paintjet/Inkjet printer.

6.1.4.5. Hewlett Packard Plotter 7550A, 7475, 7470A or compatibles.

6.1.4.6. Additional printers and plotters supported are listed in the PA Maintenance setup options.

6.1.5. The PA software package consists of three floppy diskettes (they are not copy-protected) and a user's manual. It must reside on your computer's hard drive as it will not run on the floppies. The con fig.sys file on the root directory of your boot disk must contain: buffers=20 and files=20. Without these commands, the system will not work properly.

6.1.6. To receive copies of the Performance Analyzer software, please send three 5 1/4" or 3 1/2" blank double-sided, double density disks along with your grade/rank; first, middle initial, and last name; branch of service; office symbol; whether or not you are a designated PMO; organization; street address; city, state and zip code; commercial and DSN phone numbers to:

SAF/FMCCR
1020 Air Force Pentagon
Washington, DC 20330-1020

DSN 223-9344
Commercial (703) 693-9344

There is a software support hotline for questions with PA-call 703-938-7292 or 7293. All recommendations for PA software upgrades should be sent to HQ AFMC/FMAC, Wright-Patterson AFB, OH, 45433-5008, DSN 787-3920 or (513) 257-3920.

6.2. Contract Appraisal System (CAPPS):

6.2.1. The Contract Appraisal System (CAPPS) is a management tool to aid executives and program managers in their understanding of cost and schedule status of their program. This system is designed to support the executive or program manager with high-level, summarized cost and schedule status information from Formats 1 and 2 of the Cost Performance Report (CPR). If you are a manager or analyst that is less involved with performing cost performance analysis, CAPPS may be for you. When compared to the Performance Analyzer (PA), PA is much more in-depth and can do more than CAPPS but requires more memory to run and has more features to learn including loading formats 1 to 5 if needed. CAPPS will make the following computations:

- 6.2.1.1. CV.
- 6.2.1.2. SV.
- 6.2.1.3. VAC.
- 6.2.1.4. CV percent.
- 6.2.1.5. CPI
- 6.2.1.6. Index to go.
- 6.2.1.7. EAC techniques.
- 6.2.1.8. EAC formulas.

6.2.2. Some of the above computations can be displayed graphically. Hardware requirements to run CAPPS are an IBM PC/XT/AT (or a true compatible) or a Zenith 248; one floppy disk drive; 192KB RAM minimum; PC DOS 2.X operating system for the IBM or an MSDOS 2.X for the Zenith.

6.2.3. For a copy of the CAPPS software, please send two 5 1/4" or one 3 1/2" blank double-sided, double density disks along with your grade/rank; first, middle initial, and last name; branch of service; office symbol; whether or not you are a designated PMO; organization; street address; city, state and zip code; commercial and DSN phone numbers to:

DAI Inc
2231 Crystal Dr.
3 Crystal Park Suite 1111
Arlington, VA 22202

Phone: (703) 920-9200 FAX: (703) 920-9204

Chapter 7

CONTRACT FUNDS STATUS REPORT (CFSR) TECHNIQUES

7.1. CPR and C/SSR Reconciliation to the CFSR/CCDR:

7.1.1. Reconciliation of the CPR or C/SSR with the CFSR/CCDR is a good business and financial management practice. The following is a list of elements on these reports which can or should be reconcilable. Figures 7.1 to 7.6 contain formats of the four reports with numbers corresponding to paragraph 7.1.3. identifying the data elements which can be reconciled.

7.1.2. Before an attempt is made to reconcile CPR or C/SSR data with the CFSR/CCDR, the following points need to be made. First, the CFSR is usually segregated by each fiscal year's funds and appropriation when contracts are financed with funds appropriated in more than one fiscal year, while the CPR or C/SSR will usually include all years and appropriations. Second, the CPR or C/SSR performance data do not include fee or profit while the CFSR/CCDR information does. The CPR heading information block does reflect the amount of profit/fee on negotiated costs to date and adding the two blocks results in target price. The C/SSR usually does not reflect profit or fee data on the form. To get actual fee or profit projection from a C/SSR one would have to review the contractual instrument itself to ascertain the amount. Third, when in an over-ceiling situation, the contractor may choose to limit the amounts reflected on the CFSR to the ceiling price. Fourth, reconciliation to the exact dollar may be difficult. Due to rounding procedures incorporated by the contractor within the various reports, the analyst should be satisfied if the reports agree with each other, give or take a few percentage points. Any significant variances should, however, be evaluated or explained. The Performance Analyzer software outlined in Chap 6 also has a reconciliation module which can assist in this analysis.

7.1.3. Reconcilable data elements:

7.1.3.1. Contract type/number - to properly reconcile the various reports one needs to be assured that the same contract number is being evaluated.

7.1.3.2. Report period - the CPR and C/SSR are usually monthly reports, while the CFSR is generally required on a quarterly basis. The CCDR varies between reports and the Data Item Description should be checked. It is imperative that the report period be the same time frame for proper reconciliation.

7.1.3.3. Contract target estimated price - the "Est price" on the CPR should compare with the subtotal block of contract work authorized on the CFSR (block 11g). Utilizing CBB (block 5) on the C/SSR and applying appropriate profit/fee amounts and adjusting for any incentive or cost sharing provisions should be reconcilable with block 11g on the CFSR.

7.1.3.4. Authorized but unpriced work - the "estimated cost of authorized but unpriced" effort (CPR and C/SSR) should reconcile with the "not definitized" but authorized block on the CFSR, after adjustments of the CPR and C/SSR data for anticipated profit or fee.

7.1.3.5. EAC - the "latest revised estimate at completion" on the CPR and C/SSR will normally agree with the "at completion" block on the CFSR for items 12c, 13, and 14 (and also the CCDR) once appropriate profit or fee is added to the CPR and C/SSR data. (NOTE: A contractor who is anticipating exceeding the limit on government obligations (LOGO) clause may opt to show only the amount to ceiling or LOGO as the "at completion" projection on the CFSR since that is all that will be reimbursed.) Differences should be explained in the reconciliation.

7.1.3.6. Cost to date - the total "cumulative actual cost of work performed (ACWP)" data on the CPR and C/SSR should be comparable with the "accrued expenditures" (actual to date) data on the CFSR. Due to data item definitions of ACWP and accrued expenditures not being identical at all times, an exact agreement between the figures might not be possible. (Differences in data are usually attributed to accounting for material expenditures and the inclusion or exclusion of profit or fee). Normally, the actual to-date accrued expenditures on the CFSR will be equal to or slightly greater than ACWP values on the CPR or C/SSR. Significant or large differences in these two data elements should prompt investigation into the matter.

7.1.3.7. Contract ceiling (fixed price incentive firm contracts only) - the "Est contract ceiling" block of the CPR should match/reconcile with the "adjusted contract price ceiling" on the CFSR.

7.1.3.8. Original or initial contract price - the "initial contract price target" element of the CFSR should reconcile with the "original contract target cost" block on the CPR and C/SSR once appropriate profit or fee adjustments are made.

7.1.3.9. Target price - the "target price" values should reconcile directly for CPRs and CFSRs since they are based on all negotiated effort/changes plus appropriate profit or fee. To be able to reconcile a CFSR with a C/SSR, one would have to take the "contract target cost" value and apply appropriate profit or fee.

PAGE _____ OF _____

CLASSIFICATION _____

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE																
CONTRACTOR:		CONTRACT TYPE/NO.:		PROGRAM NAME/NUMBER		REPORT PERIOD		SIGNATURE, TITLE & DATE			FORM APPROVED OMB NUMBER 22R0280		PAGE _____ OF _____			
LOCATION:		PRODUCTION <input type="checkbox"/>		NEGOTIATED COST		EST COST AUTH, UNPRICED WORK		TGT PROFIT/FEE %		TGT PRICE		EST PRICE		EST CONTRACT CEILING		
QUANTITY		WORK SCHEDULED		WORK PERFORMED		ACTUAL COST		BUDGETED COST		VARIANCE		CUMULATIVE TO DATE		AT COMPLETION		
ITEM	CURRENT PERIOD		CUMULATIVE TO DATE		REPROGRAMMING ADJUSTMENTS		SHARE RATIO		CONTRACT CEILING		EST CONTRACT CEILING		CONTRACT CEILING		EST CONTRACT CEILING	
	WORK SCHEDULED	WORK PERFORMED	ACTUAL COST	BUDGETED COST	VARIANCE	WORK SCHEDULED	WORK PERFORMED	ACTUAL COST	BUDGETED COST	VARIANCE	COST VARIANCE	BUDGET	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
WORK BREAKDOWN STRUCTURE																
COST OF MONEY																
GEN AND ADMIN																
UNDISTRIBUTED BUDGET																
SUBTOTAL																
MANAGEMENT RESERVE																
TOTAL																
RECONCILIATION TO CONTRACT BUDGET BASE																
VARIANCE ADJUSTMENT																
TOTAL CONTRACT VARIANCE																

FORMAT 1

DOLLARS IN _____)

CLASSIFICATION _____

Figure 7.1. CPR Format 1.

CONTRACTOR		COST/SCHEDULE STATUS REPORT			SIGNATURE, TITLE & DATE		FORM APPROVED OMB NUMBER 22R0327	
LOCATION	CONTRACT TYPE/NO. ①	PROGRAM NAME/NUMBER	REPORT PERIOD: ②					
RDILE <input type="checkbox"/>	PRODUCTION <input type="checkbox"/>	CONTRACT DATA						
(1) ORIGINAL CONTRACT TARGET COST	(2) NEGOTIATED CONTRACT CHANGES	(3) CURRENT TARGET COST (1) + (2)	(4) ESTIMATED COST OF AUTHORIZED, UNPRICED WORK	(5) CONTRACT BUDGET BASE (3) + (4)				
③		④	⑤	⑥				
PERFORMANCE DATA								
WORK BREAKDOWN STRUCTURE	CUMULATIVE TO DATE				AT COMPLETION			
	BUDGETED COST		VARIANCE		BUDGETED	LATEST REVISED ESTIMATE	VARIANCE	
WORK SCHEDULED	WORK PERFORMED	ACTUAL COST WORK PERFORMED	SCHEDULE	COST				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GENERAL AND ADMINISTRATIVE								
UNDISTRIBUTED BUDGET								
MANAGEMENT RESERVE								
TOTAL			⑥					⑦

Figure 7.2. Cost/Schedule Status Report.

CONTRACT FUNDS STATUS REPORT													
CLASSIFICATION _____		FORM APPROVED OMB No. 0704-0188											
(DOLLARS IN _____)		9. INITIAL CONTRACT PRICE											
1. CONTRACT NUMBER		3. CONTRACT FUNDING FOR		5. PREVIOUS REPORT DATE		7. CONTRACTOR (Name, address and zip code)		a. TARGET		b. CEILING			
(1)		FOR FY		6. CURRENT REPORT DATE		8. PROGRAM		c. TARGET		d. CEILING			
2. CONTRACT TYPE		4. APPROPRIATION		(2)		(3) / (5)		(4)		(7)			
(1)		(2)		(3)		(4)		(5)		(6)			
11. FUNDING INFORMATION													
LINE ITEM/WBS ELEMENT	APPROPRIATION IDENTIFICATION	FUNDING AUTHORIZED TO DATE	ACCRUED EXPENDITURES OPEN COMMITMENTS TOTAL	CONTRACT WORK AUTHORIZED		FORECAST			TOTAL REQUIREMENTS	FUNDS CARRY-OVER	NET FUNDS REQUIRED		
				DEFINITIZED	NOT DEFINITIZED	SUBTOTAL	NOT YET AUTHORIZED	ALL OTHER WORK				SUBTOTAL	
a	b	c	d	e	f	g	h	i	j	k	l	m	
12. CONTRACT WORK AUTHORIZED (WITH FEE/PROFIT) - ACTUAL OR PROJECTED													
		ACTUAL TO DATE										AT COMPLETION	
a. OPEN COMMITMENTS													
b. ACCRUED EXPENDITURES		(6)											
c. TOTAL (12a + 12b)												(5)	
13. FORECAST OF BILLINGS TO THE GOVERNMENT												(5)	
14. ESTIMATED TERMINATION COSTS													
15. REMARKS													

Figure 7.3. Contract Funds Status Report.

Form Approved
OMB No. 0704-0188

SECURITY CLASSIFICATION _____

COST DATA SUMMARY REPORT

(Dollars in _____)

7. CONTRACT TYPE 8. CONTRACT PRICE	1. PROGRAM 9. CONTRACT CEILING	2. CONTRACT NO. LATEST AMENDMENT: <input type="checkbox"/> REP NO. <input type="checkbox"/> PROGRAM ESTIMATE <input type="checkbox"/> PRIME/ASSOCIATE <input type="checkbox"/> SUBCONTRACTOR (Name and Address, include ZIP Code)	3. <input type="checkbox"/> RDT & E <input type="checkbox"/> IMPROVEMENT 4. MULTIPLE YEAR CONTRACT <input type="checkbox"/> YES <input type="checkbox"/> NO 5. REPORT AS OF (2) 6. FY FUNDED
11. NAME OF CUSTOMER (Subcontractor Use Only)	10. <input type="checkbox"/> PRIME/ASSOCIATE <input type="checkbox"/> SUBCONTRACTOR (Name and Address, include ZIP Code)		
CONTRACT LINE ITEM A	REPORTING ELEMENTS B	ELEMENT CODE C	AT COMPLETION COSTS INCURRED NUMBER OF UNITS G
TO DATE COSTS INCURRED NONRECURRING D RECURRING E TOTAL F		NONRECURRING H RECURRING I TOTAL J	
(5)		(5)	
12. REMARKS			
13. NAME OF PERSON TO BE CONTACTED		14. TELEPHONE NO.	15. SIGNATURE
DD Form 1921, JUN 86		16. DATE	

Previous editions are obsolete.

SECURITY CLASSIFICATION _____

Figure 7.4. Cost Data Summary Report.

SECURITY CLASSIFICATION

FORM APPROVED
OMB No. 0704-0188

S E C T I O N A	FUNCTIONAL COST-HOUR REPORT		1. PROGRAM		2. REPORT AS OF				
	3. DOLLARS IN		4. HOURS IN		5. <input type="checkbox"/> CONTRACT/ <input type="checkbox"/> RFP NO <input type="checkbox"/> PROGRAM ESTIMATE				
	6. <input type="checkbox"/> NON-RECURRING <input type="checkbox"/> RECURRING <input type="checkbox"/> TOTAL		7. <input type="checkbox"/> RDT&E <input type="checkbox"/> PROCUREMENT <input type="checkbox"/> OTHER						
	8. MULTIPLE YEAR CONTRACT <input type="checkbox"/> YES <input type="checkbox"/> NO		9. FY FUNDED		10. <input type="checkbox"/> PRIME/ASSOCIATE <input type="checkbox"/> SUBCONTRACTOR <i>(Name and address; include ZIP code)</i>				
				11. NAME OF CUSTOMER <i>(Subcontractor Use Only)</i>					
				12. REPORTING ELEMENT (S)					
S E C T I O N B	FUNCTIONAL CATEGORIES		ADJUST- MENTS TO PREVIOUS REPORTS A	CONTRACTOR		SUBCONTRACT OR OUT- SIDE PROD AND SERV		TOTAL	
				TO DATE B	AT COMPL C	TO DATE D	AT COMPL E	TO DATE F	AT COMPL G
	ENGINEERING								
	1. DIRECT LABOR HOURS								
	2. DIRECT LABOR DOLLARS		\$	\$	\$	\$	\$	\$	\$
	3. OVERHEAD		\$	\$	\$	\$	\$	\$	\$
	4. MATERIAL		\$	\$	\$	\$	\$	\$	\$
	5. OTHER DIRECT CHARGES <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$
	6. TOTAL ENGINEERING DOLLARS		\$	\$	\$	\$	\$	\$	\$
	TOOLING								
	7. DIRECT LABOR HOURS								
	8. DIRECT LABOR DOLLARS		\$	\$	\$	\$	\$	\$	\$
	9. OVERHEAD		\$	\$	\$	\$	\$	\$	\$
	10. MATERIALS AND PURCHASED TOOLS		\$	\$	\$	\$	\$	\$	\$
	11. OTHER DIRECT CHARGES <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$
	12. TOTAL TOOLING DOLLARS		\$	\$	\$	\$	\$	\$	\$
	QUALITY CONTROL								
	13. DIRECT LABOR HOURS								
	14. DIRECT LABOR DOLLARS		\$	\$	\$	\$	\$	\$	\$
	15. OVERHEAD		\$	\$	\$	\$	\$	\$	\$
	16. OTHER DIRECT CHARGES <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$
	17. TOTAL QUALITY CONTROL DOLLARS		\$	\$	\$	\$	\$	\$	\$
	MANUFACTURING								
	18. DIRECT LABOR HOURS								
	19. DIRECT LABOR DOLLARS		\$	\$	\$	\$	\$	\$	\$
	20. OVERHEAD		\$	\$	\$	\$	\$	\$	\$
	21. MATERIALS AND PURCHASED PARTS		\$	\$	\$	\$	\$	\$	\$
	22. OTHER DIRECT CHARGES <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$
	23. TOTAL MANUFACTURING DOLLARS		\$	\$	\$	\$	\$	\$	\$
	24. PURCHASED EQUIPMENT		\$	\$	\$	\$	\$	\$	\$
	25. MATERIAL OVERHEAD		\$	\$	\$	\$	\$	\$	\$
26. OTHER COSTS NOT SHOWN ELSEWHERE <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$	
27. TOTAL COST PLUS G & A		\$	\$	\$	\$	\$	\$	\$	
28. G & A		\$	\$	\$	\$	\$	\$	\$	
29. TOTAL COST PLUS G & A		\$	\$	\$	\$	\$	\$	\$	
30. FEE OR PROFIT		\$	\$	\$	\$	\$	\$	\$	
31. TOTAL OF LINES 29 AND 30		\$	\$	\$	\$	\$	\$ (6)	\$ (5)	

FORM CONTINUED ON REVERSE

Figure 7.5. Functional Cost-Hour Report.

SECURITY CLASSIFICATION

FORM APPROVED
OMB No. 0704-0188

SECTION A	PROGRESS CURVE REPORT <i>(Recurring Cost Only)</i>				1. PROGRAM		
	2. DOLLARS IN		3. HOURS IN		5. CONTRACT NO.		6. REPORT FOR _____ MONTHS ENDING _____
	4. TOTAL CUMULATIVE UNITS ACCEPTED AS OF LAST REPORT				②		
	7. MULTIPLE YEAR CONTRACT <input type="checkbox"/> YES <input type="checkbox"/> NO		9. <input type="checkbox"/> PRIME/ASSOCIATE <input type="checkbox"/> SUBCONTRACTOR <i>(Name and address; include ZIP code)</i>		10. NAME OF CUSTOMER <i>(Subcontractor Use Only)</i>		
8. FY FUNDED		11. REPORTING ELEMENT (S)					

ITEM	UNITS/LOTS ACCEPTED					ESTIMATE OF NEXT UNIT/LOT TO BE ACCEPTED F	TO COMPLETE CONTRACT G
	A	B	C	D	E		
1. MODEL AND SERIES							
2. FIRST UNIT OF LOT							
3. LAST UNIT OF LOT							
4. CONCURRENT UNITS							
5. CHARACTERISTICS							
6.							
7.							
CONTRACTOR DATA (Per Unit/Lot)							
8. DIRECT QUALITY CONTROL MAN-HOURS							
9. DIRECT MANUFACTURING MAN-HOURS							
10. QUALITY CONTROL DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$
11. MANUFACTURING DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$
12. RAW MATERIAL & PURCHASED PARTS DOLLARS	\$	\$	\$	\$	\$	\$	\$
13. PURCHASED EQUIPMENT DOLLARS	\$	\$	\$	\$	\$	\$	\$
14. TOTAL DOLLARS	\$	\$	\$	\$	\$	\$	\$ ⑤
SUBCONTRACT / OUTSIDE PROD. & SERV							
15. DIRECT QUALITY CONTROL MAN-HOURS							
16. DIRECT MANUFACTURING MAN-HOURS							
17. TOTAL MAN-HOURS							
18. QUALITY CONTROL DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$
19. MANUFACTURING DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$
20. RAW MATERIAL & PURCHASED PARTS DOLLARS	\$	\$	\$	\$	\$	\$	\$
21. PURCHASED EQUIPMENT DOLLARS	\$	\$	\$	\$	\$	\$	\$
22. TOTAL DOLLARS	\$	\$	\$	\$	\$	\$	\$
UNIT TOTAL <input type="checkbox"/> AVERAGE <input type="checkbox"/>							
23. DIRECT QUALITY CONTROL MAN-HOURS							
24. DIRECT MANUFACTURING MAN-HOURS							
25. TOTAL MAN-HOURS							
26. QUALITY CONTROL DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$
27. MANUFACTURING DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$
28. RAW MATERIAL & PURCHASED PARTS DOLLARS	\$	\$	\$	\$	\$	\$	\$
29. PURCHASED EQUIPMENT DOLLARS	\$	\$	\$	\$	\$	\$	\$
30. TOTAL DOLLARS	\$	\$	\$	\$	\$	\$	\$ ⑤
31. % SUBCONTRACT OR OUTSIDE PROD. & SERV.							

SECTION B CONTINUED ON PAGE 2

Figure 7.6. Progress Curve Report.

7.2. Program Office Funds Comparison to the CFSR:

7.2.1. The CFSR provides management with the visibility to correlate the dollar requirements of the contractor with the financial resources of the system program office to accomplish the mission in the most efficient and economical manner. When CFSR data are used in conjunction with contractor manpower data and the CPR or C/SSR, a contractor's efforts can be closely monitored. Trends can be identified and analyzed; investigations can be made; and action to appropriately adjust funding requirements can be initiated.

7.2.2. When properly analyzed, the CFSR data can be used to:

7.2.2.1. Determine fiscal year funding requirements.

7.2.2.2. Analyze manpower expenditure forecasts versus commitments.

7.2.2.3. Make decisions regarding internal reprogramming of funds.

7.2.2.4. Reconcile cost data reported on the CPR or C/SSR.

7.2.3. The CFSR data in Figure 7.7 can be arrayed monthly on an internal cost tracking sheet, as in table 7.1. The financial manager can use it to compare original forecasts. The reasons for changes to the original forecasts should be investigated and annotated on the table. The data from this table can be plotted in graph form as in Figure 7.8 to highlight trends in commitments. Unfavorable deviations from the forecasted commitments could signify problems. When R&D funds are involved, this table and graph are useful tools in establishing fiscal year requirements and forecasting potential forward financing situations. When the total of unliquidated commitments plus accrued expenditures (line 12c of the CFSR) through September are forecasted to exceed the program office funds obligated on the contract, a forward financing posture can be predicted. Action can then be initiated to either reduce the level of the obligations or to request a forward financing waiver.

7.2.4. If deviations from forecasted commitments are compared with manpower forecasts from the CPR (Figure 7.9), a trend may be visible, which could indicate schedule problems. For example, if material purchases are not ordered (committed) as planned, material deliveries may be impacted, thus impacting labor expenditures and ultimately equipment deliveries.

7.2.5. A budget status report (table 7.2) is a summary of the obligation status for all contracts within a given project. Through the use of this summary, the analyst can compare the overall funds required for a project to the total funds available. In this manner, excesses and deficits by contract are highlighted and internal reprogramming of project funds can be initiated.

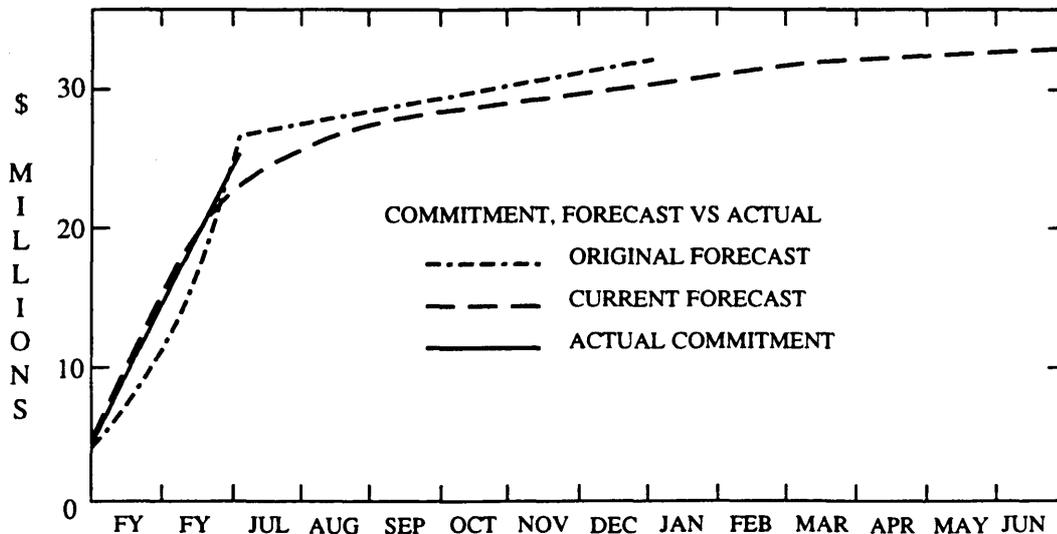
7.2.6. When the estimated cost at completion differs from the original contract value, a contract funding table (table 7.3) should be prepared to explain the deltas. This information could be extracted from supplemental reports to the CFSR (if required in the CDRL) as in table 7.4. This not only enables the analyst to analyze the status of various changes, but also shows which change orders are included in the forecast.

7.2.7. When a CFSR is submitted in conjunction with a CPR or C/SSR, the data should be compared and reconciled as discussed in paragraph 7.1.

CONTRACT FUNDS STATUS REPORT																								
1. CONTRACT NUMBER F04701-80-G-00123	3. CONTRACT FUNDING FOR F04701-80-G-00123	5. PREVIOUS REPORT DATE 31 May 199X	7. CONTRACTOR (Name, address and zip code) XYZ Corp. 1234 Main St., Anyplace, USA	9. INITIAL CONTRACT PRICE a. TARGET N/A b. CEILING N/A	10. ADJUSTED CONTRACT PRICE c. TARGET N/A d. CEILING N/A	FORM APPROVED OMB No. 0704-0188																		
2. CONTRACT TYPE CPIF	4. APPROPRIATION 3600	6. CURRENT REPORT DATE 30 June 19XX	8. PROGRAM ALPHAOMEGA																					
FUNDING INFORMATION																								
LINE ITEM/WBS ELEMENT a	APPROPRIATION IDENTIFICATION b	FUNDING AUTHORIZED TO DATE c	ACCRUED EXPENDITURES OPEN COMMITMENTS TOTAL d	CONTRACT WORK AUTHORIZED			FORECAST				TOTAL REQUIREMENTS k	FUNDS CARRY-OVER l	NET FUNDS REQUIRED m											
				DEFINITIZED e	NOT DEFINITIZED f	SUBTOTAL g	NOT YET AUTHORIZED h	ALL OTHER WORK i	SUBTOTAL j															
TOTAL CONTRACT		25,120	25,095	31,606	745	32,351	59	-0-	-0-	59	32,410	-0-	32,410											
CONTRACT WORK AUTHORIZED (WITH FEETPROFIT) - ACTUAL OR PROJECTED																								
				ACTUAL TO DATE	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AT COMPLETION	
a. OPEN COMMITMENTS				626	730	650	600	460	175	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	
b. ACCRUED EXPENDITURES				24,469	25,404	26,284	27,292	29,539	31,200	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351
c. TOTAL (12a + 12b)				25,095	25,134	26,934	27,892	29,997	31,375	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351	32,351
13. FORECAST OF BILLINGS TO THE GOVERNMENT				25,095	871	871	871	2,775	982	886	886	886	886	886	886	886	886	886	886	886	886	886	886	886
14. ESTIMATED TERMINATION COSTS																								
15. REMARKS																								

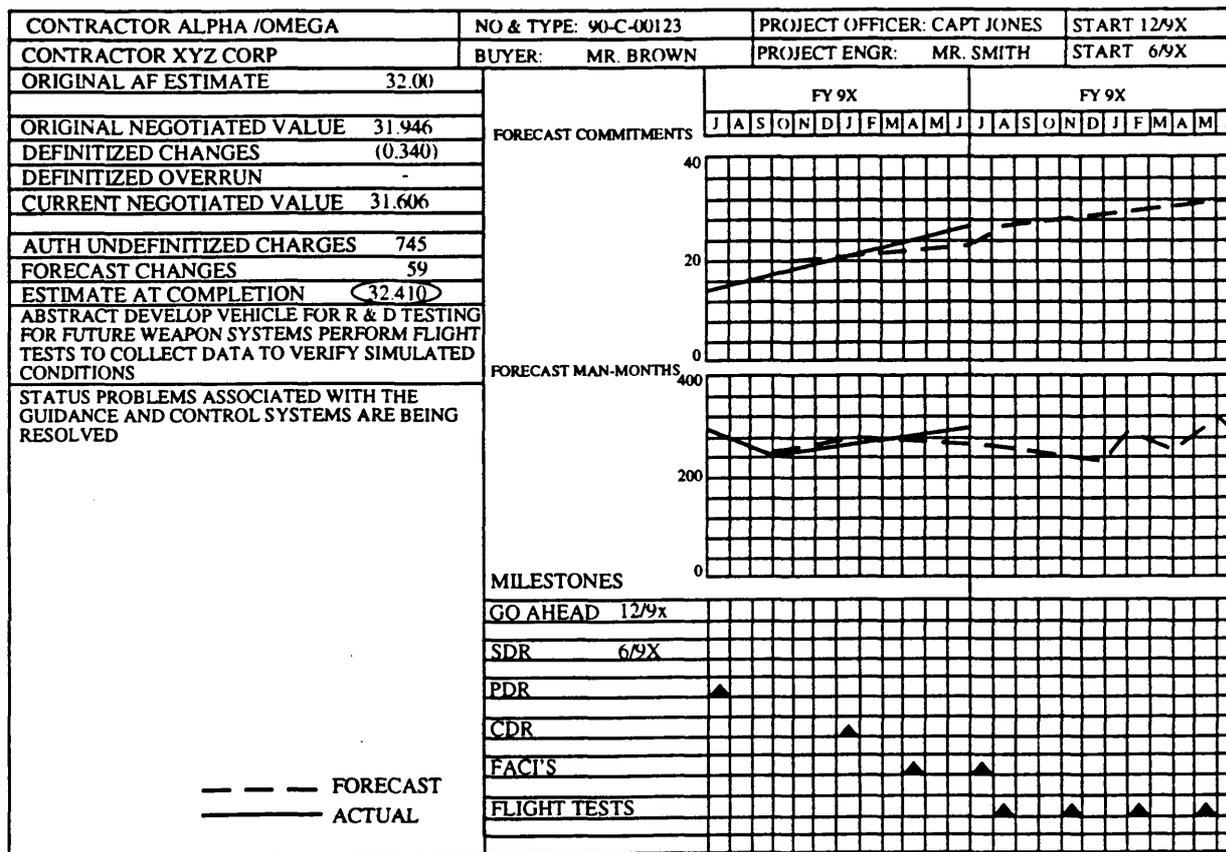
Figure 7.7. Contract Funds Status Report.

CONTRACTOR FINANCIAL SUMMARY



ORIGINAL FORECAST	11.94	26.31	27.25	28.19	29.13	30.07	31.01	31.95							
CURRENT FORECAST	16.30	23.95	26.13	26.93	27.89	28.59	29.30	30.00	30.46	30.92	31.38	31.72	32.07	32.41	
ACTUAL COMMITMENT	15.36	25.10													

Figure 7.8. Commitment Forecast vs. Actual.



CONTRACT:

PREPARED BY:

AS OF:

Figure 7.9. Forecast Commitments vs. Forecast Man-Months.

CONTRACT NO. XYZ 90-C 00123													PURPOSE ALPHA/OMEGA												DURATION 12/9x-6/9x											
FY	199X						199X						199X						199X																	
	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN								
MONTH																																				
ACTUALS	5.84	7.82	11.75	15.36	18.23	20.31	22.72	25.10																												
FORECASTS																																				
ORIGINAL		7.07	9.32	11.94	15.53	19.13	22.72	26.31	27.25	28.19	29.13	30.07	31.01	31.95	30.29	31.00	31.45	31.89	32.34																	
1			11.20	14.47	17.52	21.25	24.97	20.70	29.44	30.18	30.92	31.66	32.40	33.14																						
2				16.30	20.60	24.53	27.25	20.98	30.61	31.24	31.87	32.50	33.14	33.77																						
3					18.32	20.49	22.33	24.05	25.43	26.82	28.20	29.58	30.96	32.34																						
4						20.49	22.33	24.05	24.83	25.60	26.38	27.21	28.03	28.86	29.57	31.00	31.45	31.89	32.34																	
5									NO SIGNIFICANT CHANGE																											
6								23.95	24.60	25.58	26.57	27.55	28.17	28.80	29.42	30.39	30.88	31.40	31.91																	
7									26.13	26.93	27.89	28.59	29.30	30.00	30.46	31.38	31.72	32.07	32.41																	
REASONS FOR CHANGES																																				
1	TRANSFERRED ECP, FROM PREVIOUS CONTRACT																																			
2	NEW WORK #24 LESS DECREASE OF .200 IN NEGOTIATED PRICE OF ECP																																			
3	PARTIAL TERMINATION																																			
4	CONTRACT EXTENSION																																			
5	FURTHER CREDIT FOR PARTIAL TERMINATION																																			
7	NEW ECP, AND COST GROWTH																																			

Table 7.1. Internal Cost Tracking Sheet.

BUDGET STATUS REPORT

FISCAL YEAR 19XX

PROJECT	MANAGER	CONTRACT	DURATION	EST COST	PR YR OBLIG	REQ'D	CHGS IN PROC	PENDING	BUDGET	OBLIG	REMARKS
ALPHA OMEGA	JONES	8-00123	12/9X - 6/9X	32.410	25.120	7.290	0.010	0.700	8.000	3.650	
MOTORS	SMITH	8-00133	7/9X-1/9X	1.949	1.570	0.379			0.379	0.080	
TOTAL						7.669	0.010	0.700	8.379	3.730	

Table 7.2. Budget Status Report.

CONTRACT FUNDING, XYZ 8-00123

CONTRACT	DURATION	ESTIMATED COST AT COMPLETION	PRIOR YEAR FUNDING	FY 9X REQUIREMENTS	FY 9X BUDGET
ALPHA/OMEGA	12/9X-6/9X	32.410	25.120	7.290	8.000
ORIGINAL VALUE				31.946	
PARTIAL TERMINATION				(0.395)	
NEW WORK				0.376	
COST GROWTH				0.363	
INCENTIVE FEE				0.120	
ESTIMATED COST AT COMPLETION				32.410	

Table 7.3. Contract Funding Summary.

SUPPLEMENT TO CONTRACT FUNDS STATUS REPORT

CONTRACT NO. XXXXX
 CONTRACT TITLE

CURRENT REPORT DATE 30 JUNE 19XX

ITEM	CONTRACT WORK AUTHORIZED			FORECAST			
	DEFINITIZED	NOT DEFINITIZED	SUBTOTAL	DEFINED WORK	ALL OTHER WORK	SUBTOTAL	TOTAL
BASIC	31,946		31,946				31,946
AVE CABLING	55		55				55
GFE COMPUTER		92	92				92
SPECIFIC CHANGES		11	11				11
COMD. GUIDANCE RADAR TESTS		16	16				16
PARTIAL TERMINATION	(395)		(395)				(395)
SECURITY REQUIREMENTS		18	18				18
FACTORY/FIELD TEST PLAN		26	26				26
INTEGRATE PAYLOADS		79	79				79
MODIFY LIFTING RINGS		20	20				20
COST GROWTH		363	363				363
INCENTIVE FEE		120	120	59	0	59	120
ALTERNATIVE PAYLOAD ADAPTER							59
TOTAL	31,606	745	32,351	59	0	59	32,410

Table 7.4. Supplement to CFSR.

7.3. Closing the Gap Between EACs and Budget Estimates:

7.3.1. Financial Manager (FM) Responsibility. The program office FM should first develop independent EACs for each contract which provides CPRs or C/SSRs. Once developed, the FM should convert each EAC at cost to an EAC at price (or total government funding liability). Next, the FM should break out the total EAC price down to level 3 of the WBS and phase by fiscal year. This assumes the program office is capable of funding the contract at level 3 of the WBS. The FM is now in position to incorporate the EACs into the financial management process as described below.

7.3.2. Comparing EAC (Price) with Funds Obligated. First compare funds obligated by contract at WBS level 3 to the EACs at price by WBS level 3. Identify the difference between funds obligated and the independent EACs for each WBS level-3 item and the cause(s). Next, the EACs should be aligned with funds obligated. For those contracts not requiring CPRs or C/SSRs and where the funds obligated have bought the complete fiscal year requirements for specific WBS-level items, the funds obligated to date should become the program office EAC. Where the FM has developed "grass roots" EACs through CPR or C/SSR data analysis, no action is required at this step other than to note the differences between EACs and funds obligated.

7.3.3. Adjusting the Budget and/or EAC. The budget estimate (AF Form 1537) at WBS level 3 is adjusted to reflect the EACs developed through CPR or C/SSR data analysis and through the step described above. The budget estimate for the WBS level-3 items should be set equal to the independent EACs (at price) for the same WBS level-3 items. This revised budget estimate now reflects the total program funds requirements by fiscal year. A comparison of the revised budget requirements and the approved program budget will indicate budget problems.

7.3.4. Balancing Funds in Hand, Approved Program, and Program Funds Required by Fiscal Year. Now define the actions necessary to balance funds in hand, approved program, and program funds required by fiscal year. First, funds should be considered for deobligation where EACs at price are less than funds obligated to date for WBS level-3 items. This should be cautiously done only in those instances where there is a high confidence factor in the final EAC. Second, funds should be obligated to equate to EACs at price for WBS level-3 items where the obligated funds are less than the EACs. This increase of obligated funds to match EACs should be done only insofar as prudent program management dictates. For example, where a fund's deficit exists for a particular fiscal year, the program office cannot obligate the total program funds in hand for that fiscal year immediately without greatly reducing program management flexibility. When funds deficits or excess funds are identified for any fiscal year on the AF Form 1537 through incorporation of program office independent EACs, the FM must immediately notify the program director and the division comptroller of the situation.

7.3.5. Documentation. Finally, all the steps accomplished must be well documented by the program office FM. This includes internal data (EACs at cost and price), comparison data (EACs to budget estimates and funds obligated), and the reasons for data differences at WBS level 3. Additionally, the FM should document internal actions taken to balance funds required with funds received for each fiscal year as well as document external notification of either excess funds deficits for which the program office cannot internally correct.

7.3.6. Summary. Through incorporation of EACs into the financial management process, the program office FM has accomplished the following:

7.3.6.1. Updated the total program cost through grass roots estimating procedures.

7.3.6.2. Adjusted EACs for contracts not covered by CPRs or C/SSRs through analysis of funds obligated to date.

7.3.6.3. Revised budgets by using current EACs for each contract by fiscal year.

7.3.6.4. Equated obligated funds with EACs where that alignment does not interfere with prudent program management.

7.3.6.5. Notified the program director and division comptroller immediately of estimated funds excesses or deficits.

Chapter 8

CONTRACTOR LATEST REVISED ESTIMATE (LRE) VERIFICATION

8.1. Background - Numerous system program office analysts and C/SCSC surveillance monitors in DPRO and DCMC organizations have requested guidance on how to verify the contractor's LRE for contract costs at completion. The following contractor LRE verification method was used to verify the contract costs at completion on the B-1B Strategic Bomber contract. Over 1,900 cost accounts were reviewed, resulting in beneficial information for both the contractor and the government.

8.2. Purpose. The contractor LRE verification method is based on checking the contractor's LRE at lower levels using a series of formulas recognized by both the government and industry. This method is not designed for the government to calculate a fully priced EAC. Instead, this method will check each cost account EAC to verify that the summarized contractor LRE is accurate and reasonable.

8.3. Data Analysis. The first step in verifying the contractor's LRE is to gather the contractor's computer tab runs containing cost account cum-to-date BCWS, BCWP, ACWP, BAC, and EAC information. Then calculate the government EAC for every cost account using the following formula:

$$8.3.1. \quad \text{CPI} = \frac{\text{BCWP}}{\text{ACWP}}$$

$$8.3.2. \quad \text{Government EAC} = \frac{\text{BAC}}{\text{CPI}}$$

NOTE: The AFMC EAC discussed in paragraph 4.4.1. could be used in place of this formula for more accuracy. However, the volume of cost accounts (1900) analyzed on the B-1B program was too large to allow the use of the AFMC formula.

8.4. Cost Accounts List. Next, establish a cost accounts list as shown in Figure 8.1 listing:

8.4.1. All cost accounts with no ACWP but showing BCWP, BAC, and EAC. If work has been performed, there should be ACWP.

8.4.2. All cost accounts with $\text{BCWP} > \text{BAC}$. BCWP can never be greater than the total BAC.

8.4.3. All cost accounts with no BAC but showing an EAC.

8.4.4. All cost accounts with no EAC but showing BAC.

8.4.5. All cost accounts with $\text{ACWP} > \text{EAC}$ (this should not exist).

8.4.6. All cost accounts with $\frac{\text{Government EAC} - \text{Contractor EAC}}{\text{Contractor EAC}} (100) > 15\%$

This condition could result in the contractor's EAC being understated. The 15 percent threshold could be lowered to 10 percent for more accuracy. Exclude cost accounts less than 30 percent complete.

8.5. EAC Rationale. Finally, work with contractors to understand their EAC rationale. Take into account any information that exists at higher levels within the contractor's organization such as rate changes, process improvements, program level risk assessments, cost improvements and other factors that could impact the EAC. After all differences have been corrected, the government and contractor can have a higher degree of confidence in the contractor LRE.

**CONTRACTOR LRE VERIFICATION
COST ACCOUNTS LIST**

COST ACCOUNT #	a. NO ACWP	b. BCWP > BAC	c. NO BAC	d. NO EAC	e. ACWP > EAC	f. > 15%	g. < 15%

Figure 8.1. Cost Account Anomaly List.

Chapter 9

BUSINESS MANAGER'S MONTHLY ASSESSMENT

9.1. Purpose. Good business practice dictates the need for keeping senior level management informed on cost and schedule status, EACs, and various other financial information on major defense programs. The following is a streamlined monthly report format used by the Global Positioning System program office (SPO) to keep the program manager informed of the financial status of the program. This report can be supplemented by graphs and information discussed in Chapters 4, 5, and 6 of this guide. Work with senior level management and determine what charts he/she would like to see attached to your analysis.

9.2. Example Report in Letter Format.

<p>Memo for Record</p> <p>SUBJECT: Business Manager's Monthly Assessment of (Contractor's name, location, complete contract number, if applicable).</p> <p>Effort: (What is the contract for?)</p> <p>Period of Performance: (Contractual start and stop dates)</p> <p>1. <u>Contract (or Segment) Overview</u> (Source of data and date)</p> <p style="padding-left: 40px;">There are some standard items that should be included in this section, such as:</p> <ul style="list-style-type: none"> a. Percent complete. b. Percent spent.

- c. Percent scheduled.
- d. Cumulative and current cost variance (amount and percent).
- e. Schedule variance (amount and percent).
- f. Latest revised estimate (both SPO and contractor). Is there a difference?
- g. Main reasons for cost and schedule problems and/or improvements.
- h. How long has the contract been running?
- i. Significant events and dates. What is going on?

This section should emphasize objectivity. The comments section at the end of your monthly report will be subjective.

2. Cost Variance (cumulative amount and percent)

The significant contributors are:

a. Item and dollar amount. This section will be a brief list and description of the main drivers in everyday language - not technical jargon! Please don't copy the CPR but rather have the technical OPR explain to you what the contractor means. Remember, this is the business manager's report and not a technical review. Copying the CPR because you don't understand it will probably create the same problem for other people who read it-they won't understand it either.

b. Address any impacts to the program in terms of cost or schedule as well as the feasibility of the solutions that the contractor proposes to remedy the situation.

3. Schedule Variance

This section will be written in a similar fashion as the cost variance section.

4. Additional Comments/Perceptions

This is where you get the opportunity to apply original and subjective thinking. Express your opinions!

- a. Will the contract go to ceiling?
- b. Will the contract be completed on time?
- c. Do we need to take some kind of action?
- d. Do you need some help to solve a problem?
- e. Are you being slow-rolled by somebody?

Any ideas or comments that you have should be expressed here such as C/SCSC surveillance problems at various contractor facilities.

(Signature Block)

Chapter 10

TRACKING OVERHEAD RATES AND THE APPLICATION OF COST/SCHEDULE CONTROL SYSTEM DATA TO OVERHEAD BASE FORECASTING

10.1. Purpose. Negotiation of overhead forward bidding rates with government contractors is one of the more critical exercises a CAO goes through on an annual basis. One part of the analysis required to prepare for such negotiations is the evaluation of the overhead base forecasts presented by the contractor in the bid rate proposal.

10.2. Source of Information. The source of information is the contractor's CPR and internal data using a functional breakdown. A validated C/SCSC system has the capability to present a time-phasing of budget elements (such as direct labor, material cost, and other direct cost) by functional discipline (engineering, manufacturing, tooling). This is accomplished at the cost account level utilizing scheduled work package or planning package budgets for measured effort and time-phased budgets for level-of-effort activity. The most current data should be utilized in developing the base forecasts.

10.3. Data Organization:

10.3.1. The initial format of the data will largely depend on the information summarization capabilities built into the C/SCS by the contractor. Most systems should be capable of automatically producing direct resource distributions of effort over the life of the program.

10.3.2. The basic organization of the data will be by cost account. In general, the cost account information will include direct labor plus the material associated with that labor.

10.4. Reorganization of the Data:

10.4.1. Before the data can be organized in a useful manner, it will be necessary to analyze and to understand the way the contractor collects and allocates overhead expense. The two most common techniques are using functional direct expense pool classifications (for example, engineering, manufacturing, and procurement) or using total work center expense as a base (machine shop, assembly, maintenance) which includes direct labor and material resources consumed.

10.4.2. The cost account distributions can then be arranged according to the content of overhead base expense pools. Where the functional pool technique is used, it will be necessary to segregate the direct labor resource distributions from the material resource distributions. The work center technique will require less segregation of resources before the cost account information is summarized to the total base pool level.

10.4.3. Another important factor is the time frame used in the contractor's overhead system, which is usually an annual forecast using either the calendar year or government fiscal year. Cost accounts usually cover a period of 1 year or less but do not necessarily end with the calendar year or fiscal year. It may be necessary, in some cases, to make an arbitrary assessment of budget distribution within a cost account as of a given cutoff date. The level at which the data are extracted from the system, whether it be the cost account level or higher summary levels, depends entirely on the summarization capabilities of the contractor's C/SCS.

10.5. Application of the Technique:

10.5.1. Forecasting the Overhead Base:

10.5.1.1. The real work associated with the use of C/SCSC data in analysis of proposed overhead base forecasts is done once the data are loaded into the proper format. Once they are assembled and summarized, the data are then forwarded to the administrative contracting officer (ACO) where an overhead specialist analyzes the contractor's proposal. These data obviously will not provide support to base forecasts of the total business volume for the contractor's facility. The data will normally provide support only for those active programs to which the C/SCSC or C/SSR are required.

10.5.1.2. An additional application of such data uses the contractor's cost account baseline which reflects, on a real-time basis, changes in total budget for a program as a result of contractual changes as well as the results of internal re-programming actions (particularly "make-or-buy" decisions wherein planned in-house effort is subcontracted or vice versa). This information is always important to the overhead specialist's analyses using Probability of Incurring Indirect Cost, a set of time-sharing computer programs forecasting overhead expense using base cost as the driving factor.

10.5.1.3. Such distributions can also be used in developing a more concrete funds requirement picture for the ACO. Manpower requirements and use of overtime versus new hires may also be analyzed using the functional distributions of planned cost.

10.5.2. Tracking Overhead Rates. Each overhead rate by overhead pool (separate pools) is tracked for the current year. Graphs of this type are useful in anticipating fluctuations in overhead costs which could contribute to a cost overrun. Figure 10.1 portrays an engineering overhead rate chart. As shown in the graph, engineering overhead costs represent four and eight-tenths percent of total target dollars. The figure also shows an original target forecast (F/C 9B) of \$3.73 for CY 1993. Subsequent iterations of overhead estimates resulted in a revised target forecast of \$4.42 in March 1993, which the contractor has projected through CY 93. The asterisks on the figure indicate the actual monthly rate the contractor is experiencing, although the cum-to-date of these rates is indicated as \$4.01, the contractor is still projecting an engineering overhead rate of \$4.42 for CY 93 at this point in time. Contractor forward pricing rates for CY 94 and CY 95 are also indicated on the graph. Compare these rates to those that are reported on the CCDR 1921-3 Plant-Wide Data Report (if required) and analyze differences to see if there are logical explanations for large differences.

10.5.3. Conclusions:

10.5.3.1. The application of the C/SCS to overhead forecasting and bid rate negotiation is possible. The most complex task is understanding overhead base makeup and aligning C/SCS data to it.

10.5.3.2. The most serious weakness of the application of such data is that a complete analysis is usually difficult. This, however, is offset by the fact that the portion which can be analyzed in this manner is supported with real-time planning information rather than speculation.

10.5.3.3. Use your on-site DPRO and DCAA team members extensively to monitor and analyze overheads.

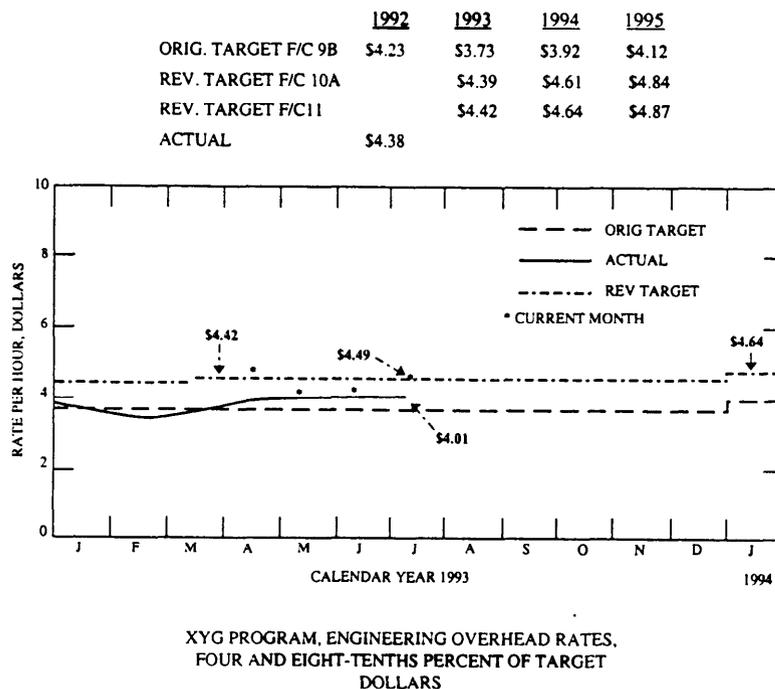


Figure 10.1. Overhead Rate Trend.

Chapter 11

USES OF CONTRACTOR COST DATA REPORTING (CCDR)

11.1. General Program Management Uses of CCDR. Although the CCDR system was established primarily to create a data base for future cost estimating efforts, the four CCDR reports provide information useful to program management of major weapon acquisition systems.

11.1.1. CCDR facilitates the comparison and analysis of contractor costs when used for contractor reporting. CCDR requires the use of standard formats, reporting elements, reporting element structure, and uniform definitions of these reporting elements. The CCDR definitions for such representative cost reporting elements as airframe, engineering, overhead, and direct costs serve as the standard throughout DOD. As a result, government and industry cost discussions are clearly understood as the basis of definition. When CCDR formats are required in a response to a government proposal solicitation in which a preliminary WBS has been provided by the program office, the government can significantly reduce the difficulty of comparing competing contractor proposals by decreasing the number of contractor-peculiar reporting formats, elements, structures, and definitions.

11.1.2. CCDR establishes a breakout of the negotiated price of the winning contractor following contract award according to a standard format and WBS elements. Such a break out of a contractor estimate, directly relatable to contract price by WBS, permits downstream evaluation of incurred and estimated cost performance. For example, current period contractor program management incurred and estimated costs can be compared with the initial estimate, with those program management costs of other contracts, and with the program management costs of other contractors on other contracts.

11.1.3. Routine reporting can be scheduled so as to provide data to support major budget or cost analysis activities; for example, development of weapon system budget estimates (or AF Form 1537) and development of independent cost analyses.

11.2. DD Form 1921, Cost Data Summary Report (Data Item Description DI-F-6006) (Figure 11.1):

11.2.1. Description. The DD Form 1921 (see Figure 11.1) provides the contract line items and associated MIL-STD-881 WBS reporting elements (items 1 and 2), with associated actual costs incurred to date and estimated costs at completion (items 3 and 4), broken into nonrecurring and recurring cost categories (items 5 and 6). The number of hardware units related to the reported costs is also shown (item 7).

11.2.2. Uses:

11.2.2.1. Comparison of initial CCDR with succeeding reports can provide an indication of potential technical difficulties and cost growth: (1) if the ratio of nonrecurring (primarily engineering) to recurring cost (primarily manufacturing) increases significantly, (2) if the cost ratio of hardware to total costs increases within either the nonrecurring or recurring categories, (3) if the nonrecurring or recurring cost ratio within a level-2 WBS element increases in relation to the level-2 total, and (4) if at completion cost estimates rise substantially.

11.2.2.2. CCDR can provide WBS level-3 costs estimated by fiscal year for that portion of the program which remains beyond the contracted effort by extrapolation. Used with CFSR data, these DD Form 1921 data can be used to support out-year budget planning. (Reconciliation should be accomplished as shown in para 7.1.)

11.3. DD Form 1921-1, Functional Cost-Hour Report (Data Item Description, DI-F-6007) (Figure 11.2).

11.3.1. Description. The DD Form 1921-1 (Figure 11.2) reflects either nonrecurring or recurring costs (1) of a selected reporting element (2) broken into functional categories (3) by dollars and hours (4). Cost are shown for the contractor (5), subcontractor (6) and total (7) in terms of actual costs to date (8) and an EAC (9).

11.3.2. Uses:

11.3.2.1. Comparison of the initial CCDR with succeeding reports can provide indication of potential technical difficulties and cost growth if the proportion of functional costs to each other changes significantly and at-completion estimated costs rise substantially. (Reconciliation should be accomplished as shown in para 7.1.)

11.3.2.2. These forms can also be used to provide cost estimates by fiscal year for that portion of the program which remains beyond the contracted effort by extrapolation.

11.4. DD Form 1921-2, Progress Curve Report (Data Item Description DI-F-6008) (Figure 11.3).

11.4.1. Description. For specified reporting elements (1) the DD Form 1921-2 provides a report of the recurring cost of unit lots accepted by lot (2), an estimate for the next units/lot (3) and at completion (4) separated into contractor (5), subcontractor (6), total (7) hours (8) and dollars (9).

11.4.2. Uses:

11.4.2.1. The data can be used to plot the contractor's anticipated or planned rate of learning for recurring hardware costs.

11.4.2.2. Actual unit cost data of succeeding reports can be used to establish an actual learning curve for critical analysis of the contractor's estimates of future performance.

11.4.2.3. Development of a cost model for estimating program costs impact in response to constant "what if" exercises involving changes to current contract quantities.

11.5. DD Form 1921-3, Plant-Wide Data Report (Data Item Description DI-F-6009) (Figure 11.4).

11.5.1. Description. The DD Form 1921-3 provides by contractor (1) and facility (2) cost information for the previous, current, and three future periods (3) broken down by functional (engineering, manufacturing, etc.) direct costs (4) across different programs/projects (5), and a matrix of functional indirect costs (6) for specific indirect cost categories (7). The back page of the report provides direct labor rate data (8) for the four quarters of the current calendar year, the past year and the next two years (9) by function (engineering, etc.) (10) in terms of basic average plant-wide wage rate (11) and effective average plant-wide wage rate (overtime premium included) (12). Note that these numbers are cross-referenced to the appropriate number on Figure 11.4, but are shown in () Parentheses instead of circled number.

11.5.2. Uses:

11.5.2.1. Provides a breakout of contractor's direct cost base by program such that the future impact of overhead increases or decreases is indicated.

11.5.2.2. Provides identification of indirect costs by cost categories, benefits, payroll taxes, travel, etc., which facilitates reviewing, monitoring, and controlling overhead costs.

11.5.2.3. Direct labor rates section provides basic rate data as well as impact of overtime premiums which may be examined to see if improved scheduling can reduce overtime pay. Such overtime pay conditions may also indicate contractor difficulty in meeting schedule.

Form Approved
OMB No. 0704-0188

SECURITY CLASSIFICATION

COST DATA SUMMARY REPORT (Dollar in _____)		1. PROGRAM		2. CONTRACT NO: LATEST AMENDMENT: <input type="checkbox"/> RFP NO: <input type="checkbox"/> PROGRAM ESTIMATE		3. FDT & E <input type="checkbox"/> PROCUREMENT <input type="checkbox"/> MULTIPLE YEAR CONTRACT <input type="checkbox"/> YES <input type="checkbox"/> NO		5. REPORT AS OF	
7. CONTRACT TYPE		8. CONTRACT PRICE		9. CONTRACT CEILING		10. <input type="checkbox"/> PRIME/ASSOCIATE <input type="checkbox"/> SUBCONTRACTOR (Name and Address, include ZIP Code)		6. FY FUNDED	
(1) CONTRACT LINE ITEM A	(2) REPORTING ELEMENTS B	ELEMENT CODE C	(3) TO DATE COSTS INCURRED		(4) AT COMPLETION COSTS INCURRED		NUMBER OF UNITS G	TOTAL J	
			NONRECURRING D	RECURRING E	NONRECURRING H	RECURRING I			
→	→		(5)	(6)	(7)				
12. REMARKS									
13. NAME OF PERSON TO BE CONTACTED						14. TELEPHONE NO.		15. SIGNATURE	
16. DATE									

DD Form 1921, JUN 86
Previous editions are obsolete.

SECURITY CLASSIFICATION

Figure 11.1. Cost Data Summary Report.

SECURITY CLASSIFICATION

FORM APPROVED
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S E C T I O N A	FUNCTIONAL COST-HOUR REPORT		1. PROGRAM		2. REPORT AS OF ②				
	3. DOLLARS IN ①		4. HOURS IN ①		5. <input type="checkbox"/> CONTRACT/ <input type="checkbox"/> RFP NO <input type="checkbox"/> PROGRAM ESTIMATE				
	6. <input type="checkbox"/> NON-RECURRING <input type="checkbox"/> RECURRING <input type="checkbox"/> TOTAL		7. <input type="checkbox"/> RDT&E <input type="checkbox"/> PROCUREMENT <input type="checkbox"/> OTHER						
	8. MULTIPLE YEAR CONTRACT <input type="checkbox"/> YES <input type="checkbox"/> NO		10. <input type="checkbox"/> PRIME/ASSOCIATE <input type="checkbox"/> SUBCONTRACTOR <small>(Name and address; include ZIP code)</small>		11. NAME OF CUSTOMER <i>(Subcontractor Use Only)</i>				
9. FY FUNDED		12. REPORTING ELEMENT (S) ②							
S E C T I O N B	FUNCTIONAL CATEGORIES		⑤ CONTRACTOR		⑥ SUBCONTRACT OR OUT-SIDE PROD AND SERV		⑦ TOTAL		
			ADJUST- MENTS TO PREVIOUS REPORTS A	TO DATE B	AT COMPL C	TO DATE D	AT COMPL E	TO DATE F	AT COMPL G
	③ ENGINEERING								
	1. DIRECT LABOR HOURS								
	2. DIRECT LABOR DOLLARS		\$	\$	\$	\$	\$	\$	\$
	3. OVERHEAD		\$	\$	\$	\$	\$	\$	\$
	4. MATERIAL		\$	\$	\$	\$	\$	\$	\$
	5. OTHER DIRECT CHARGES <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$
	6. TOTAL ENGINEERING DOLLARS		\$	\$	\$	\$	\$	\$	\$
	③ TOOLING								
	7. DIRECT LABOR HOURS								
	8. DIRECT LABOR DOLLARS		\$	\$	\$	\$	\$	\$	\$
	9. OVERHEAD		\$	\$	\$	\$	\$	\$	\$
	10. MATERIALS AND PURCHASED TOOLS		\$	\$	\$	\$	\$	\$	\$
	11. OTHER DIRECT CHARGES <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$
	12. TOTAL TOOLING DOLLARS		\$	\$	\$	\$	\$	\$	\$
	③ QUALITY CONTROL								
	13. DIRECT LABOR HOURS								
	14. DIRECT LABOR DOLLARS		\$	\$	\$	\$	\$	\$	\$
	15. OVERHEAD		\$	\$	\$	\$	\$	\$	\$
	16. OTHER DIRECT CHARGES <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$
	17. TOTAL QUALITY CONTROL DOLLARS		\$	\$	\$	\$	\$	\$	\$
	③ MANUFACTURING								
	18. DIRECT LABOR HOURS								
	19. DIRECT LABOR DOLLARS		\$	\$	\$	\$	\$	\$	\$
	20. OVERHEAD		\$	\$	\$	\$	\$	\$	\$
	21. MATERIALS AND PURCHASED PARTS		\$	\$	\$	\$	\$	\$	\$
	22. OTHER DIRECT CHARGES <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$
	23. TOTAL MANUFACTURING DOLLARS		\$	\$	\$	\$	\$	\$	\$
	24. PURCHASED EQUIPMENT		\$	\$	\$	\$	\$	\$	\$
	25. MATERIAL OVERHEAD		\$	\$	\$	\$	\$	\$	\$
26. OTHER COSTS NOT SHOWN ELSEWHERE <i>(Specify)</i>		\$	\$	\$	\$	\$	\$	\$	
27. TOTAL COST PLUS G & A		\$	\$	\$	\$	\$	\$	\$	
28. G & A		\$	\$	\$	\$	\$	\$	\$	
29. TOTAL COST PLUS G & A		\$	\$	\$	\$	\$	\$	\$	
30. FEE OR PROFIT		\$	\$	\$	\$	\$	\$	\$	
31. TOTAL OF LINES 29 AND 30		\$	\$	\$	\$	\$	\$	\$	

FORM CONTINUED ON REVERSE

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Figure 11.2. Functional Cost-Hour Report.

SECURITY CLASSIFICATION

FORM APPROVED
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SECTION	PROGRESS CURVE REPORT <i>(Recurring Cost Only)</i>		1. PROGRAM					
	2. DOLLARS IN	3. HOURS IN	5. CONTRACT NO.		6. REPORT FOR _____ MONTHS ENDING _____			
ION	4. TOTAL CUMULATIVE UNITS ACCEPTED AS OF LAST REPORT		9. <input type="checkbox"/> PRIME/ASSOCIATE <input type="checkbox"/> SUBCONTRACTOR <i>(Name and address; include ZIP code)</i>		10. NAME OF CUSTOMER <i>(Subcontractor Use Only)</i>			
	7. MULTIPLE YEAR CONTRACT <input type="checkbox"/> YES <input type="checkbox"/> NO		8. FY FUNDED		11. REPORTING ELEMENT (S)			
A								
SECTION	ITEM	UNITS/LOTS ACCEPTED					ESTIMATE OF NEXT UNIT/LOT TO BE ACCEPTED	TO COMPLETE CONTRACT
		A	B	C	D	E	F	G
SECTION B	1. MODEL AND SERIES							
	2. FIRST UNIT OF LOT							
	3. LAST UNIT OF LOT							
	4. CONCURRENT UNITS							
	5. CHARACTERISTICS							
	6.							
	7.							
	5. CONTRACTOR DATA <i>(Per Unit/Lot)</i>							
	8. DIRECT QUALITY CONTROL MAN-HOURS							
	9. DIRECT MANUFACTURING MAN-HOURS							
	10. QUALITY CONTROL DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$
	11. MANUFACTURING DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$
	12. RAW MATERIAL & PURCHASED PARTS DOLLARS	\$	\$	\$	\$	\$	\$	\$
	13. PURCHASED EQUIPMENT DOLLARS	\$	\$	\$	\$	\$	\$	\$
14. TOTAL DOLLARS	\$	\$	\$	\$	\$	\$	\$	
6. SUBCONTRACT /OUTSIDE PROD. & SERV								
15. DIRECT QUALITY CONTROL MAN-HOURS								
16. DIRECT MANUFACTURING MAN-HOURS								
17. TOTAL MAN-HOURS								
18. QUALITY CONTROL DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$	
19. MANUFACTURING DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$	
20. RAW MATERIAL & PURCHASED PARTS DOLLARS	\$	\$	\$	\$	\$	\$	\$	
21. PURCHASED EQUIPMENT DOLLARS	\$	\$	\$	\$	\$	\$	\$	
7. 22. TOTAL DOLLARS	\$	\$	\$	\$	\$	\$	\$	
UNIT TOTAL <input type="checkbox"/> AVERAGE <input type="checkbox"/>								
23. DIRECT QUALITY CONTROL MAN-HOURS								
24. DIRECT MANUFACTURING MAN-HOURS								
7. 25. TOTAL MAN-HOURS								
26. QUALITY CONTROL DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$	
27. MANUFACTURING DIRECT LABOR DOLLARS	\$	\$	\$	\$	\$	\$	\$	
28. RAW MATERIAL & PURCHASED PARTS DOLLARS	\$	\$	\$	\$	\$	\$	\$	
29. PURCHASED EQUIPMENT DOLLARS	\$	\$	\$	\$	\$	\$	\$	
30. TOTAL DOLLARS	\$	\$	\$	\$	\$	\$	\$	
31. % SUBCONTRACT OR OUTSIDE PROD. & SERV.								

SECTION B CONTINUED ON PAGE 2

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Figure 11.3. Progress Curve Report.

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PLANT-WIDE DATA REPORT		A. CONTRACTOR (1)		B. PLANT LOCATION (2)	
		C. REPORT PERIOD ENDING		D. DATE SUBMITTED	
OVERHEAD ACCUMULATION, DISTRIBUTION AND APPLICATION					
TIME PERIOD		1. FROM (3) TO (4)		2. FROM (3) TO (4)	
		3. <input type="checkbox"/> ACTUAL <input type="checkbox"/> ESTIMATE		5. FROM (3) TO (4)	
PROGRAM	BUYER	4. DIRECT COST		6. DIRECT COST	
PROJECT	QTY	ENG. d	MATL. e	OTHER g	INDIRECT COST
a (5)	b	ENG. d	MFG. e	MATL. f	OTHER g
1.	c	ENG. d	MFG. e	MATL. f	OTHER g
2.		ENG. d	MFG. e	MATL. f	OTHER g
3.		ENG. d	MFG. e	MATL. f	OTHER g
4.		ENG. d	MFG. e	MATL. f	OTHER g
5.		ENG. d	MFG. e	MATL. f	OTHER g
6.		ENG. d	MFG. e	MATL. f	OTHER g
7.		ENG. d	MFG. e	MATL. f	OTHER g
8.		ENG. d	MFG. e	MATL. f	OTHER g
9.		ENG. d	MFG. e	MATL. f	OTHER g
10.		ENG. d	MFG. e	MATL. f	OTHER g
11.		ENG. d	MFG. e	MATL. f	OTHER g
12. OTHER GOVT EFFORT		ENG. d	MFG. e	MATL. f	OTHER g
13. COMMERCIAL EFFORT		ENG. d	MFG. e	MATL. f	OTHER g
14. TOTAL DIRECT COST BASE		ENG. d	MFG. e	MATL. f	OTHER g
INDIRECT COST CATEGORY (7)		6. INDIRECT COST		6. INDIRECT COST	
		ENG. h	MATL. i	OTHER j	G & A k
15. INDIRECT LABOR		ENG. h	MATL. i	OTHER j	G & A k
16. EMPLOYEE BENEFITS		ENG. h	MATL. i	OTHER j	G & A k
17. PAYROLL TAXES		ENG. h	MATL. i	OTHER j	G & A k
18. EMPLOYMENT		ENG. h	MATL. i	OTHER j	G & A k
19. COMMUNICATION/TRAVEL		ENG. h	MATL. i	OTHER j	G & A k
20. PRODUCTION RELATED		ENG. h	MATL. i	OTHER j	G & A k
21. FACILITIES-BUILDING/LAND		ENG. h	MATL. i	OTHER j	G & A k
22. FACILITIES-FURNITURE/EQ		ENG. h	MATL. i	OTHER j	G & A k
23. ADMINISTRATION		ENG. h	MATL. i	OTHER j	G & A k
24. FUTURE BUSINESS		ENG. h	MATL. i	OTHER j	G & A k
25. OTHER MISCELLANEOUS		ENG. h	MATL. i	OTHER j	G & A k
26. CREDITS		ENG. h	MATL. i	OTHER j	G & A k
27. TOTAL OVERHEAD COST		ENG. h	MATL. i	OTHER j	G & A k
28. TOTAL G&A COST		ENG. h	MATL. i	OTHER j	G & A k
29. OVERHEAD/G&A RATE		ENG. h	MATL. i	OTHER j	G & A k
EMPLOYMENT-INDIRECT		ENG. h	MATL. i	OTHER j	G & A k
30. WORKERS		ENG. h	MATL. i	OTHER j	G & A k

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Figure 11.4. Plant-Wide Data Report.

		(6) DIRECT LABOR RATES																		
		(9) 1ST QUARTER			(9) 2ND QUARTER			(9) 3RD QUARTER			(9) 4TH QUARTER					(9) PAST YEAR	(9) YEAR:	(9) YEAR:	(9) BASIC RATE	(9) YEAR:
S E C T I O N	C	WORKERS	BASIC RATE	EFF. RATE	WORKERS	BASIC RATE	EFF. RATE	WORKERS	BASIC RATE	EFF. RATE	WORKERS	BASIC RATE	EFF. RATE	WORKERS	BASIC RATE	EFF. RATE	BASIC RATE	BASIC RATE	BASIC RATE	
		a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	b	b	b	b
		(11)	(12)																	
	1. ENGINEERING																			
	2. TOOLING																			
	a. DESIGN																			
	b. FABRICATION																			
	3. QUALITY CONTROL																			
	4. MANUFACTURING																			
REMARKS																				
NAME OF PERSON TO BE CONTACTED												PHONE NO.			SIGNATURE			DATE		

Figure 11.4. Continued.

Chapter 12

CHECKLISTS

12.1. Formulas For Analysis of Performance Measurement Data.

12.1.1. Variances:

12.1.1.1. Schedule: $SV = BCWP - BCWS$

12.1.1.2. Cost: $CV = BCWP - ACWP$

12.1.1.3. At completion: $VAC = BAC - EAC$

12.1.2. Variance %:

12.1.2.1. $SV\% = \frac{SV}{BCWS} \times 100$

12.1.2.2. $CV\% = \frac{CV}{BCWP} \times 100$

12.1.2.3. $VAC\% = \frac{VAC}{BAC} \times 100$

NOTE: The above will work with either current or cumulative data.

12.1.3. Contract Totals and Derivatives:

12.1.3.1. Contract budget base (CBB)

12.1.3.1.1. $CBB = \text{negotiated contract cost} + \text{est unpriced work}$

12.1.3.1.2. $CBB = BAC + MR$

12.1.3.2. BAC

12.1.3.2.1. $BAC = UB + \text{sum of all internal budgets}$

12.1.3.2.2. $BAC = CBB - MR$

12.1.3.2.3. $BAC = \text{performance measurement baseline}$

12.1.3.3. $\text{Work remaining} = BAC^* - BCWP_{cum}$

12.1.3.4. $\text{Budget remaining} = BAC^* - ACWP_{cum}$

12.1.3.5. $\text{Estimated work remaining} = EAC - BCWP_{cum}$

12.1.3.6. $\text{Estimated costs remaining} = EAC - ACWP_{cum}$

12.1.3.7. $\text{Percent complete} = \frac{BCWP_{cum}}{BAC^*} \times 100$

12.1.3.8. Percent spent = $\frac{ACWP_{cum}}{BAC*} \times 100$

12.1.3.9. Percent scheduled = $\frac{BCWS_{cum}}{BAC*} \times 100$

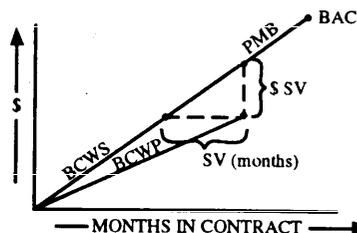
* CBB may be substituted for BAC if MR is expected to be used.

12.1.4. SV Conversions (from dollar to time):

12.1.4.1. $SV_{months} = (\$SV_{cum}/BAC) * (Kt \text{ length in months})$

12.1.4.2. $SV_{months} = \frac{\$SV_{cum}}{\$BCWS_{current}/1 \text{ month}}$

12.1.4.3. $SV_{months} = \frac{\$SV_{cum}}{\$BCWS_{cum} / \text{months of } Kt \text{ to date}}$
 Kt = contract



NOTE: All the above techniques draw a dollar-to-time ratio based upon various parts of the PMB plan (1 month, months to date, total contract length). It would also be plausible as an alternative to substitute BCWP values for the BCWS values. This technique's dollar-to-time ratio would then be based upon actual performance (for 1 month or cum-to-date) rather than on the planned value of a month's worth of work. None of these techniques reflects how long it will take to actually accomplish the work that is behind schedule, however. A moving average value of BCWS could also be used.

12.1.5. Performance Indices: These indices can apply to current or cumulative data; however, they tend to be more meaningful with cumulative data (or a moving average of 3-6 months' accumulation).

12.1.5.1. SPI for Efficiency: $SPI_E = \frac{BCWP}{BCWS}$

Indicates with what efficiency the contractor is staying within the scheduled plan for getting work done (SPI_E is a work efficiency indicator).

12.1.5.2. CPI for Efficiency: $CPI_E = \frac{BCWP}{ACWP}$

Indicates with what efficiency the contractor is staying within the budget.

NOTE: The above indices may be converted to percentages by multiplying them by 100: ($SPI_E\% = \frac{BCWP}{BCWS} \times 100$).

12.1.5.3. CPI for Performance: $CPI_P = \frac{ACWP}{BCWP}$

Indicates the actual cost of each dollar's worth of work accomplished.

12.1.5.4. TCPI of Efficiency: $TCPI_E = \frac{\text{work remaining}}{\text{money remaining}} = \frac{BAC* - BCWP_{cum}}{BAC* - ACWP_{cum}}$

Whereas the CPI_E indicates past fiscal efficiency, the TCPI indicates the budget/cost efficiency at which the contractor must perform in the future to complete the contract within the targeted BAC. The CBB or EAC may be substituted for

the BAC in the denominator to indicate the future efficiency needed to complete the contract within their respective target goals.

12.1.6. **EAC Formulas:** All formulas for calculating EAC must take into account all actual costs already expended and the amount of work remaining to be accomplished. EAC formulas may only differ in their projections of the future work environment (with what efficiency future work will be accomplished).

$$12.1.6.1. EAC = ACWP + CPI_P (BAC^* - BCWP_{cum})$$

$$12.1.6.2. EAC = \frac{BAC^*}{CPI_E}$$

NOTE: Both of the above formulas will give the same EAC; each is equal to the other. All are projecting the EAC based upon a past efficiency factor.

$$12.1.6.3. EAC = ACWP_{cum} + \frac{BAC^* - BCWP_{cum}}{.5 (SPI_E) + .5 (CPI_E)}$$

NOTE: This EAC is based upon an equal weighting of the past schedule and cost efficiency factors. Different weighting may be substituted for the 50/50 spread shown above. As discussed in paragraph 4.4.1. of this guide, a .2 weighting of SPI_E and a .8 weighting of CPI_E has been found to be the recommended weighting. *CBB may be substituted for BAC if all the MR is expected to be used. Or a portion of the MR expected to be used could be added to the BAC. CPR Format 1, Column (15), Management Reserve line will reflect the amount of MR expected to be consumed before the end of the contract. Reason: MR expected to be used will eventually become a part of the BAC of the PMB.

12.2. Checklist for Review of the CPR (DI-F-6000C).

12.2.1. Introduction

12.2.1.1. The CPR is prepared by the contractor and is used for analysis of cost and schedule status in terms of dollars.

12.2.1.2. This checklist is intended to aid in the review of contractors' CPR submissions.

12.2.1.3. The CPR consists of five formats: WBS; functional categories; baseline; manpower loading; and problem analysis.

12.2.2. Heading Information - Formats (1) to (5)

	YES	NO
12.2.2.1. Is the contractor's name and location identified?	_____	_____
12.2.2.2. Is the appropriate contract effort box checked?	_____	_____
12.2.2.3. Is the contract identified correctly?	_____	_____
12.2.2.3.1. Is the type of contract entered?	_____	_____
12.2.2.3.2. Is the contract number entered?	_____	_____
12.2.2.3.3. Is the number of the latest contract change or supplemental agreement entered?	_____	_____
12.2.2.4. Are the program name and number identified?	_____	_____
12.2.2.5. Are the reporting period beginning and ending dates entered?	_____	_____

12.2.2.6. Is the report signed and dated? _____

12.2.3. Specific Format (1) Heading Information

12.2.3.1. Is the quantity of prime items to be procured entered? _____

12.2.3.2. Is the negotiated dollar value (excluding fee or profit) entered? _____

12.2.3.2.1. For cost-type contracts, has the estimated negotiated cost been entered? _____

12.2.3.2.2. For fixed price incentive-type contracts, has the definitized contract target cost been entered? _____

12.2.3.3. Is this entry the estimated cost (excluding fee or profit) for work for which authorization has been given but for which contract prices have not been agreed to? _____

12.2.3.4. Has the fee or percentage of profit been entered? _____

12.2.3.5. Has the target price for definitized effort been entered? _____

12.2.3.6. Is the total estimated cost at completion entered? _____

12.2.3.7. Is the cost-sharing ratio applicable to cost overruns and under-runs entered? _____

12.2.3.8. Is the contract ceiling price for definitized effort entered? _____

12.2.3.9. Is the estimated ceiling price for both definitized and undefinitized effort entered? _____

12.2.4. Performance Data - Format (1). Note: If the G&A line is labeled "Non-Add", delete the references to "plus General and Administrative" or "General and Administrative" in the appropriate paragraphs.

12.2.4.1. Column 1 - WBS

Are the WBS elements and levels reported the same as those specified in the contract? _____

12.2.4.2. Column 2 - current period - BCWS

12.2.4.2.1. Is the sum of the BCWS for the individual WBS reporting elements, cost of money, and G&A equal to the reported subtotal? _____

12.2.4.2.2. Does the subtotal equal the reported total? _____

12.2.4.3. Column 3 - current period - BCWP

12.2.4.3.1. Is the sum of the BCWP for the individual WBS reporting elements, cost of money, and G&A equal to the reported subtotal? _____

12.2.4.3.2. Does the subtotal equal the reported total? _____

12.2.4.4. Column 4 - current period - actual cost, work performed (ACWP)

12.2.4.4.1. Is the sum of the ACWP for the individual WBS reporting elements, cost of money, and G&A equal to the reported subtotal? _____

12.2.4.4.2. Does the subtotal equal the reported total? _____

12.2.4.5. Column 5 - current period - SV

12.2.4.5.1. Is the reported SV for the individual WBS reporting elements, cost of money, G&A, subtotal and total equal to the difference between column 8 (BCWP) and column 7 (BCWS)? _____

12.2.4.5.2. Are negative (unfavorable) variances enclosed in parentheses? _____

12.2.4.5.3. Are SVs that exceed the contractually established thresholds identified and fully explained in format 5? _____

12.2.4.6. Column 6 - current period - CV

12.2.4.6.1. Is the reported CV for the individual WBS reporting elements, cost of money, G&A, subtotal and total equal to the difference between column 3 (BCWP) and column 4 (ACWP)? _____

12.2.4.6.2. Are negative (unfavorable) variances enclosed in parentheses? _____

12.2.4.6.3. Are CVs which exceed the contractually established thresholds identified and fully explained in format 5? _____

12.2.4.7. Column 7 - cum-to-date - BCWS

12.2.4.7.1. Is the sum of BCWS for the individual WBS reporting elements, cost of money and G&A equal to the reported subtotal? _____

12.2.4.7.2. Does the subtotal equal the reported total? _____

12.2.4.7.3. Is the BCWS for the individual WBS reporting elements, cost of money and G&A greater for this reporting period than in the preceding reporting period? _____

12.2.4.7.4. Is the BCWS less than or equal to the BAC column 14 for each WBS reporting element? _____

12.2.4.8. Column 8 - cum-to-date - BCWP

12.2.4.8.1. Is the sum of BCWP for the individual WBS reporting elements, cost of money and G&A equal to the reported subtotal? _____

12.2.4.8.2. Does the subtotal equal the reported total? _____

12.2.4.8.3. Is the BCWP for the individual WBS reporting elements, cost of money and G&A greater for this reporting period than in the preceding reporting period? _____

12.2.4.8.4. Is the BCWP less than or equal to the BAC column 14 for each WBS reporting element? _____

12.2.4.9. Column 9 - cum-to-date - ACWP

12.2.4.9.1. Is the sum of ACWP for the individual WBS reporting elements, cost of money and G&A equal to the reported subtotal? _____

12.2.4.9.2. Does the subtotal equal the reported total? _____

12.2.4.9.3. Is the ACWP for the individual WBS reporting elements, cost of money and G&A greater for this reporting period than in the preceding reporting period? _____

12.2.4.10. Column 10 - cum-to-date - SV

12.2.4.10.1. Is the reported SV for the individual WBS reporting elements, cost of money, G&A, subtotal, and total equal to the difference between column 8 (BCWP) and column 7 (BCWS)? _____

12.2.4.10.2. Are negative (unfavorable) variances enclosed in parentheses? _____

12.2.4.10.3. Are SVs which exceed the contractually established thresholds identified and fully explained in format 5? _____

12.2.4.11. Column 11 - cum-to-date - CV

12.2.4.11.1. Is the reported CV for the individual WBS reporting elements, cost of money, G&A, subtotal and total equal to the difference between column 8 (BCWP) and column 9 (ACWP)? _____

12.2.4.11.2. Are negative (unfavorable) variances enclosed in parentheses? _____

12.2.4.11.3. Are CVs which exceed the contractually established thresholds identified and fully explained in format 5? _____

12.2.4.12. Column 12 - reprogramming adjustments - CV

12.2.4.12.1. If reprogramming has been approved and adjustments have been made to previously reported CVs, is the adjustment applicable to each WBS reporting element entered in column 12? _____

12.2.4.12.2. Does the total line of column 12 equal the amount shown on the variance adjustment line in column 11? _____

12.2.4.13. Column 13 - reprogramming adjustment - budget

12.2.4.13.1. If reprogramming has been approved, are the total amounts added to the budget for each WBS reporting element entered in column 13? The amounts will consist of the sum of the budgets used to adjust CVs (column 12) plus the additional budget added to the WBS element for remaining work. _____

12.2.4.13.2. Is the amount of budget added to cost of money, G&A, and MR entered on the appropriate line in column 13? _____

12.2.4.13.3. Does the total line of column 13 equal the amount the contract has been budgeted in excess of the CBB? _____

12.2.4.14. Column 14 - at completion - budgeted

NEGATIVE ENTRIES CANNOT BE MADE IN COLUMN 14.

12.2.4.14.1. Is the sum of the BAC for the individual WBS reporting elements, cost of money, G&A, and UB equal to the reported subtotal? _____

12.2.4.14.2. Is the sum of the subtotal and MR equal to the reported total BAC? _____

12.2.4.14.3. Does the total BAC equal the CBB (the negotiated contract cost plus the estimated cost of authorized but unpriced work)? If the total BAC exceeds the CBB, government approval is required in advance and the portion of format 1 under "Reconciliation to Contract Budget Base" must be filled out. _____

12.2.4.15. Column 15 - at completion - LRE

12.2.4.15.1. Is the sum of the LRE for the individual WBS reporting elements, cost of money, G&A, and UB equal to the reported subtotal? _____

12.2.4.15.2. If an entry other than zero is entered in column 15, is the rationale for this Figure explained in the narrative analysis on format 5? _____

12.2.4.15.3. Is the sum of the subtotal and MR equal to the reported total LRE? _____

12.2.4.15.4. Are the LREs for the individual WBS reporting elements and total LRE consistent with customer estimates? _____

12.2.4.15.5. Are the LREs for the individual WBS reporting elements and total LRE less than or equal to the ACWP column 9? _____

12.2.4.16. Column 16 - at completion - variance (VAC)

12.2.4.16.1. Is the reported VAC for the individual WBS reporting elements, cost of money, G&A, subtotal, MR, and total equal to the difference between column 14 (BAC) and column 15 (LRE)? _____

12.2.4.16.2. Are negative (unfavorable) variances enclosed in parentheses? _____

12.2.4.16.3. Are VACs which exceed the contractually established thresholds identified and fully explained in format 5? _____

12.2.4.17. G&A

Has the G&A rate been applied correctly? _____

12.2.4.18. UB

12.2.4.18.1. Are the UB entries in columns 14 and 15 the same? _____

12.2.4.18.2. Is the UB fully explained in format 5? _____

12.2.4.19. MR

Are all MR applications (differences between the last report's MR column 14 and the current report's MR column 14) explained in Format 5? _____

12.2.4.20. Variance adjustments

Do the entries in columns 10 and 11 reflect the SV and CV adjustments which have been approved by the government? _____

12.2.5.6.1. Are the reported CVs for the individual functional categories, cost of money, G&A, subtotal, and total equal to the difference between column 3 (BCWP) and column 4 (ACWP)?

12.2.5.6.2. Are negative (unfavorable) variances enclosed in parentheses?

12.2.5.6.3. Are CVs which exceed the contractually established thresholds identified and fully explained in format 5?

12.2.5.7. Column 7 - cum- to-date - BCWS

12.2.5.7.1. Is the sum of the BCWS for the individual functional categories, cost of money, and G&A equal to the reported subtotal?

12.2.5.7.2. Does the subtotal equal the reported total? Is this number consistent with format 1?

12.2.5.7.3. Are the BCWS for the individual functional categories, cost of money, and G&A greater for this reporting period than in the preceding reporting period?

12.2.5.7.4. Is the BCWS less than or equal to the BAC column 14 for each functional category?

12.2.5.8. Column 8 - cum-to-date - BCWP

12.2.5.8.1. Is the sum of the BCWP for the individual functional categories, cost of money, and G&A equal to the reported subtotal?

12.2.5.8.2. Does the subtotal equal the reported total? Is this number consistent with format 1?

12.2.5.8.3. Are the BCWP for the individual functional categories, cost of money, and G&A greater for this reporting period than in the preceding reporting period?

12.2.5.9. Column 9 - cum-to-date - ACWP

12.2.5.9.1. Is the sum of the ACWP for the individual functional categories, cost of money, and G&A equal to the reported subtotal?

12.2.5.9.2. Does the subtotal equal the reported total? Is this number consistent with format 1?

12.2.5.9.3. Are the ACWPs for the individual functional categories, cost of money, and G&A greater for this reporting period than in the preceding reporting period?

12.2.5.10. Column 10 - cum-to-date - SV

12.2.5.10.1. Are the reported SVs for the individual functional categories, cost of money, G&A, subtotal, and total equal to the difference between column 8 (BCWP) and column 7 (BCWS)?

12.2.5.10.2. Are negative (unfavorable) variances enclosed in parentheses?

12.2.5.10.3. Are SVs which exceed the contractually established thresholds identified and fully explained in format 5?

12.2.5.11. Column 11 - cum-to-date - CV

12.2.5.11.1. Are the reported CVs for the individual functional categories, cost of money, G&A, subtotal, and total equal to the difference between column 8 (BCWP) and column 9 (ACWP)?

12.2.5.11.2. Are negative (unfavorable) variances enclosed in parentheses?

12.2.5.11.3. Are CVs which exceed the contractually established thresholds identified and fully explained in Format 5?

12.2.5.12. Column 12 - reprogramming adjustment - CV

12.2.5.12.1. If reprogramming has been approved and adjustments have been made to previously reported CVs, is the adjustment applicable to each functional category entered in column 12?

12.2.5.12.2. Does the total line of column 12 equal the amount shown on the variance adjustment line in column 11?

12.2.5.13. Column 13 - reprogramming adjustment - budget

12.2.5.13.1. If reprogramming has been approved, are the total amounts added to the budget for each functional category entered in column 13? The amounts will consist of the sum of the budgets used to adjust CVs (column 12) plus the additional budget added to the functional category for remaining work.

12.2.5.13.2. Is the amount of budget added to cost of money, G&A, and MR entered on the appropriate line in column 13?

12.2.5.13.3. Does the total line of column 13 equal the amount the contract has been budgeted in excess of the CBB?

12.2.5.14. Column 14 - at completion - budgeted (BAC)

12.2.5.14.1. Is the sum of the BAC for the individual functional categories, cost of money, G&A, and UB equal to the reported subtotal BAC?

12.2.5.14.2. Is the sum of the subtotal and MR equal to the reported total BAC? Is this number consistent with format 1?

12.2.5.14.3. Does the total BAC equal the CBB (the negotiated contract cost plus the estimated cost of authorized but unpriced work) when reprogramming has not occurred?

12.2.5.15. Column 15 - at completion - LRE

12.2.5.15.1. Is the sum of the LRE for the individual functional categories, cost of money, G&A, and UB equal to the reported subtotal LRE?

12.2.5.15.2. If an entry other than zero is entered in Column 15, is the rationale for this figure explained in the narrative analysis on Format 5?

12.2.5.15.3. Is the sum of the subtotal and MR equal to the reported total LRE?

12.2.5.15.4. Are the LREs for the individual functional categories and total LRE consistent with customer estimates?

12.2.5.15.5. Are the LREs for the individual functional categories and total LRE less than or equal to the ACWP column 9?

12.2.5.16. Column 16 - at completion - variance VAC

Are the reported VACs for individual functional categories, cost of money, and G&A equal to the difference between column 14 (BAC) and column 15 (LRE)?

12.2.5.17. Does the total line on format 2 agree with the total line on format 1?

12.2.6. Format 3 - baseline

12.2.6.1. Block 1 - original contract target cost

12.2.6.1.1. Is the negotiated dollar value (excluding fee or profit) in the original contract entered?

12.2.6.1.2. For a cost-plus contract, has the negotiated estimated cost been entered?

12.2.6.1.3. For a fixed price incentive contract, has the definitized contract target cost been entered?

12.2.6.2. Block 2 - negotiated contract changes. Has the cumulative cost (excluding fee or profit) for definitized contract changes to date been entered?

12.2.6.3. Block 3 - current target cost

12.2.6.3.1. Does the amount entered equal the sum of blocks 1 and 2?

12.2.6.3.2. Is this amount equal to the current dollar value (excluding fee or profit) on which contractual agreement has been reached?

12.2.6.3.3. Is this amount equal to the negotiated cost on format 1?

12.2.6.4. Block 4 - estimated cost of authorized, unpriced work

12.2.6.4.1. Is this entry the estimated cost (excluding fee or profit) for contract changes for which written authorization has been given but for which contract prices have not been negotiated?

12.2.6.4.2. Is this amount the same as shown on formats 1 and 2?

12.2.6.5. Block 5 - CBB

12.2.6.5.1. Does the amount entered equal the sum of blocks 3 and 4?

12.2.6.5.2. If reprogramming has not occurred, is this block the same as column 14, total line of format 1?

12.2.6.5.3. If reprogramming has occurred, is this block the same as column 14, total contract variance line of format 1?

12.2.6.6. Block 6 - total allocated budget. Is this amount equal to the total line in column 14 on format 1?

12.2.6.7. Block 7 - difference

12.2.6.7.1. Is the amount shown the difference between block 5 and block 6?

12.2.6.7.2. Is the difference in value fully explained in format 5?

12.2.6.8. Column 1 - item

12.2.6.8.1. Has the time-phased PMB which existed at the beginning of current reporting period been entered?

12.2.6.8.2. Have the entries on this line been taken from previous report's PMB (end of period)? (NOTE: the column (2) entry will be the sum of the previous columns (2) and (3); column (3) will be the previous column (4), etc.)

12.2.6.9. Baseline changes

12.2.6.9.1. Have all authorized baseline changes been listed?

12.2.6.9.2. Are the changes adequately explained in format 5?

12.2.6.10. G&A. Are the appropriate G&A costs entered?

12.2.6.11. UB

12.2.6.11.1. Is the total amount of UB as of the end of the reporting period entered?

12.2.6.11.2. Is this the same UB as shown on formats 1 and 2?

12.2.6.12. PM - baseline (end of period). Does this entry represent the effects of authorized changes and allocations of UB and MR upon PM - Baseline (beginning of period for this reporting period)?

12.2.6.13. MR. Is this entry the amount of MR shown in column (12) of format 1?

12.2.6.14. Format (3) - BCWS to date. Do the entries in the bottom five lines of column (2) (G&A through total) equal the corresponding entries in column (7) of format 1?

12.2.6.15. Total budget. Do the entries in the bottom five lines of column (14) (G&A through total) equal the corresponding entries in column (12) of format 1?

12.2.7. Format (4) - manpower loading

12.2.7.1. Is the reporting unit (equivalent man-months, man-hours, etc.) indicated?

12.2.7.2. Column 1 - organization or functional category. Are the functional categories shown the same as those in format 2?

12.2.7.3. Total direct. Is the amount entered equal to the sum of all the individual functional categories for each column?

12.2.7.4. Format (4) - actual end of current period (cum). Does the entry in column (3) equal the column (3) entry from the previous report plus the column (2) entry from this report?

12.2.7.5. At completion. For each category, do the entries in column (15) equal the sum of the entries in columns (3) through (14)?

12.2.8. Format (5) - problem analysis report

12.2.8.1. Has a summary analysis of overall contract performance been provided?

12.2.8.2. Have significant variances been explained?

12.2.8.3. Are all UBs fully explained?

12.2.8.4. Are all MR applications fully explained?

12.2.8.5. Are all baseline changes identified and fully explained?

As a final check, an EAC should be developed within the program office. A current EAC should be maintained for comparison to the contractor's LRE. Differences between government and contractor estimates should be examined thoroughly.

12.3. Checklist for the Review of the Cost/Schedule Status Report (C/SSR) (DI-F-6010A)

12.3.1. Introduction

12.3.1.1. The contractor-prepared C/SSR is a major source of data which permits program management to measure contractor cost and schedule performance in terms of dollars.

12.3.1.2. This checklist is intended to aid in the review of contractors' C/SSR submissions.

12.3.2. Heading Information

YES NO

12.3.2.1. Is the contractor's name and location identified?

12.3.2.2. Is the appropriate contract effort box checked?

12.3.2.3. Is the contract properly identified?

12.3.2.3.1. Is the contract type entered?

12.3.2.3.2. Is the contract number entered?

12.3.2.3. Is the number of the latest definitized contract modification entered?

12.3.2.4. Is the program identified?

12.3.2.5. Is the current report period cutoff date entered?

12.3.2.6. Is the report signed and dated?

12.3.3. Contract Data

12.3.3.1. Item (1) - original contract target cost. Is the original negotiated contract dollar value (excluding fee or profit) entered? For a cost-plus fixed-fee contract, this should equal the definitized contract target cost.

12.3.3.2. Item (2) - negotiated contract changes. Is this entry the cumulative cost (excluding fee or profit) applicable to definitized contract changes which have occurred since the beginning of the contract?

12.3.3.3. Item (3) - current target cost

12.3.3.3.1. Does the amount entered equal the sum of items (1) and (2)?

12.3.3.3.2. Is this amount equal to the current dollar value (excluding fee or profit) on which contractual agreement has been reached?

12.3.3.4. Item (4) - estimated cost of authorized, unpriced work. Is this entry the estimated cost (excluding fee or profit) for contract changes for which written authorization has been given but for which contract prices have not been negotiated?

12.3.3.5. Item (5) - CBB. Does the amount entered equal the sum of items (3) and (4)?

12.3.4. Performance Data

NOTE: If the G&A line is labeled "Non-Add", delete the references to "plus General and Administrative" or "General and Administrative" in the appropriate paragraphs.

12.3.4.1. Column (1) - WBS elements. Are the WBS elements or levels reported those specified in the CDRL?

12.3.4.2. Column (2) - budgeted cost - work scheduled (BCWS)

12.3.4.2.1. Is the sum of the BCWS for the individual WBS reporting elements plus BCWS for G&A equal to the reported total?

12.3.4.2.2. Is the BCWS for the individual WBS reporting elements and G&A greater for this reporting period than the preceding reporting period?

12.3.4.2.3. Initial report only: Is the method used to derive BCWS explained satisfactorily?

12.3.4.2.4. Are subsequent changes in the BCWS methodology explained and are reasons given for the change?

12.3.4.2.5. Is the BCWS less than or equal to the BAC column (7) for each WBS element?

12.3.4.3. Column (3) - BCWP

12.3.4.3.1. Is the sum of the BCWP for the individual WBS reporting elements plus BCWP for G&A equal to the reported total?

12.3.4.3.2. Is the BCWP for the individual WBS reporting elements and G&A greater for this reporting period than the preceding reporting period?

12.3.4.3.3. Initial report only: Is the method used to derive BCWP explained satisfactorily? _____

12.3.4.3.4. Are subsequent changes in the BCWP methodology explained and are reasons given for the change? _____

12.3.4.3.5. Is the BCWP less than or equal to the BAC column (7) for each WBS element? _____

12.3.4.4. Column (4) - ACWP

12.3.4.4.1. Is the sum of the ACWP for the individual WBS reporting elements plus ACWP for G&A equal to the reported total? _____

12.3.4.4.2. Is the ACWP for the individual WBS reporting elements and G&A greater for this reporting period than the preceding reporting period? _____

12.3.4.5. Column (5) - SV

12.3.4.5.1. Is the reported SV for the individual WBS reporting elements and G&A equal to the difference between column (3) (BCWP) and column (2) (BCWS)? _____

12.3.4.5.2. Are negative (unfavorable) variances shown in parentheses? _____

12.3.4.5.3. Are SVs which exceed the contractually established thresholds identified and fully explained in the "Narrative Explanation" section? _____

12.3.4.6. Column (6) - CV

12.3.4.6.1. Is the reported CV for the individual WBS reporting elements and G&A equal to the difference between column (3) (BCWP) and column (4) (ACWP)? _____

12.3.4.6.2. Are negative (unfavorable) variances shown in parentheses? _____

12.3.4.6.3. Are CVs which exceed the contractually established thresholds identified and fully explained in the "Narrative Explanation" section? _____

12.3.4.7. Column (7) - at completion - budgeted (BAC)

12.3.4.7.1. Is the sum of the BAC for the individual WBS reporting elements, G&A, UB and MR equal to the reported total BAC? _____

12.3.4.7.2. Does the total BAC equal the CBB, item (5), contract data? _____

12.3.4.7.3. If the answer to (2) is no, are the reasons for the difference fully explained in the "Narrative Explanation" section? _____

12.3.4.8. Column (8) - at completion - estimated (LRE)

12.3.4.8.1. Is the sum of the LRE for the individual WBS reporting elements, G&A, UB, and MR equal to the reported total LRE? _____

12.3.4.8.2. Are the LREs for the individual WBS reporting elements and total LRE consistent with program office estimates? _____

12.3.4.8.3. Are the LREs for the individual WBS reporting elements and total LRE less than or equal to the ACWP column (4)? _____

12.3.4.9. Column (9) - at completion - variance (VAC)

12.3.4.9.1. Are the reported VACs for the individual WBS reporting elements, G&A, MR and total equal to the difference between column (7) (BAC) and column (8) (LRE)? _____

12.3.4.9.2. Are negative (unfavorable) variances shown in parentheses? _____

12.3.4.9.3. Are VACs which exceed the contractually established thresholds identified and fully explained? _____

12.3.4.10. G&A. Has the G&A rate been applied correctly? _____

12.3.4.11. UB

12.3.4.11.1. Are the entries in columns (7) and (8) the same? _____

12.3.4.11.2. Is the UB fully explained in the "Narrative Explanation" section? _____

12.3.4.12. MR. Are all MR applications (difference between the last report's MR column (7) and the current report's MR column (7)) explained in the "Narrative Explanation" section? _____

12.3.5. Narrative Explanations

12.3.5.1. Has a summary analysis of overall contract performance been provided? _____

12.3.5.1.1. Does it include significant existing or potential problems? _____

12.3.5.1.2. Does it include corrective actions taken or required? _____

12.3.5.1.3. Does it include Government action where required? _____

12.3.5.2. Have significant variances been fully explained? _____

12.3.5.2.1. Is the nature of the problems being experienced clearly identified? _____

12.3.5.2.2. Is the total contract impact explained? _____

12.3.5.2.3. Are the corrective actions taken or required explained? _____

12.3.5.3. Are all UBs fully explained? _____

12.3.5.4. Are all MR applications fully explained? _____

12.3.5.5. If the total BAC does not equal the CBB, are the reasons for the difference explained, including identification of the differences by WBS element? _____

Chapter 13

SAMPLE COST PERFORMANCE REPORTS (CPRS)

(FORMAT 1)

CLASSIFICATION _____ PAGE _____ OF _____

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE

CONTRACTOR LOCATION: ROUTE: <input type="checkbox"/> PRODUCTION <input type="checkbox"/>	CONTRACT TYPE/NO.	PROGRAM NAME/NUMBER	REPORT PERIOD	SIGNATURE, TITLE & DATE		FORM APPROVED CMB NUMBER ZPR0200										
				EST COST ATRK, UNPRICED WORK	TGT PROFIT/EE %											
QUANTITY	NEGOTIATED COST	EST COST ATRK, UNPRICED WORK	TGT PROFIT/EE %	TOT PRICE	EST PRICE	SHARE RATIO	CONTRACT CEILING	EST CONTRACT CEILING								
ITEM	CURRENT PERIOD				CUMULATIVE TO DATE				REPROGRAMMING ADJUSTMENTS				AT COMPLETION			
	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	COST VARIANCE	BUDGET	LATEST REVISED ESTIMATE	VARIANCE	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE
(1) WORK BREAKDOWN STRUCTURE																
COST OF MONEY																
GEN AND ADMIN																
UNDISTRIBUTED BUDGET																
BN/DOTA																
MANAGEMENT RESERVE																
TOTAL																
RECONCILIATION TO CONTRACT BUDGET BASE																
VARIANCE ADJUSTMENT																
TOTAL CONTRACT VARIANCE																

DOLLARS \$ ()

CLASSIFICATION _____

FORMAT 1

Figure 13.1. CPR Format 1.

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE																
CONTRACTOR: Adv Aerospace, Inc. Fighter Division Los Angeles, CA			CONTRACT TYPE/NO: CPE/A0019-91-C-0157			PROGRAM NAME/NUMBER: Advanced FighterFX			REPORT PERIOD: 1-1-92 to 1-31-92			SIGNATURE, TITLE & DATE: Program Director 2-4-92			FORM APPROVED OMB NUMBER: ZPR0280	
QUANTITY: 300 Fighters		NEGOTIATED COST: 228900		EST COST AUTH, UNPRICED WORK: 0		TGT PROFIT/FEE %: 8.2		TGT PRICE: 247700		EST PRICE: 229965		SHARE RATIO: 85/15		CONTRACT CEILING: EST CONTRACT CEILING		
ITEM	CURRENT PERIOD			CUMULATIVE TO DATE			REPROGRAMMING ADJUSTMENTS			AT COMPLETION						
	BUDGETED COST WORK SCHEDULED PERFORMED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	BUDGETED COST WORK SCHEDULED PERFORMED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	COST VARIANCE	BUDGET	BUDGETED	LATE/REVISED ESTIMATE	VARIANCE					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
WORK BREAKDOWN STRUCTURE																
Fighter System	1280	1116	(90)	1280	1116	(90)	74	(90)	1116	74	(90)	62900	62900	62900	0	
Air Vehicle	42	34	(8)	42	34	(8)	(34)	(42)	34	(34)	(8)	48900	48900	48900	0	
Command & Law Eqp	16	14	(2)	16	14	(2)	(5)	(4)	19	(5)	(1)	14500	14500	14500	0	
Tracked Vehicle	1	0	(1)	1	0	(1)	-	(1)	0	-	-	1400	1400	1400	0	
Training	0	0	0	0	0	0	-	-	0	-	-	2300	2300	2300	0	
Peculiar Support Eqp	30	42	12	30	42	12	(1)	(12)	43	(1)	12	22000	22000	22000	0	
Systems Test & Eval	508	363	(145)	508	363	(145)	(30)	(145)	393	(30)	(15)	18000	18000	18000	0	
Project Mgmt	15	14	(1)	15	14	(1)	(4)	(1)	18	(4)	(1)	7900	7900	7900	0	
Data	0	0	0	0	0	0	-	-	0	-	-	5100	5100	5100	0	
Repair Parts																
COST OF MONEY																
GEN AND ADMIN	259	222	(37)	259	222	(37)	-	(37)	222	-	(37)	25071	25071	25071	0	
UNDISTRIBUTED BUDGET												0	0	0	0	
SUBTOTAL	2153	1845	(308)	2153	1845	(308)	-	(308)	1845	-	(308)	208071	208071	208071	0	
MANAGEMENT RESERVE												20829	20829	20829	20829	
TOTAL	2153	1845	(308)	2153	1845	(308)	-	(308)	1845	-	(308)	228900	228900	228900	20829	
RECONCILIATION TO CONTRACT BUDGET BASE																
VARIANCE ADJUSTMENT																
TOTAL CONTRACT VARIANCE																

Figure 13.2. January 1992 CPR Format 1.

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE														
CONTRACTOR: Adv. Aerospace, Inc.			PROGRAM NAME/NUMBER: Advanced Fighter/FX			SIGNATURE, TITLE & DATE: Program Director 3-4-92			FORM APPROVED: OMB NUMBER 22R0280					
CONTRACT TYPE/NO: CPF/A00018-91-C-0157			REPORT PERIOD: 2-1-92 to 2-28-92			EST PRICE: 229965			CONTRACT CEILING					
LOCATION: Los Angeles, CA			TGT PROFIT/FEE %: 8.2			TGT PRICE: 247700			SHARE RATIO: 85/15					
ROTIIE: <input type="checkbox"/> PRODUCTION <input type="checkbox"/>			EST COST AUTH. UNPRICED WORK: 0			EST CONTRACT CEILING			EST CONTRACT CEILING					
QUANTITY: 300 Fighters			NEGOTIATED COST: 228900			CUMULATIVE TO DATE			REPROGRAMMING ADJUSTMENTS			AT COMPLETION		
ITEM	CURRENT PERIOD			CUMULATIVE TO DATE			REPROGRAMMING ADJUSTMENTS			AT COMPLETION				
	BUDGETED COST WORK SCHEDULED (2)	ACTUAL COST WORK PERFORMED (4)	VARIANCE SCHEDULE (5)	BUDGETED COST WORK SCHEDULED (7)	ACTUAL COST WORK PERFORMED (8)	VARIANCE SCHEDULE (9)	COST VARIANCE (12)	BUDGET (13)	BUDGETED (14)	LATEST REVISED ESTIMATE (15)	VARIANCE (16)			
WORK BREAKDOWN STRUCTURE														
Fighter System	1191	957	(234)	2471	2147	(324)	42		62900	62900	0			
Air Vehicle	115	203	88	157	203	46	(33)		48900	48900	0			
Command & Lau Eqp	35	267	232	53	281	228	(6)		14500	14500	0			
Tracked Vehicle	1	3	2	2	3	1	-		1400	1400	0			
Training	0	0	-	0	0	-	-		2300	2300	0			
Peculiar Support Eqp	241	192	(36)	271	245	(26)	10		22000	22000	0			
Systems Test & Eval	624	542	(82)	1132	905	(227)	(9)		18000	18000	0			
Project Mgt	21	25	4	36	39	3	(4)		7900	7900	0			
Data	0	0	-	0	0	-	-		5100	5100	0			
Repair Parts	0	0	-	0	0	-	-							
COST OF MONEY														
GEN AND ADMIN	306	302	(4)	565	524	(41)	-		25071	25071	0			
UNDISTRIBUTED BUDGET														
SUBTOTAL	1534	2502	(92)	4687	4347	(340)	-		208071	208071	0			
MANAGEMENT RESERVE														
TOTAL	1534	2502	(92)	4687	4347	(340)	-		228900	208071	20829			
RECONCILIATION TO CONTRACT BUDGET BASE														
VARIANCE ADJUSTMENT														
TOTAL CONTRACT VARIANCE														

FORMAT 1

DOLLARS IN)

CLASSIFICATION

Figure 13.3. February 1992 CPR Format 1.

PAGE _____ OF _____

CLASSIFICATION _____

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE															
CONTRACTOR: Adv. Aerospace, Inc. Fighter Division Los Angeles, CA		CONTRACT TYPE/NO.: CPF/A0018-91-C-0157		PROGRAM NAME/NUMBER: Advanced FighterFX		REPORT PERIOD: 3-1-92 to 3-31-92		SIGNATURE, TITLE & DATE: Program Director 4-7-92			FORM APPROVED OMB NUMBER Z290280				
QUANTITY	NEGOTIATED COST	EST COST AUTH. UNPRICED WORK	TGT PROFIT/FEE %	TGT PRICE	EST PRICE	SHARE RATIO	CONTRACT CEILING	EST CONTRACT CEILING							
300 Fighters	228900	13092	8.2	247700	245969	65/15									
ITEM	CURRENT PERIOD				CUMULATIVE TO DATE				REPROGRAMMING ADJUSTMENTS			AT COMPLETION			
	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	WORK SCHEDULED	BUDGETED COST WORK PERFORMED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	WORK SCHEDULED	COST VARIANCE	BUDGET	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
WORK BREAKDOWN STRUCTURE															
Fighter System	1602	1031	(571)	4073	3178	3660	(895)	895	(895)	(482)			62900	0	
Air Vehicle	264	202	(62)	421	405	476	(16)	476	(16)	(71)			56436	(2932)	
Command & Lau Exp	360	365	(259)	413	382	652	(31)	652	(31)	(278)			14500	0	
Tracked Vehicle	6	5	(1)	8	8	0		0		(2)			1443	0	
Training	0	0		0	0	0		0					2300	0	
Peculiar Support Exp	414	425	16	685	677	660	(8)	660	(8)	17			22267	0	
Systems Test & Eval	632	549	(87)	1784	1450	1463	(4)	1463	(4)	(13)			18087	0	
Project Mgt	82	46	(36)	118	85	168	(33)	168	(33)	(83)			7938	0	
Data	0	0		0	0	0		0					5100	0	
Repair Parts															
COST OF MONEY															
GEN AND ADMIN	460	323	(137)	1025	847	971	(178)	971	(178)	(124)			25761	26163	(402)
UNDISTRIBUTED BUDGET															
SUBTOTAL	3820	2685	(1135)	8507	7032	8060	(1475)	8060	(1475)	(1028)			219992	223328	(3334)
MANAGEMENT RESERVE													22000	0	22000
TOTAL	3820	2685	(1135)	8507	7032	8060	(1475)	8060	(1475)	(1028)			241992	223328	18666
28973															
RECONCILIATION TO CONTRACT BUDGET BASE															
VARIANCE ADJUSTMENT															
TOTAL CONTRACT VARIANCE															

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Figure 13.4. March 1992 CPR Format 1.

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COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE														
CONTRACTOR: Adv. Aerospace, Inc. Fighter Division LOCATION: Los Angeles, CA		CONTRACT TYPE NO.: CP/F/A00019-91-S-0157		PROGRAM NAME/NUMBER Advanced Fighter/FX		REPORT PERIOD 4-1-92 to 4-30-92		SIGNATURE, TITLE & DATE Program Director 5-7-92		FORM APPROVED OMB NUMBER 22R0200		EST CONTRACT CEILING		
QUANTITY 300 Fighters		EST COST AUTH. UNPRICED WORK 31041		EST COST AUTH. UNPRICED WORK 31041		TGT PROFIT/LOSS % 8.2		TGT PRICE 25061		EST PRICE 267643		SHARE RATIO 85/15		
ROUTE: <input type="checkbox"/> PRODUCTION <input type="checkbox"/>		NEGOTIATED COST 231110		EST CONTRACT CEILING		EST CONTRACT CEILING		EST CONTRACT CEILING		EST CONTRACT CEILING		EST CONTRACT CEILING		
Level 3 ITEM	CURRENT PERIOD				CUMULATIVE TO DATE				REPROGRAMMING ADJUSTMENTS				AT COMPLETION	
	BUDGETED COST WORK SCHEDULED (2)	BUDGETED COST WORK PERFORMED (5)	ACTUAL COST WORK PERFORMED (4)	VARIANCE SCHEDULE (9)	BUDGETED COST WORK SCHEDULED (7)	BUDGETED COST WORK PERFORMED (8)	ACTUAL COST WORK PERFORMED (6)	VARIANCE SCHEDULE (10)	VARIANCE COST (11)	COST VARIANCE (12)	BUDGET (13)	BUDGETED (14)	LATEST REVISED ESTIMATE (15)	VARIANCE (16)
WORK BREAKDOWN STRUCTURE														
(1) Fighter System	1445	1100	1606	(345)	5518	4276	5266	(1240)	(938)		63367	63801	(434)	
Air Vehicle	327	217	253	(110)	748	622	729	(126)	(107)		62616	66328	(3712)	
Command & Law Exp	362	120	265	(242)	775	502	917	(273)	(415)		16205	16460	(255)	
Tracked Vehicle	10	5	6	(4)	18	14	16	(4)	(2)		1578	1578	0	
Training	0	0	0	-	0	0	0	-	-		2300	2300	0	
Peculiar Support Exp	472	392	587	(80)	1157	1069	1247	(88)	(178)		22923	22923	0	
Systems Test & Eval	640	662	682	(22)	2404	2112	2145	(292)	(33)		18294	18294	0	
Project Mgt	69	51	35	(18)	187	136	203	(51)	(67)		8057	8057	0	
Data	0	0	0	-	0	0	0	-	-		5100	5100	0	
Repair Parts														
COST OF MONEY														
GEN AND ADMIN	455	349	470	(106)	1480	1196	1441	(284)	(245)		27460	28063	(603)	
UNDISTRIBUTED BUDGET														
SUBTOTAL	3780	2897	3904	(883)	12287	9929	11964	(2358)	(2035)		238319	243323	(5004)	
MANAGEMENT RESERVE											23832	0	23832	
TOTAL	3780	2897	3904	(883)	12287	9929	11964	(2358)	(2035)		262151	243323	18828	
RECONCILIATION TO CONTRACT BUDGET BASE														
VARIANCE ADJUSTMENT														
TOTAL CONTRACT VARIANCE														

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Figure 13.5. April 1992 CPR Format 1.

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE																				
CONTRACTOR: Avy Aerospace, Inc. Fighter Division Los Angeles, CA			PROGRAM NAME/NUMBER Advanced Fighter/FX			REPORT PERIOD 5-1-92 to 5-31-92			SIGNATURE, TITLE & DATE Program Director 6-5-92			FORM APPROVED OMB NUMBER 25R0280								
CONTRACT TYPE/NO: CPR/A00019-11-C-0157		EST COST AUTH, UNPRICED WORK 13792		TGT PROFIT/EE % 8.2		TGT PRICE 278649		EST PRICE 275438		SHARE RATIO 85/15		CONTRACT CEILING		EST CONTRACT CEILING						
QUANTITY 300 Fighters		NEGOTIATED COST 257531		PRODUCTION <input type="checkbox"/>																
Level 2 ITEM	CURRENT PERIOD						CUMULATIVE TO DATE						REPROGRAMMING ADJUSTMENTS			AT COMPLETION				
	BUDGETED COST		ACTUAL COST		VARIANCE		BUDGETED COST		ACTUAL COST		VARIANCE		COST VARIANCE	BUDGET	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE			
	WORK SCHEDULED	WORK PERFORMED	WORK SCHEDULED	WORK PERFORMED	SCHEDULE	COST	WORK SCHEDULED	WORK PERFORMED	SCHEDULE	COST	SCHEDULE	COST	(11)	(12)	(13)	(14)	(15)	(16)		
WORK BREAKDOWN STRUCTURE																				
Fighter System																				
Air Vehicle																				
Command & Lau Eqp																				
Tracked Vehicle																				
Training																				
Peculiar Support Eqp																				
Systems Test & Eval																				
Project Mgt																				
Data																				
Repair Parts																				
COST OF MONEY																				
GEN AND ADMIN																				
UNDISTRIBUTED BUDGET																				
SUBTOTAL																				
MANAGEMENT RESERVE																				
TOTAL																				
RECONCILIATION TO CONTRACT BUDGET BASE																				
VARIANCE ADJUSTMENT																				
TOTAL CONTRACT VARIANCE																				

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Figure 13.6. May 1992 CPR Format 1.

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COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE																							
CONTRACTOR: Air Aerospace, Inc. Fighter Division Los Angeles, CA			PROGRAM NAME/NUMBER Advanced Fighter/FX			SIGNATURE, TITLE & DATE Program Director 8-4-92			FORM APPROVED OMB NUMBER 220220			REPORT PERIOD 7-1-92 to 7-31-92			EST CONTRACT CEILING								
CONTRACT TYPE/NO: CPR/100018-91-C-0157			EST COST AUTH UNPRICED WORK 3895			TGT PROF/FEE % 8.2			TGT PRICE 312184			EST PRICE 301491			SHARE RATIO 85/15			CONTRACT CEILING					
QUANTITY 300 Fighters			NEGOTIATED COST 288525			EST COST AUTH UNPRICED WORK 3895			TGT PROF/FEE % 8.2			TGT PRICE 312184			EST PRICE 301491			SHARE RATIO 85/15			CONTRACT CEILING		
Level 2 ITEM	CURRENT PERIOD				CUMULATIVE TO DATE				REPROGRAMMING ADJUSTMENTS				AT COMPLETION										
	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	(1)	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	(2)	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	(3)	COST VARIANCE	BUDGET	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE						
WORK BREAKDOWN STRUCTURE																							
Fighter System	2122	2045	(77)	(198)	11132	9416	(1716)	(2146)	11562	11562	(1716)	(2146)			71234	73022	(1788)						
Air Vehicle	1687	1530	(157)	(106)	3202	2830	(372)	(171)	3001	3001	(372)	(171)			79494	81822	(2328)						
Command & Lau Eqp	444	451	7	(48)	1904	1724	(180)	(292)	2016	2016	(180)	(292)			23026	23389	(363)						
Tracked Vehicle	15	15	0	1	50	46	(4)	0	46	46	(4)	0			1930	1930	0						
Training	5	5	0	0	5	5	0	0	5	5	0	0			2386	2386	0						
Peculiar Support Eqp	578	541	(37)	(106)	2916	2623	(293)	(590)	3213	3213	(293)	(590)			24681	25310	(633)						
Systems Test & Eval	640	635	(5)	(5)	4377	4172	(205)	(77)	4249	4249	(205)	(77)			18836	18836	0						
Project Mgt	42	42	0	(2)	337	332	(5)	(7)	339	339	(5)	(7)			8362	8362	0						
Data	0	0	0	0	0	0	0	0	0	0	0	0			6698	6705	(7)						
Repair Parts																							
COST OF MONEY																							
GEN AND ADMIN	758	721	(37)	(64)	3277	2897	(380)	(450)	3347	3347	(380)	(450)			32421	33121	(701)						
UNDISTRIBUTED BUDGET															0	0							
SUBTOTAL	6291	5985	(306)	(530)	27200	24045	(3155)	(3733)	27778	27778	(3155)	(3733)			269068	274883	(5815)						
MANAGEMENT RESERVE															23352	0	23352						
TOTAL	6291	5985	(306)	(530)	27200	24045	(3155)	(3733)	27778	27778	(3155)	(3733)			292420	274883	17537						
RECONCILIATION TO CONTRACT BUDGET BASE																							
VARIANCE ADJUSTMENT																							
TOTAL CONTRACT VARIANCE																							

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Figure 13.8. July 1992 CPR Format 1.

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE																
CONTRACTOR: Adv. Aerospace, Inc. Fighter Division Los Angeles, CA		PROGRAM NAME/NUMBER Advanced Fighter/FX		REPORT PERIOD 8-1-92 to 8-31-92		SIGNATURE, TITLE & DATE Program Director 8-7-92			FORM APPROVED OMB NUMBER 2290280							
QUANTITY	NEGOTIATED COST	EST COST AUTH, UNPRICED WORK	TGT PROFIT/FEE %	TGT PRICE	EST PRICE	SHARE RATIO	CONTRACT CEILING	CONTRACT CEILING	EST CONTRACT CEILING							
300 Fighters	292420	0	8.2	316398	303277	85/15										
ITEM	CURRENT PERIOD				CUMULATIVE TO DATE				REPROGRAMMING ADJUSTMENTS			AT COMPLETION				
	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	COST	BUDGETED COST WORK SCHEDULED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	COST	COST VARIANCE	BUDGET	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
WORK BREAKDOWN STRUCTURE																
Fighter System																
Air Vehicle	3240	3071	3839	(169)	14372	12487	15401	(1865)	(2914)	71234	73559	73559	71234	73559	(2325)	
Command & Low Eqp	2808	2531	3008	(277)	6010	5361	6010	(649)	(649)	79494	81822	81822	79494	81822	(2328)	
Tracked Vehicle	580	524	598	(56)	2484	2248	2614	(236)	(366)	23026	23369	23369	23026	23369	(363)	
Training	20	19	19	(1)	70	65	65	(5)	0	1930	1930	1930	1930	1930	0	
Peculiar Support Eqp	20	21	20	1	25	26	25	1	1	2386	2386	2386	2386	2386	0	
Systems Test & Eval	591	526	586	(65)	3149	3507	3799	(358)	(650)	24681	26626	26626	24681	26626	(1945)	
Project Mgt	639	638	648	(1)	5016	4810	4897	(206)	(87)	18836	18836	18836	18836	18836	0	
Data	42	43	50	7	379	375	389	(4)	(14)	8362	8362	8362	8362	8362	0	
Repair Parts	0	0	0	0	0	0	0	0	0	6698	6699	6699	6698	6699	(1)	
COST OF MONEY																
GEN AND ADMIN	1088	1010	1201	(78)	4365	3907	4548	(458)	(641)	32421	33374	33374	32421	33374	(953)	
UNDISTRIBUTED BUDGET																
SUBTOTAL	9028	8383	9970	(645)	36228	32428	37748	(3800)	(5320)	269068	276983	276983	269068	276983	(7915)	
MANAGEMENT RESERVE																
TOTAL	9028	8383	9970	(645)	36228	32428	37748	(3800)	(5320)	23352	23352	23352	23352	23352	0	
RECONCILIATION TO CONTRACT BUDGET BASE																
VARIANCE ADJUSTMENT																
TOTAL CONTRACT VARIANCE																

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Figure 13.9. August 1992 CPR Format 1.

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE															
CONTRACTOR: Avco Aerospace, Inc. Fighter Division Los Angeles, CA			PROGRAM NAME/NUMBER: Advanced Fighter/FX			REPORT PERIOD: 9-1-92 to 9-30-92			SIGNATURE, TITLE & DATE: Program Director 10-5-92			FORM APPROVED OMB NUMBER 22R0280			
QUANTITY 300 Fighters		NEGOTIATED COST 292420		EST COST AUTH. UNPRICED WORK 0		TOT PROFIT/FEE % 8.2		TGT PRICE 316398		EST PRICE 307201		SHARE RATIO 85/15		EST CONTRACT CEILING	
ITEM	CURRENT PERIOD				CUMULATIVE TO DATE				REPROGRAMMING ADJUSTMENTS				AT COMPLETION		
	BUDGETED COST WORK SCHEDULED PERFORMED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	COST	BUDGETED COST WORK SCHEDULED PERFORMED	ACTUAL COST WORK PERFORMED	VARIANCE SCHEDULE	COST	COST VARIANCE	BUDGET	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
WORK BREAKDOWN STRUCTURE															
Fighter System	3392	2145	3793	(1247)	(1648)	17764	14632	(3132)	(4562)	71234	74749		(3515)		
Air Vehicle	3632	3418	4109	(214)	(691)	9642	8779	(863)	(1340)	79494	84055		(4561)		
Command & Law Eqp	787	778	833	(9)	(55)	3271	3026	(245)	(421)	23026	23026		0		
Tracked Vehicle	32	30	32	(2)	(2)	102	95	(7)	(2)	1930	1930		0		
Training	23	21	22	(2)	(1)	48	47	(1)	0	2386	2386		0		
Peculiar Support Eqp	680	563	644	(97)	(61)	4187	3732	(455)	(711)	24681	217626		(2945)		
Systems Test & Eval	642	643	647	1	(4)	5658	5453	(205)	(91)	18636	18636		0		
Project Mgt	53	50	52	(3)	(2)	432	425	(7)	(16)	8362	8362		0		
Data	0	0	0	0	0	0	0	0	0	6698	6699		(1)		
Repair Parts															
COST OF MONEY															
GEN AND LOAN	1266	1051	1368	(215)	(337)	5631	4958	(673)	(979)	32421	33931		(1510)		
UNDISTRIBUTED BUDGET										0	0				
SUBTOTAL	10507	8719	11520	(1788)	(2801)	46735	41147	(5588)	(6122)	269068	281600		(12532)		
MANAGEMENT RESERVE										23352	0		23352		
TOTAL	10507	8719	11520	(1788)	(2801)	46735	41147	(5588)	(6122)	292420	281600		10820		
RECONCILIATION TO CONTRACT BUDGET BASE															
VARIANCE ADJUSTMENT															
TOTAL CONTRACT VARIANCE															

Figure 13.10. September 1992 CPR Format 1.

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COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE																				
CONTRACTOR: Adv. Aerospace, Inc. Fighter Division Los Angeles, CA		PROGRAM NAME/NUMBER Advanced Fighter/FX		REPORT PERIOD 10-1-92 to 10-31-92		SIGNATURE, TITLE & DATE Program Director 11-1-92		FORM APPROVED OMB NUMBER 22R0280												
CONTRACT TYPE/NO: CPF/A000181-C-0157		EST COST AUTH, UNPRICED WORK 0		TGT PROFIT/FEE % 8.2		TGT PRICE 316398		EST PRICE 308721		SHARE RATIO 85/15		CONTRACT CEILING		EST CONTRACT CEILING						
QUANTITY 300 Fighters		NEGOTIATED COST 292420		PRODUCTION <input type="checkbox"/>																
ITEM	CURRENT PERIOD						CUMULATIVE TO DATE						REPROGRAMMING ADJUSTMENTS			AT COMPLETION				
	BUDGETED COST		ACTUAL COST WORK PERFORMED		VARIANCE		BUDGETED COST		ACTUAL COST WORK PERFORMED		VARIANCE		COST VARIANCE	BUDGET	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE			
	WORK SCHEDULED PERFORMED	WORK PERFORMED	SCHEDULE	COST	WORK SCHEDULED PERFORMED	WORK PERFORMED	SCHEDULE	COST	WORK SCHEDULED PERFORMED	WORK PERFORMED	SCHEDULE	COST	(11)	(12)	(13)	(14)	(15)	(16)		
WORK BREAKDOWN STRUCTURE																				
Fighter System	3833	3204	4553	(629)	(1348)	(273)	(296)	17836	23747	(3761)	(5911)				71234	76284	(5050)			
Air Vehicle	4772	4499	4795	(43)	(40)	(43)	(40)	13278	14914	(1136)	(1636)				79494	84016	(4522)			
Command & Lau Eqp	950	907	947	(43)	(40)	(43)	(40)	3933	4394	(288)	(461)				23026	23026	0			
Tracked Vehicle	40	45	47	5	(2)	5	(2)	140	144	(2)	(4)				1930	1930	0			
Training	23	22	21	(1)	1	(1)	1	69	68	(2)	(1)				2386	2386	0			
Peculiar Support Eqp	740	558	867	(182)	(309)	(182)	(309)	4297	5310	(637)	(1020)				24681	27703	(3022)			
Systems Test & Eval	644	645	660	1	(15)	1	(15)	6302	6204	(204)	(106)				18836	18836	0			
Project Mgt	154	156	160	2	(4)	2	(4)	581	601	(5)	(20)				8362	8362	0			
Repair Parts	0	0	0	0	0	0	0	0	0	0	0				6698	6699	(1)			
COST OF MONEY																				
GEN AND ADMIN	1528	1375	1651	(153)	(276)			6333	7587	(827)	(1254)				32421	34146	(1725)			
UNDISTRIBUTED BUDGET																				
SUBTOTAL	12684	11411	13701	(1273)	(2290)			52558	62969	(6662)	(10411)				269068	283388	(14320)			
MANAGEMENT RESERVE																				
TOTAL	12684	11411	13701	(1273)	(2290)			52558	62969	(6662)	(10411)				23352	0	23352			
RECONCILIATION TO CONTRACT BUDGET BASE																				
VARIANCE ADJUSTMENT																				
TOTAL CONTRACT VARIANCE															292420	283388	9032			

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Figure 13.11. October 1992 CPR Format 1.

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COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE															
CONTRACTOR: Adv. Aerospace, Inc. Fighter Division Los Angeles, CA		CONTRACT TYPE NO.: CPFA00019-91-C-0157		PROGRAM NAME/NUMBER: Advanced Fighter/FX		REPORT PERIOD: 11-1-92 to 11-30-92		SIGNATURE, TITLE & DATE: _____		FORM APPROVED OMB NUMBER 22R0280		EST CONTRACT CEILING			
QUANTITY: 300 Fighters		NEGOTIATED COST: 292420		EST COST AUTH, UNPRICED WORK: 0		TGT PROFIT/FEE %: 8.2		TGT PRICE: 316398		EST PRICE: 308763		SHARE RATIO: 85/15		EST CONTRACT CEILING	
ITEM	CURRENT PERIOD				CUMULATIVE TO DATE				REPROGRAMMING ADJUSTMENTS				AT COMPLETION		
	BUDGETED COST	ACTUAL COST PERFORMED	VARIANCE	TGT PROFIT/FEE %	BUDGETED COST	ACTUAL COST PERFORMED	VARIANCE	EST PRICE	COST VARIANCE	BUDGET	BUDGETED	LATEST REVISED ESTIMATE	VARIANCE		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
WORK BREAKDOWN STRUCTURE															
Fighter System	4038	3611	4354	(427)	(743)	25435	21447	20101	(4188)	(6554)			71234	77584	(6350)
Air Vehicle	5282	5164	5947	(116)	(763)	19696	18442	20861	(1254)	(2419)			79494	83855	(4361)
Command & Lm Equip	1098	1176	1047	78	129	5319	5109	5441	(210)	(332)			23026	23239	(213)
Tracked Vehicle	60	56	61	(4)	(5)	202	196	205	(6)	(9)			1930	1930	0
Training	24	23	23	(1)	0	95	92	91	(3)	1			2386	2386	0
Peculiar Support Equip	800	800	877	(77)	(197)	5727	4970	6187	(757)	(1217)			24681	26695	(2014)
Systems Test & Eval	638	640	642	2	(2)	6940	6738	6848	(202)	(108)			18936	18636	300
Project Mgt	164	163	170	19	13	750	764	771	14	(7)			8382	8082	300
Data	0	0	0	0	0	0	0	0	0	0			6698	6699	0
Repair Parts															
COST OF MONEY															
GEN AND LOAN	1658	1580	1796	(78)	(218)	8818	7913	8385	(905)	(1472)			32421	34152	(1731)
UNDISTRIBUTED BUDGET															
SUBTOTAL	13762	13113	14919	(649)	(1806)	73182	65871	77888	(7511)	(12217)			269068	283438	(14370)
MANAGEMENT RESERVE															
TOTAL	13762	13113	14919	(649)	(1806)	73182	65871	77888	(7511)	(12217)			292420	283438	8982
RECONCILIATION TO CONTRACT BUDGET BASE															
VARIANCE ADJUSTMENT															
TOTAL CONTRACT VARIANCE															

FORMAT 1

DOLLARS IN _____)

CLASSIFICATION _____

Figure 13.12. November 1992 CPR Format 1.

COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE																				
CONTRACTOR: Adv. Aerospace, Inc. Fighter Division Los Angeles, CA			PROGRAM NAME/NUMBER Advanced Fighter/FX			REPORT PERIOD 12-1-92 to 12-31-92			SIGNATURE, TITLE & DATE Program Director 1-8-93			FORM APPROVED OMB NUMBER 22R0280								
CONTRACT TYPE/NO.: CPF/A000191-C-0157		EST COST AUTH, UNPRICED WORK 0		TGT PROFIT/FEE % 8.2		TGT PRICE 316398		EST PRICE 308763		SHARE RATIO 85/15		CONTRACT CEILING		EST CONTRACT CEILING						
QUANTITY 300 Fighters		NEGOTIATED COST 292420		PRODUCTION <input type="checkbox"/>																
ITEM	CURRENT PERIOD			CUMULATIVE TO DATE			REPROGRAMMING ADJUSTMENTS			AT COMPLETION										
	BUDGETED COST WORK SCHEDULED (2)	ACTUAL COST WORK PERFORMED (4)	VARIANCE SCHEDULE (5)	BUDGETED COST WORK SCHEDULED (7)	ACTUAL COST WORK PERFORMED (9)	VARIANCE SCHEDULE (10)	COST VARIANCE (12)	BUDGET (13)	BUDGETED (14)	LATEST REVISED ESTIMATE (15)	VARIANCE (16)									
WORK BREAKDOWN STRUCTURE																				
Fighter System	4140	3901	(239)	29775	25348	(4427)	(6887)		76234	76584	(350)									
Air Vehicle	5076	5147	(12)	24772	23506	(1266)	(2502)		62494	63255	(761)									
Tracked Vehicle	1080	1055	(4)	6399	6496	(214)	(311)		23026	23239	(213)									
Training	72	75	3	274	285	(3)	(14)		1930	1930	0									
Peculiar Support Eqp	24	23	(1)	119	114	(4)	1		2386	2386	0									
Systems Test & Eval	760	685	(75)	6487	5655	(832)	(1320)		26681	26995	(314)									
Project Mgt	630	642	12	7570	7380	(190)	(90)		18836	18836	0									
Data	138	140	11	886	911	25	0		8362	8062	300									
Repair Parts	0	0	0	0	0	0	0		6699	6699	0									
COST OF MONEY																				
GEN AND ADMIN	1632	1591	(41)	10451	9504	(947)	1524		33790	33974	(184)									
UNDISTRIBUTED BUDGET																				
SUBTOTAL	13550	13204	(346)	86733	78875	(7858)	(12847)		280438	281960	(1522)									
MANAGEMENT RESERVE																				
TOTAL	13550	13204	(346)	86733	78875	(7858)	(12847)		11982	0	11982									
RECONCILIATION TO CONTRACT BUDGET BASE																				
VARIANCE ADJUSTMENT																				
TOTAL CONTRACT VARIANCE									292420	281960	10460									

Figure 13.13. December 1992 CPR Format 1.

Included are twelve sample CPR formats 1 covering CY 92. The 8 Jan 93 (12-1-92 to 12-31-92 report period) CPR was used for the calculations discussed in chapter 4.

DONNA J. BACK
Deputy Director, Financial

DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

DEFINITIONS

ACTUAL COST OF WORK PERFORMED (ACWP). The cost actually incurred and recorded for performance measurement purposes in accomplishing the work performed within a given time period.

AUTHORIZED WORK. That effort which has been definitized and is on contract, plus that for which definitized contract costs have not been agreed to but for which written authorization has been received.

BUDGET AT COMPLETION (BAC). The cumulative sum of all BCWS

BUDGETED COST FOR WORK PERFORMED (BCWP). The numerical representation (in dollars) of the value of all work actually accomplished in a given period of time.

BUDGETED COST FOR WORK SCHEDULED (BCWS). The numerical representation (in dollars) of the value of all work scheduled to be accomplished in a given period of time.

CONTRACT BUDGET BASE (CBB). The negotiated contract cost plus the estimated cost of authorized unpriced work. $CBB = BAC \text{ of the PMB} + MR$.

ESTIMATED COST AT COMPLETION OR ESTIMATE AT COMPLETION (EAC). Actual direct costs, plus indirect costs allocable to the contract, plus the estimate of cost (direct and indirect) for authorized work remaining. Synonymous with latest revised estimate.

MANAGEMENT RESERVE (MR). An amount of the total allocated budget withheld for management control purposes, rather than designated for the accomplishment of a specific task or set of tasks. It is not a part of the performance measurement baseline (PMB).

NEGOTIATED CONTRACT COST. The estimated cost negotiated in a cost-plus-fixed-fee contract, or the negotiated contract target cost in either a fixed-price-incentive contract or a cost-plus-incentive-fee contract.

OVER TARGET BASELINE (OTB). A PMB resulting from formal reprogramming by the contractor, with customer approval, which establishes budget allocations in excess of the CBB.

PERFORMANCE MEASUREMENT BASELINE (PMB). The cumulative total of all work packages within the contract: the PMB at any time is synonymous with the cumulative BCWS at that same time. BAC of the PMB is $CBB - MR$, or total allocated budget (TAB) - MR when an OTB has been authorized.

SIGNIFICANT VARIANCES. Those differences between planned and actual performance which require further review, analysis, or action. Appropriate thresholds should be established as to the magnitude of variances which will require variance analysis.

TOTAL ALLOCATED BUDGET (TAB). The sum of all budgets allocated to the contract. TAB will reconcile directly to the CBB. Any differences will be documented as to amount and cause. $CBB + OTB = TAB$.

UNDISTRIBUTED BUDGET (UB). Budget applicable to contract effort which has not yet been identified to contract WBS (CWBS) elements at or below the lowest level of reporting to the government.

WORK BREAKDOWN STRUCTURE (WBS). A product-oriented family tree division of software, services, and other work tasks which organizes, defines, and graphically displays the product to be produced as well as the work to be accomplished to achieve the specific product.

Project Summary Work Breakdown Structure. A summary WBS tailored to a specific defense material item by selecting elements from one or more summary WBSs or by adding equivalent elements unique to the project (MIL-STD-881).

Contract Work Breakdown Structure (CWBS). The complete WBS for a contract, developed and used by a contractor within the guidelines of MIL-STD-881 and in accordance with the contract work statement.

ABBREVIATIONS/ACRONYMS

ACO	Administrative Contracting Officer
ACWP	Actual Cost of Work Performed
BAC	Budget At Completion
BCWP	Budgeted Cost of Work Performed
BCWS	Budgeted Cost of Work Scheduled
CAO	Contract Administration Office
CBB	Contract Budget Base
CCDR	Contractor Cost Data Reporting
CDRL	Contract Data Requirements List
CFSR	Contract Funds Status Report
CPI	Cost Performance Index
CPR	Cost Performance Report (DI-F-6000C)
C/SCSC	Cost/Schedule Control Systems Criteria (AFMCP 173-5)
C/SSP	Cost/Schedule Status Report (DI-F-6010A)
CV	Cost Variance
CWBS	Contract Work Breakdown Structure
DCAS	Defense Contract Administration Agency
DI	Data Item
DPRO	Defense Plant Representative Office
EAC	Estimate At Completion
G&A	General and Administrative
LOGO	Limitation of Government Obligation
LRE	Latest Revised Estimate
MR	Management Reserve
OTB	Over Target Baseline
PMB	Performance Measurement Baseline
SPI	Schedule Performance Index
SV	Schedule Variance
TCPI	To Complete Performance Index
UB	Undistributed Budget
VAC	Variance at Completion
WBS	Work Breakdown Structure (MIL-STD-881)