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THESIS

ACTIVITY-BASED COSTING AND MARINE CORPS FORMAL SCHOOLS BUDGETING

by

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December, 1996

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ABSTRACT

The purpose of this thesis is to evaluate the current practice for budget estimation and resource allocation in Marine Corps Formal Schools for potential improvement. The methodology used devises a budgeting system that reflects variation in activity level, or output requirements, and how costs change when student throughput changes.

While the evaluation is relevant to Marine Corps Formal Schools in general, the research focused on an approach taken by the Marine Corps Engineer School for the development and design of its Cost Estimation and Resource Allocation Model and the potential for application in any Marine Corps school. The spreadsheet modeling technique employs the concepts of activity-based costing for cost estimation, resource allocation, and budget execution. The thesis addresses the shortcomings of current budgeting practices by applying a modeling technique that was designed to facilitate cost identification for direct and indirect course costs, as well as allocation of overhead and general/ administrative costs, thereby providing for the association of costs with varying outputs.

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I. INTRODUCTION

Current practices for budget estimation in Marine Corps Formal Schools do not adequately identify cost variability when student throughput quantities are changed. In order to enhance cost estimation, thereby improving the capability to account for cost variability, a revised budgeting system, or methodology, needs to be evaluated. The budgeting system should be designed in a manner that reflects activity level which will reveal how costs change when the numbers or quantity of students change. This thesis addresses the shortcomings of the current practice by applying a spreadsheet modeling technique that was designed to facilitate cost identification and provide association of costs with varying outputs.

A. OVERVIEW OF BUDGETING PRACTICE

1. Current Practice

The current practice for command level budgeting at Marine Corps Formal Schools is based on fixed costs (civilian salaries, printing costs, or contracted services) and direct material costs for the offered courses. There is no estimate or breakdown of allocated and unallocated overhead costs based on student numbers or activity level among the school's courses. Within this methodology, overhead costs are aggregated under a single cost account code structure (School Administration), with subcategorized objective classes, which provide marginal visibility or identification with the outputs that are supported. The overhead costs that are collected under the School Administration cost account codes lose their identity in terms of allocation to the outputs that the school produces.

2. Shortcomings of Current Practice

The practice of not making an effort to associate overhead costs with the course, class, or individual student results in an inability to accurately estimate the requisite resources required when output requirements change. Incremental approaches to budget estimation, couched in inflationary factors or unsubstantiated percentage increases over prior year budgets based on forecasted student throughput is not

a practical means to determine the necessary operating budgets. This kind of arbitrary budgeting also becomes an easy target for equally arbitrary budget reduction. If budgets can be developed based on the relationship between cost and activity level, with costs allocated to the product, then more accurate budget estimates can be generated. In an era of declining defense budgets, cost estimation will require not just more detail, but verifiable justification in order to defend resource requirements. In order to overcome shortcomings described in the current approach to cost estimation, this thesis will attempt to use a spreadsheet to model the cost-volume relationship of various cost accounts and the flow of costs, which will greatly facilitate the development of a justifiable budget estimating model for Marine Corps Formal Schools.

3. Current Funding Situation

The Marine Corps, in real and cumulative terms, has absorbed a 21 percent reduction in resources since 1989. The Operations and Maintenance, Marine Corps (O&MMC) budget request for Fiscal Year 97 (FY 97) of $2.2 billion represents, in real terms, a decline of 11.7 percent over the FY 96 budget. The O&MMC budget supports Fleet Marine Force (FMF) operations and maintenance, logistics functions, recruiting efforts, as well as education and training. While the FMF costs are the largest portion of the O&MMC budget (46%), training costs equate to $198 million in the FY 97 budget request. [Ref. 1]

The Marine Corps' emphasis on its training and education process, which supports FMF operations, is a continuous focus on readiness and is inextricably linked to the O&MMC budget. When financial managers commit O&M funds, they are buying the goods and services that provide readiness. If O&M funds are not spent wisely, readiness suffers. Because past practices of annual/ incremental approaches to budgeting, it is one of the first places budget cutters look to reduce defense spending. [Ref. 2]

If the defense draw down is to continue through 1999, budget forecasts will be forced to incorporate improved techniques to ensure funding requirements are justifiable and not incremental

increases over previous year's spending. Without improved approaches to cost estimation and management of O&M budgets, which will accommodate enhanced strategies for budget determination, justification, and execution, these expense-type funds will remain a vulnerable target for resource reduction.

B. OBJECTIVES AND RESEARCH QUESTIONS

In an era of declining budget appropriations, DoD activities will have to evaluate improved methods and means to determine, justify, and execute budget allocations. It is no longer reasonable to continue to incrementally increase spending from a baseline, plus a percentage increase, to establish budgets or operating targets. The visibility of cost identification, cost management, and cost control will add credibility to budget submissions and execution. With increased scrutiny of defense appropriations, budgets must be thoroughly substantiated to insure that resources support defined requirements and are prudently executed. Under these circumstances, formulating models to link dollars to critical requirements may shift the focus from what can be done with fewer dollars to how much is required to effectively carry out the stated mission. Linking resources to requirements leads to more effective budget formulation, justification, negotiation, and execution under the circumstances of budget decline. [Ref. 3] If it is possible to logically and verifiably associate the requirements with the costs, relative to the service priorities, it would become less tempting for the budget providers to arbitrarily require the budget executors to accomplish the same or expanded missions with reduced resources. This thesis will evaluate a potential budgeting technique and the application of spreadsheet modeling for resource management in a military organization constrained by a fixed budget with multiple and varying outputs. Specifically, Marine Corps Formal Schools which must develop budget submissions based on numerous "production" inputs, instructional costs, overhead expenses, and "capital investment" requirements will be examined for potential employment of the methodology developed by this study. The modeling technique that will be employed in this thesis will be used to address the following primary and subsidiary questions:

Can a justifiable method, based on unit costing concepts, be used to develop budgets for Marine Corps Formal Schools?

1. Can formal school costs be correctly broken down into direct, indirect, overhead, and general/ administrative; and can costs be allocated to the outputs that are supported (produced)?

2. Is it possible to develop a spreadsheet budget model that can support cost estimation; resource allocations once budget requirements are identified; and budget execution once allocations are authorized?

C. METHODOLOGY

This thesis consists of the development of a conceptually sound spreadsheet model to overcome the shortcomings of the current practice used to generate budget requirements in Marine Corps schools. Even though the specific characteristics for overhead cost allocation are germane to a single command, the logical approach to cost estimation based on activity level and organizational dependencies is relevant to similar commands. While other means may be available to assess the impact of activity level on changing resource requirements, the approach presented in this thesis is intended to provide a tool by which cost estimation and resource allocation can be accomplished.

The conceptual foundation of the model is rooted in activity-based costing. For the purposes of this thesis, this method will incorporate the following three factors:

1. The identification of activities which consume resources, and the assignment of costs to those activities.

2. Computing a cost rate per cost driver unit.

3. Assignment of costs to products by multiplying the cost driver rate times the volume of cost driver units consumed by the product. [Ref. 4, p. 248]

D. SCOPE AND LIMITATIONS

This thesis will focus primarily on budgeting as it relates to Marine Corps Formal Schools, however, its application will be transferable to other activities that are analogous to the budgeting description described in the questions above. The portion of the operating budget that will be evaluated is the mission budget funded by O&MMC, Program 8 (Training, Medical, and Other General Personnel Activities). This thesis is not intended to factor in Base Operating Support, Military Personnel, Military Construction, or other appropriations that are beyond the scope of Program Objectives Memorandum submissions formulated by the school command. With the research questions mentioned earlier in mind, this thesis will analyze the feasibility of adopting a spreadsheet model currently taken by the Marine Corps Engineer School, Camp Lejeune, North Carolina. This spreadsheet approach to cost estimation, resource allocation, and budget execution is known as the Cost Estimation and Resource Allocation Model (CERAM).

While the model presented was developed by, and is currently solely utilized by the Marine Corps Engineer School, the design and application could be employed by other school commands or individuals involved in budget reviews. The model was designed to include, as accurately as possible, all relevant resources and activity levels associated with the mission budget for entry-level/ initial skill, functional, institutional, skill progression, and specialized skill training as defined in Marine Corps Order 1553.1B, The Marine Corps Training and Education System.

The current model was designed in 1994 to accommodate the 28 Programs of Instruction (POI's) that were presented or being developed at MCES. During FY96, POI's involving Engineer Equipment Operator and Maintenance training, Metalworking, and Refrigeration Maintenance were in the process of transfer to Fort Leonardwood, Missouri, and Aberdeen Proving Grounds, Maryland. Therefore, the segments of the model that were originally designed to incorporate these courses will be present in the CERAM, but will minimally contribute to the calculations. There were fixed costs that could not completely be removed from the model, therefore all costs and associated cell formulas were not removed.

In the majority of cases, the formal school's mission involves the training of entry level, noncommissioned officer, supervisory, and officer students. The modeling technique presented here is predicated on this assumption and is developed based on these levels of training when defining the model's requirements, relationships, and dependencies. Although the dependencies in the design of the CERAM were designed specifically by and for MCES, they are not intended to mimic, or be inclusive of all commands that have similar missions, however, the methodology is applicable to other school commands.

Data inputs for the model were provided by MCES and Manpower, Programming, and Budget Branch, Training and Education Division, Marine Corps Combat Development Command (T&E, MCCDC). Unless noted, all figures will be based on FY 96 training requirements and operating and mission costs. The cost estimates that are determined by the model outputs (to be presented in the appendices) will represent the minimum requirement for optimal operation of the school command. The original FY 96 budget allocation of $1.073 million received from T&E, MCCDC will be used to adjust the school's budget in the resource allocation portion of the model. This dollar figure will remain constant and will not be modified for any subsequent budget distributions made at the end of the fiscal year.

E. ORGANIZATION

The thesis is presented in six chapters. Chapter I provides a general introduction and relevance of the study to command level budgeting within the context of the larger Marine Corps O&M budget appropriation. The modeling technique is described at the level of the school command in which it is employed, and is offered as an alternative to incremental budgeting techniques that are arbitrary for accurate cost estimation. Chapter II presents the background for the mission and makeup of Marine Corps Formal Schools, Systems Approach to Training requirements, Programs of Instruction, the Training Input Plan, and unique definitions of Marine Corps terminology as it relates to budgeting and formal school issues. The chapter will serve to explain the "production" inputs to formal school requirements and how the training and education process operates. Chapter III describes the development of the CERAM. The

chapter will describe the requirement to accurately gather cost data, define dependencies and internal organizational relationships, develop a framework for model formulation and components, and construction of the spreadsheet estimation model. The model description provides a logic check or a validation of the outputs and evaluation of the methodology employed. Chapter IV provides a description and analysis of the Resource Allocation Model portion of the model and accompanying outputs. These outputs provide the basis for budget justification as well as annual execution and quarterly budget allocations at the work center and instructional section level of the command. Chapters III and IV will be heavily associated with the information contained in the appendices, where the model components will be provided in spreadsheet format. Chapter V provides conclusions for the spreadsheet budget model as employed by the Marine Corps Engineer School and offers recommendations for organizational evaluation and application of budget spreadsheet modeling techniques at other formal schools. Chapter VI addresses answers to the research questions, and provides conclusions, recommendations, and topics for further research. The model as developed can prove useful at the school command level as well as higher levels where budget review is performed. The value of the model is in its applicability for budget formulation, justification, negotiation, and execution, as well as its potential to assess the impact of increased activity levels or output requirements for the school.

II. MARINE CORPS FORMAL SCHOOLS AND ITS MISSION

A. IMPORTANCE OF MARINE CORPS EDUCATION AND TRAINING

The following excerpt from the Commandant of the Marine Corps' Five Pillars gives his intent, and as he describes, his most strongly held beliefs, about what is important for the future of the Marine Corps.

> During times of fiscal constraint the Marine Corps has always turned to its education and training systems to keep its war fighting edge. We will do that today. Each dollar spent in training will bring a solid return. The use of simulation, virtual reality, **models**, and various war fighting games can make subsequent field training more effective and, ultimately, less expensive. Therefore, we will pursue this type of technology. In the same vein, education will become central to all Marines-- not just a select few. Education and training provides the foundation for a Marine Corps that can adapt to a changing world. [Ref. 5]

In order to carry out the Commandant's intent, as provided in his Five Pillars, Marine Corps Formal Schools must insure that training dollars are judiciously budgeted for and executed in the most efficient and effective manner possible. In order to understand how the O&MMC appropriation, which funds the training and education budget allocation, can be most efficiently spent, one should have a background in the Marine Corps training and education process and the inputs which drive the activity level within a Marine Corps school.

B. WHAT IS MARINE CORPS TRAINING AND WHO DIRECTS IT?

Training and education are important but different tools to be used in the development of an effective fighting force. Each complements the other, but in the early stages of a Marine's career training receives the greater focus. The Marine Corps definition of training is, "the conduct of instruction, discipline, or drill; the building in of information and procedures; and the progressive repetition of tasks - the product of which is skill development and proficiency." [Ref. 6] Guided by this definition and under the authority vested in the Commandant of the Marine Corps (CMC) by 10 U.S.C., the Commanding General, Marine Corps Combat Development Command (CG MCCDC) advises and guides commanders in

all matters related to the development, management, and conduct of the conditions to fulfill the requirements of Marine Corps training. A dual tasked commander, CG MCCDC is also the Commanding General, Marine Corps Schools (CG MARSCHOOL) through which matters pertaining to operational control, technical direction, and coordination of all Marine Corps formal schools and training centers is managed. The integration of operational training management and formal school administration under one command aggregates all training functions under a single organization. This structure allows for a streamlining of the training requirements without duplication and unnecessary expenditure of resources. Additionally, the organization is essential for the "perpetual development of cost-effective, realistic, safe, modern, professional mission-oriented training and education conducted by the Fleet Marine Force (FMF) and within the Marine Corps supporting establishment." [Ref. 7]

Marine Corps Formal Schools are the subordinate organizations that fulfill the mandates laid down by the Commandant of the Marine Corps and CG MCCDC, in order to conduct the training functions required to sustain a well trained fighting force. The formal school is defined by Marine Corps Order 1553.1B as: A school which satisfies Marine Corps-wide training and education requirements; has facilities, funding and personnel requirements provided by the Marine Corps; has quotas normally controlled by CG MARSCHOOL (TE 33); is funded under program element number 847XX; and has course descriptive data approved by the CG MARSCHOOL for each course of instruction.

Marine Corps formal schools are therefore tasked with the development of formal courses of instruction based on systematically derived, organized and managed sequences of learning events conducted within Marine Corps training institutions for the purpose of fulfilling the specific training needs of the Marine Corps. The basis for the development of these training requirements is the Systems Approach to Training.

C. TRAINING DEVELOPMENT

The Systems Approach to Training (SAT) or Instructional Systems Design (ISD) is the cornerstone for the development of Marine Corps training and the instruction that is presented both in the formal school and in the operational environment. In addition to the application of this model for Marine Corps requirements, the SAT is also recognized as the standard governing the instructional process in the private sector and within the Department of Defense. SAT is a comprehensive methodology for analyzing, designing, developing, implementing, and evaluating the total process of learning and teaching in terms of specific objectives written to support task performance in the FMF. [Ref. 7] As such, the Marine Corps has adopted this model as the basis for curriculum design within its formal schools to insure that instructional needs and priorities are implemented in a competent and consistent manner.

1. Goals of Instruction

Based on SAT as the established procedures and methodology for training development, the objective for Marine Corps formal courses of instruction as defined by the SAT Guide is as follows:

> The goal of Marine Corps instruction is to develop performance-based, criterion-referenced instruction that promotes student transfer of learning from the instructional setting to the job. For a learning outcome to be achieved, instruction must be effective and efficient. Instruction is effective when it teaches learning objectives based on job performance requirements and efficient when it makes the best use of resources. [Ref. 7, p. ii]

When curricula are developed based on the systematic technique for instructional design, performance based standards and learning objectives that meet job requirements become the foundation upon which courses of instruction are focused. This effort is made before training begins in order to insure that the instructional approaches that are pursued are the most time and cost effective from the outset. Thus the intent of SAT is to be a cyclical process which allows for management of the overall instructional process from the analysis, design, development, implementation, and ultimately the evaluation of the cost effectiveness and credibility of the instruction presented.

2. SAT Phases

The SAT model divides the instructional process into five manageable and separate phases. Each stage has a specific purpose that includes inputs, a process, and outputs which form building blocks for each subsequent phase. With extraction from the SAT Guide, the five phases are presented in sequential order:

1. Analyze. A particular job or Occupational Field/Military Occupational Specialty (OccFld/MOS) is analyzed by MCCDC to determine who performs the job, in what order it is performed, and the standard of performance necessary to adequately execute the job. The resulting output of the analysis is the Individual Training Standard (ITS). ITS's are the behavior statements that define job performance in the Marine Corps and serve as the basis for all Marine Corps instruction. The three subsidiary analyses that are performed in conjunction with this phase are:

a. Job Analysis. Develops a list of all duties and tasks an individual could perform on the job.

b. Task Analysis. Determines the job performance requirements requisite of each task performed. This process derives a task statement which describes the event or function to be performed; conditions under which the event may be performed; a standard or level of mastery required; performance steps to accomplish the task; administrative instructions, and references. The output of this process is the ITS.

c. Selection of Tasks for Instruction. Determines instructional needs from selected tasks, and assigns a responsible instructional setting or formal school to perform the training.

d. Table 2.1 summarizes the Analyze Phase.

Input	Process	Outcome
Job Task Data	Job Analysis	Task List
	Task Analysis	Individual Training Standard (ITS)
		Instructional Setting

Table 2.1. The Analyze Phase.

2. Design. In the Design Phase, the formal school/training center course developers translate the ITS to the learning objective in order to simulate the actual application of the task to the instructional setting. The more closely the task can be simulated in the training environment, the more likely the translation to performance on the job. The course design phase is further subdivided into additional processes.

a. Write a Target Population Description. Defines the student population entering a course, insuring that only qualified individuals enter into training and alleviates sometimes costly personnel transfers if a student fails to meet the prerequisites for the course of instruction.

b. Conduct Learning Analysis. Conducted to develop the learning objectives, or what the students will do during instruction.

c. Write Test Items. Derived from the learning objectives to insure students master the information provided.

d. Select Delivery System. The delivery system is the means through which the instruction is provided. (e.g. Classroom instruction, practical application, on-the-job training)

e. Sequence Learning Objectives. Insures a logical and efficient transition among subjects instructed, and provides a framework for the draft course structure.

f. Table 2.2 summarizes the Design Phase.

Input	Process	Outcome
Individual Training Standard	Define Student Population	Target Population Description
	Conduct Learning Analysis	Learning Objectives
	Define Evaluation	Test Items
	Select Media and Method	Delivery System
	Organize Instruction	Sequenced Learning Objectives

Table 2.2. The Design Phase.

3. Develop. This phase rests on the outcomes of the Analyze and Design Phases. The first phase identified tasks and the desired level of mastery for performance. The second phase determined how to attain the goals by translating the job tasks into the instructional environment and began the development of a course of instruction. At this point the course developers of the formal school adapt the outputs to meet the requirements determined during the initial two phases. The effort to develop the course of instruction is levied upon the school in the following steps.

a. Develop Course Schedule. A detailed structure for the course which includes lesson length, titles, designators, and references is coordinated.

b. Develop Instruction. This section specifies the lesson plans and supporting course materials that instructors will use during the Implement Phase.

c. Develop Media. This portion develops the selected media from the Design Phase into a effective form for instructional presentation.

d. Validate Instruction. Course validation is performed to insure the effectiveness of the instructional material and any changes are made prior to implementation.

e. Develop Course Descriptive Data (CDD) and Program of Instruction (POI). The CDD is a detailed summary of the course including instructional resources, class length, and curriculum breakdown. The POI is a detailed curriculum breakdown which includes course structure, delivery system, length, learning objectives, and evaluation procedures. Each formal course of instruction must have a POI, which will serve as the structure upon which the detailed class material will be expanded in the form of lecture outlines (Master Lesson File), student handouts, and test materials.

f. Table 2.3 summarizes the Develop Phase.

Input	Process	Outcome
Learning Objectives	Organize Course	Course Schedule
Target Population Description	Develop Instruction	Master Lesson Files
Delivery System	Develop Media	Media
Test Items	Validate Instruction	Revised Instructional Materials
	Develop Supporting Course Materials	CDD/POI

Table 2.3. The Develop Phase.

4. Implement. During the implementation phase, the instructors at the formal school/ training center prepare for and deliver the instruction. The success of the phase rests in the effective and efficient delivery of the course material so that the student achieves mastery of the learning objectives. The two stages of the Implement Phase are: a) Prepare for instruction and b) Implement instruction. Table 2.4 summarizes the Implement Phase.

Input	Process	Outcome
Instructional Material	Prepare for Instruction	Delivery of Instruction
	Implement Instruction	Quantitative Course Data/ Measurement

Table 2.4. The Implement Phase

5. Evaluate. The Evaluate Phase measures the course effectiveness and efficiency. Since the SAT model is based on evaluation and revision, the model uses a formative and summative appraisal to insure that the instruction remains effective and efficient. The formative evaluation validates the course before implementation and makes the required revisions as iterations of the course progresses. The summative evaluation is conducted after implementation to measure student performance, course materials, instructor performance, and the instructional environment. This phase is valuable for the measurement of cost effectiveness of the course that is created during the Design and Develop Phases. The evaluation is conducted in three segments:

a. Plan and Conduct. Develops and implements a strategy for measuring the effectiveness and efficiency of a course.

b. Analyze and Interpret. Analysis of measured data to assess the effectiveness and efficiency of the course.

c. Document and Report. Evaluated data is documented so that instruction can be revised if necessary.

d. Table 2.5 summarizes the Evaluate Phase.

Input	Process	Outcome
Course Data	Conduct Formative Evaluation	Revisions to Instruction
	Conduct Summative Evaluation	Data on Instructional Effectiveness
	Manage Reported Data	Course Content Review Board

Table 2.5. The Evaluate Phase.

D. FORMAL SCHOOL RESPONSIBILITIES

The outputs of the SAT model from which formal school costs are incurred are the Course Descriptive Data (CDD) and the Program of Instruction (POI). As outputs of the Develop Phase of SAT, the CDD and POI detail the resource and support requirements for each course of instruction. Specifically, the POI presents the course in terms of structure, delivery methods and media, length, learning objectives, and evaluation procedures. The fulfillment of instructional requirements, which satisfy the Individual Training Standards (ITS's) performance based criterion, constitute the foundation for the POI and thereby the costs which must be incurred to meet the occupational skill requirements which the standards dictate. The CDD is a component of the POI which includes the instructional resources, class length, class capacity, class frequency, and student prerequisites. The CDD is submitted to the CG MCCDC with justification for resource requirements for new or updated courses. Without an approved CDD, the formal school cannot implement new or continuing courses, because the document details the cost and student prerequisite data

for each course. Once a CDD is approved and funded, it is then possible to assign students to the available class seats that were determined in the Develop Phase.

E. STUDENT ASSIGNMENT

Cost and training resource information contained in the CDD and Military Occupational Specialty manning/ activity level requirements from sponsors at Manpower and Reserve Affairs (MR&A) are inputted into the Training Resource Requirement Management System (TRRMS) database. This database is used to process course and student throughput requirements which generates a Training Input Plan (TIP). The TIP becomes the basis for the annual instructional requirement and forecasts a four year plan for student numbers or activity level. From the training requirements identified in the TIP, the formal school or training center develops annual/ quarterly course schedules, based on class capacities and available instructional resources, in response to the yearly published manpower requirements. From the data output of the TIP, the Training Resource Requirement Management System develops a Training Quota Memorandum (TQM), which in turn is loaded to the By Name Assignment (BNA) system. The TQM is produced for each course and is a breakdown by class number for available school seats. BNA is the automated information system which assigns specific students to available course seats. The completed procedures generated by these steps insure that the required courses are available, that school seats are available, and school costs are estimated. All of these functions are performed for the succeeding fiscal year plus one year. Thus the TIP becomes the execution plan for the next FY and the foundation for the production of TQMs for two years out. Figure 2.1 provides the process flow for student assignments.

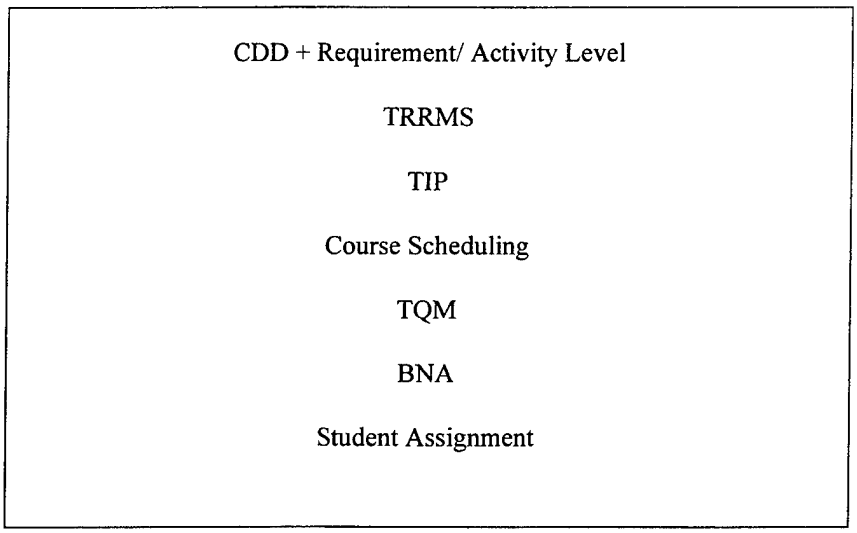


Figure 2.1. Student Assignment Process.

1. Training Echelons

The majority of training occurs early in a Marine's career, however there is continual emphasis on training and education that is progressive as the individual becomes more senior. While the bulk of Marine Corps Formal School's efforts and resources are dedicated to entry-level training, courses nor training officers, noncommissioned officers, and staff noncommissioned officers also are offered within the formal school environment. Along with an understanding of how a formal course of instruction is generated, it is also important to know what the levels or echelons of instruction entail. This knowledge will help explain how costs are estimated in the succeeding chapters. The following terms awe applicable to courses of instruction that are executed in Marine Corps Formal Schools.

1. Entry-Level Training. The combination of recruit training (or officer acquisition training) and initial skill training required to qualify for a Military Occupational Specialty (MOS), or to make a lateral move from one occupational field to another.

2. Specialized Skill Training. Training which provides Marines with the skills and knowledge needed to perform specific jobs/ Specialized skill training includes initial skill training, skill progression training and functional training.

a. Initial Skill Training. Training subsequent to recruit or officer acquisition training, which qualifies Marines in an MOS beyond the basic MOS. (Basic MOS's are generic occupational fields assigned upon completion of recruit or officer acquisition training. For example 0300 (Basic Infantryman) and 0301 (Basic Infantry Officer) are considered basic MOS's for Marines who have not completed Initial Skill Training, whereas 0311 (Infantryman) and 0302 (Infantry Officer) are MOS's which are assigned after completion of Initial Skill Training.) Initial Skill Training provides the Marine the proficiencies necessary to perform a mission required within the Fleet Marine Force or supporting establishment.

b. Skill Progression Training. Training that is received subsequent to initial skill training which provides a Marine with additional skills and knowledge required to perform in the same occupational field at a more skilled level or in a supervisory position.

c. Functional Training. Specialized skill training which provides additional skills without changing the Marine's primary specialty or skill level.

2. Training Resources

The resource requirements that are integral to the execution of any formal course of instruction are estimated based on the outputs of the training development system and the inputs that are generated by the manpower or training requirements described above. The training resources that are of interest to Marine Corps Formal Schools are the assets in all appropriations categories which are sponsored and/or supported by the CG MCCDC. (i.e. personnel, money, material, facilities, research and development)

With a background for the organization of Marine Corps schools, the development of instruction, and the training input requirements, it is necessary to develop an ability to estimate the resources that are needed to implement the courses of instruction. Chapter III will address the issue of cost estimation and resource allocation to support the courses of instruction offered within Marine Corps Formal Schools. The model that was developed by the Marine Corps Engineer School will serve as a logical approach for

estimation and management of the costs that are incurred by the formal school, based on the output of the SAT process and the annual/ out year manpower training requirements.

III. CERAM DEVELOPMENT

A. REQUIREMENT

As described in the introduction to this thesis, the current practice in budget estimation in Marine Corps Formal Schools does not adequately identify cost variability when student throughput quantities change. In order to overcome this deficiency, a budgeting method which will reflect changes in activity levels could be employed, which would facilitate cost identification and provide association of costs with varying outputs when budgets are developed and/or revised during a fiscal year.

Since activity level, or changes in the numbers of students, is the driving factor in variable costs incurred by the formal school, activity-based costing methods such as the one used at the Marine Corps Engineer School, are an invaluable feature of any budget model that can be used to estimate costs based on changing output requirements. The technique for activity-based costing that is incorporated into the Marine Corps Engineer School Cost Estimation and Resource Allocation Model (CERAM) is built around the three basic premises of activity-based costing:

1. There are identifiable activities which consume resources, and costs can be assigned to those activities.

2. A cost driver rate can be computed per cost driver unit.

3. Costs can be assigned to products by multiplying the cost driver rate times the volume of cost driver units consumed by the product.

The "functions" sections of Appendix B, CAC/Cost Relationships and Functions will detail the activity-based concepts provided above. The development of the CERAM took these three factors into consideration when internal organizational resource requirements and dependencies were assessed, when the impact of the Training Input Plan demands were evaluated, and when the current accounting and cost accumulation methods were examined. However, it was not initially possible to determine the impact of activity level (cost driver units) on the cost driver rate, that is the amount of resources the individual class

or student consumed. Therefore, the model was developed and designed in order to assess the requirements for the fixed, variable, and overhead costs; and to better understand how costs that had traditionally not been allocated to the cost drivers (students) affected the budget estimation for the school. With these factors in mind, the CERAM was developed in two parts: 1) The Cost Estimation Model, and 2) The Resource Allocation Model. Chapter III will discuss the cost estimation inputs and computations, and Chapter IV will be dedicated to the resource allocation once costs are estimated and funded.

B. MARINE CORPS ENGINEER SCHOOL COST ESTIMATION MODEL

1. Objective

The cost estimation model was designed to estimate overhead and course costs which are direct Program 8 O&MMC costs to operate MCES and conduct the school's Programs of Instruction. The model was also designed to forecast Program Objectives Memorandum requirements and determine funding requirements by objective class (OC) and cost accounting codes (CAC). The model also furnishes some "gaming" capability to focus on specific cost elements, and/or measure differential costs for changes in activity level for the number of classes or student population for either the current year or for the four years projected in the Training Input Plan.

2. Background

The model was created because of the need to establish a management tool for an era of tightening resources and greater demand to justify resource requirements. The modeling technique allows the user to analyze and establish a pattern of interrelationships among cost and expenditure histories down to the course, class, and student activity level. The model can also be used to determine those costs aggregated under general or overhead CAC descriptions which can reasonably be allocated to POI's.

3. Assumptions

When the cost estimation model was developed, the assumption was made that the prior years' cost history provided a reasonable basis to make future year forecasts. Additionally, it was determined that the school's operating costs were a function of multiple conditions:

1. Unallocable general support costs.
2. Allocable direct costs which:
    a. Support the capability to conduct individual POI's independent of the others.
    b. Support the instruction for each class iteration in a POI (i.e. cost per class).
    c. Provide instructional materials, administration, and other support for each student in a class (i.e. cost per student).

4. Constraints

A formal, well-defined data collection plan and criteria for "sanitizing" data (separating the costs within each POI or instructional company) did not exist, and techniques to capture costs and cost relationships varied widely among the instructional companies and supporting staff sections. Additionally, a cost accounting system for MCES has not yet been fully established, therefore costs could not be accurately collected from prior year obligations. Finally, future course costs for POI's expected to be added to the MCES curriculum, but not yet developed and approved, could only be "guesstimated" until the Individual Training Standards were published by MARSCHOOL/ MCCDC.

C. MODEL DESIGN

The objective of the cost estimation model is the determination of operating and maintenance costs, and assignment of those costs to specific POIs, where possible. The model is designed to compare cost relationships based on historical cost experience and analysis of current, recurring, and/or future costs. Cost relationships were based on two general categories of costs, either direct or indirect. Direct costs were specifically identifiable with a course of instruction. (e.g., class IV items in support of the vertical

construction annex of the Basic Combat Engineer POI; lumber, nails, barbed wire, etc.) These costs are allocable to the course itself since they are directly identifiable with the POI. Indirect costs are not directly attributable to any one specific POI. However, based on analysis, there are many indirect costs which can be allocated in support of more than one function or POI. Thus, there are:

1. Indirect costs (non-allocable): An example of an indirect non-allocable cost is part or all of labor costs for the position of Legal Technician which are not allocated to any specific courses because there is not a definitive or predictive pattern on how much work supports any one, or group of, courses.

2. Indirect costs (allocable): Part or all of the costs can be "reasonably" apportioned/assigned in support of other functions or courses. For example, some of the labor costs for the Academic Administration Supervisor are in general support of school operation/administration; however, part of these costs can be definitively and predictably assigned to specific courses. Thus an allocable indirect cost can be either fully or partially allocable.

1. Cost Relationships

Cost relationships are established in the model by comparing the reason(s) the cost is incurred. Is the cost incurred solely in support of a course itself, or is part or all incurred in support of other functions which are related to the courses? For example, is all funding for the Graphics Section supporting the "functioning" of the Graphics Section, or are some or all costs "assigned" to Graphics being spent in support of specific POIs?

2. Model Construction

The model was constructed based upon a "down and right" approach to deriving the total school cost forecast. The most difficult challenge was to determine what costs assigned to non-POI CAC's (overhead CAC's) were actually attributable to POI's. The model logic and model construction were formatted as shown in Figure 3.1 by addressing indirect non allocable costs first, then indirect allocable costs, and finally direct costs. Using this scheme and the definitions contained in the preceding paragraphs,

the cell grouping for direct non allocable costs (i.e., IV) would remain blank if the cost relationships are correctly identified/categorized.

	Indirect Costs	Direct Costs
Non-allocable Costs	I	IV
Allocable Costs	II	III

Figure 3.1. Model Construction Logic.

3. Model Matrix

The model was laid out using Cost Accounting Codes to classify costs and facilitate the use of historical costs which are documented by the school's CAC structure. Individual tables within the model were designed using CACs and then sub-classifying CACs according to functional areas when the code was assigned to more than one cost center/ function. The "V", which is the leading character for MCES accounting codes, was dropped off each official designator since all CACs at MCES have that alpha character in common. Thus, the CAC V2H1 became 2H1. For a CAC which was an "umbrella" CAC, covering several sub-functions, an additional designating "alpha" character was added at the end of the CAC. For example, the CAC V2H2 covers both contracts and maintenance. Since the MCES accounting system allocates funding under this CAC to both functional areas, then 2H2A is assigned to contracts and 2H2B is assigned to maintenance.

The model construct assigns CACs to a matrix position as represented by Figure 3.2. CACs associated with indirect costs are listed first, both down and also to the right (across) and correspond to the

appropriate allocation category. The next segment of costs are listed in the same manner, but are the direct costs which are the CACs for the individual courses.

		Indirect Costs 2H0A 2HIR	Direct Costs GB0 .....FJO
Non-allocable Costs	2H0A ⋮ 2HIR	I	IV
Allocable Costs	GB0 ⋮ FJ0	II	III

Figure 3.2. Model Matrix Construction.

The model construct calculates cost relationships and functions by going down a CAC column CAC-by-CAC, and then going to the next column to the right and working down again. Refer back to Figure 3.2 for the following example: The first relationship computed, going down the column, is 2H0A costs in support of itself. Next is 2H0A costs in support of other functions which are <u>not</u> courses (the term "non-allocable" applies to whether or not the costs are attributable to a specific POI; not whether or not the costs can be spread to other CACs.) After this second set of computations, all relationships in Section I of the matrix are computed. Then, the same types of computations are made for each course CAC (Section II). Once all relationships under 2H0A are established, then the next column (2H0B) is computed in a similar set of steps. If relationships are correctly assessed, there should be no cell entries in Section IV. Thus, the model construct, based on its formulated logic, has certain "logic checks" to aid in making correct assessments.

D. SPREADSHEET DESIGN AND COMPONENTS

1. Spreadsheet Format

The cost estimation portion of the spreadsheet model is segregated into numerous components. Each component is referred to as a Data Set. Figure 3.3 is a summary of the model format which includes all of the elements of the cost estimation portion of the CERAM.

DATA SET 1: MODEL INPUTS

* Setup data	(Tables 1A, 1B, and 1C)
* Civilian labor	(Tables 2A, 2B, 2C, and 2D)
* TQM/TIP data	(Tables 3A and 3B)
* Replacement/Investment	(Tables 4A and 4B)
* Maintenance	(Tables 5A and 5B)
* Direct materials for courses	(Tables 6A and 6B)

DATA SET #2: COMPUTATIONS

DATA SET #3: REPORTS

* Programming (by OC) estimates	(Report 1)
* Summary of cost information	(Report 2)
* Budgeting (by CAC) estimates	(Report 3)

Figure 3.3. Spreadsheet Format Summary.

2. Data Sets

The information contained in Figure 3.3 will be detailed in Appendix A, B, and C in order to describe the purpose, makeup, and specific setup data for each computation, table, or report. Appendix A (Model Inputs) will detail the components of Data Set #1. The corresponding table, spreadsheet cell formulas, and data inputs are included sequentially for ease of following the flow of each table description. Appendix B (Overhead CACs) will provide overhead cost information, principle CAC cost elements, CAC relationships, and data for the individual CAC that contributes to overhead functions and allocations to POIs, which are integral to the calculations performed in Data Set #2 (Cost Estimation Computation.) Appendix C (Reports) will detail the three reports contained in Data Set #3. The reports are output

summaries of the budget estimates that are computed in Data Set #2, and comprise the data inputs to the Program Objectives Memorandum (POM) submission.

3. Example of a CAC in the Cost Estimation Model

The following example will track the flow of a cost accounting code through the computations in the Cost Estimation Model (CEM). It will facilitate the understanding of how the model calculates an estimated budget for a specific CAC (GK0, Basic Combat Engineer) and will serve as a surrogate for all of the information contained in the appendices supporting this chapter. Table 3.1 provides the model spreadsheet levels which lists the general data or calculations that are contained in each sheet.

Sheet	Purpose
A	Data input for operating and civilian labor costs.
B	Data input for direct material and maintenance shop costs.
C	Reserved for future use.
D	Sources data from Sheet A for model computations. (Table 1A)
E	Computes civilian salaries, benefits, and allocation percentage for civilian costs. (Table 2A)
F	Distribution of allocated civilian labor costs for overhead. (Table 2C)
G	Distribution of allocated civilian labor costs for courses. (Table 2D)
H	Student throughput data for projected year. (Table 3A) Annual student throughput from TIP. (Table 3B)
I	Replacement/Enhancement/Investment inputs and calculations. (Table 4A)
J	Maintenance section costs. (Table 5A)
K	Course material costs sourced from Sheet B.
L	Cost Estimation Model.
M	Programming by Objective Class. (Report #1)
N	Summary of cost estimation information. (Report #2)
O	Resource Allocation Model inputs. (Report #3)

Table 3.1. Model Spreadsheet Levels.

a. CAC Overhead Costs (GK0)

The overhead CAC computations and total cost for GK0, Basic Combat Engineer are presented in Table 3.2.

Sheet	Address	Cell Information	Input Location / Calculation	Cost ($000)	Qty
D	H14	BEQ cost per person	A:H12	0.010	
	H19	Base printing cost per person	A:H17	0.020	
	G20	Headquarters admin. cost per class	A:G18	0.020	
	H21	Personnel section cost per person	A:H19	0.002	
	G22	Graphics section cost per class	A:G20	0.120	
	G23	School Reproduction cost per class	A:G21	0.030	
	H26	Laundry cost per person	A:H24	0.001	
E	C6..H14	Civilian labor costs and allocations	A:O22..A:O29		
H	F21	Annual student throughput	From TIP		1,008
	G21	Number of classes for the year	@INT((F21/29.5)+0.9)[1]		35
	H21	Course counter, if active course = 1	@IF((G21=>1),1,0)[2]		1
G	P7	H21 = 1	GK0 is an active course.		
	P42	Sum of the distribution of allocated civilian labor costs to GK0		3.340	
J	E25	Maintenance section costs		0.330	
L	C47	Inputs civilian labor costs in CEM.	G:P42	3.340	
	E47	Calculates Base Printing cost.	D:H19*H:F21	16.130	
	G47	Calculates Headquarters admin costs	D:G20*H:G21	0.530	
	H47	Calculates Personnel section costs	D:H21*H:F21	1.710	
	I47	Calculates Graphic section costs	@IF(H:G21<1,0,D:F22) +(D:G22*H:G21)[2]	4.730	
	J47	Calculates School Reproduction costs	D:G23*H:G21	0.880	
	K47	Calculates BEQ costs	D:H14*H:F21	8.060	
	M47	Calculates laundry costs	D:H26*H:F21	1.010	
	V47	Calculates maintenance costs	J:D25+(J:E25*H:G21)	11.550	
M	F27	POM forecast for allocated civilian labor cost - salary	E:F3*L:C47	2.810	
	G27	POM forecast for allocated civilian labor cost - benefits	E:H3*L:C47	0.530	
	I27	POM forecast, umbrella CAC 2H0	L:E47	16.130	
	J27	POM forecast, umbrella CAC 2H1	L:I47	4.730	
	K27	POM forecast, umbrella CAC 2H2	L:S47	0	
	L27	POM forecast, umbrella CAC 2H1	@SUM(L:F47..H47, J47, R47)	12.190	
	M27	POM forecast, umbrella CAC 2H2	@SUM(L:V47..W47)	11.550	
	O27	Computes sum of allocated costs	@SUM(F27..N27)	117.93	
N	G20	Annual student throughput	From TIP		1,008
	H20	Sum of allocated costs	M:027	117.93	
	I20	Cost per student	@IF(N:G20=0),0, (N:H20/ N:G20)[2]	0.120	

Table 3.2. Overhead Cost Information for CAC GK0.

[1] @INT(x) This formula returns the integer portion of a value, rather than a decimal value.

[2] @IF(condition;x;y) This formula takes on action if a condition is true; another if false.

b. CAC Direct Course Costs (GK0)

The direct course CAC computations for GK0, Basic Combat Engineer are presented in Table 3.3.

Sheet	Address	Cell Information	Input Location/Calculation	Cost ($000)	Qty
H	F21	Annual student throughput	From TIP		1,008
	G21	Number of classes for the year. The class capacity for Basic Combat Engineer is 30 students. This formula is designed to divide the total throughput by class capacity, and round the value to the nearest integer, insuring all will not be over capacity, yet insuring an adequate number of classes are available	@INT((F21/29.5)+0.9)		35
	H21	Course counter, if the figure in cell G21 is greater than or equal to "1", then the course is active	@IF((G21=>1),1,0)		1
J	E25	Maintenance section cost per class	B:C24	0.330	
	G25	Company level maintenance per course	B:D24	0	
	H25	Company level maintenance per class	B:E24	0	
K	F20	Direct Material cost per course		0	
	G20	Direct Material cost per class		2.000	
	H20	Direct Material cost per student		0	
L	Y47	Calculates direct material cost per class	K:F20+(H:G21*K:G20) +(H:F21*K:H20)	70.000	
M	N27	POM forecast, direct materials	L:Y47	70.000	

Table 3.3. Direct Course Cost Information for CAC GK0.

A more detailed summary of the information in Tables 3.2 and 3.3 is presented in Appendices A through C. A review of the appendices will draw together the information provided in this section and the chapter as a whole. Additionally, the remainder of the overhead and course CACs will be described with more specific annotations for the activity-based costing concepts.

4. Resource Allocation Model

Once the POM submission is completed from the data outputs of the cost computations, the mission budget is funded by the Program 8, O&MMC appropriation. If the budget does not reflect the optimal resources required to operate and maintain the organization, then there is a need to determine how to allocate the budget across the individual supporting and instructional sections' cost account structure and activity level requirement. Chapter IV will introduce and discuss the resource allocation portion of the Marine Corps Engineer School CERAM. The input to the resource allocation model will be the budget allocation that is provided in response to the POM submission.

IV. RESOURCE ALLOCATION

A. RESOURCE ALLOCATION MODEL

The resource allocation component of the CERAM is designed to translate the comptroller authorized budget, which may be less than the optimal resource requirements computed in the Cost Estimation Model, into the allowable expenditure levels within the instructional and support sections of the school. The Resource Allocation Model distributes funds to the same cost accounting codes that were used to estimate the budget requirements in Cost Estimation Model, but in all cases allows for manipulation of funding priorities and preferences. The model allows the user to determine how the budget allocation is executed, by CAC, in order to most judiciously execute/obligate the available funding.

1. Objective

The resource allocation model was intended to build an annual budget for Program 8 O&MMC funding to operate the Marine Corps Engineer School and conduct its Programs of Instruction. The model was also designed for use to facilitate allocating the funding available to cost accounting codes (CAC) and work centers (WC); balance funding received against actual requirements; and furnish some "gaming" capability to make funding tradeoffs if the operating budget was not the optimal funding level required to manage the organization.

2. Background

The model was created because of the need to link outputs from the MCES Cost Estimation Model with budgeting actions, and to establish a management tool to make funding tradeoffs when funding is less than requirements. The model also has the capability to identify unfunded deficiencies and to analyze funding shortfalls and required tradeoffs for funding POIs or making investments.

3. Assumptions

When the resource allocation model was developed, funding requirements calculated by the Cost Estimation Model were determined to be a reasonable forecast of the actual budget requirements when adjusted for inflation. Additionally, budget allocations, by CAC and WC, from the cost estimation computations were determined to be a reasonably accurate guide for apportioning the budget; and the proportion of total annual student throughput occurring in each quarter provided a reasonable estimate of the proportion of annual costs which would be incurred in each quarter.

4. Constraints

The budget estimates computed in the Cost Estimation Model, and consolidated in the Program Objective Memorandum (POM) submission, were calculated in constant dollars for a given fiscal year. When the POM is submitted through the review process, inflation indices are applied to the estimated cost computations. Thus, the greater the difference between the estimation in constant dollars for the year that is forecasted, and the inflation adjusted budget year when the budget is funded, the more likely the cost estimation could under or over estimate actual budget year costs. Additionally, the Resource Allocation Model perpetuates any errors or miscalculations contained in the Cost Estimation Model, which would cause the allocations to be improperly computed.

B. MODEL DESIGN

The model was designed to allocate budget year funding in support of estimated requirements, using inputs for the budgeted year's total obligation authority (TOA), any comptroller imposed budget controls (by quarter), fixed obligation calculations, Training Quota Memorandum (TQM) data and the cost estimates from the Cost Estimation Model. The model provides a guide for allocation of available funding, and furnishes a basis to compare the allocation with estimated requirements.

The model user has the ability to determine how to allocate the TOA for the year by adjusting the allocation factors within the model, after which the model spreads the allocation by quarter based on the

budget control requirements and any predetermined fixed obligations that may be necessary. The method for adjusting the allocation factors considers two elements in the computations:

1. The first factor, or percentage calculation, is used to make an evaluation of the distribution, or activity level, based on individual course/student throughput timing (i.e. the number of students for each course occurring in each quarter) against the budget allocation constrained by the quarterly budget controls, which are comptroller generated.

2. The second factor, or percentage calculation, is used to make an evaluation of the distribution of resource requirements based on a forecast of when funding obligations will occur vis a vis the budget allocation. (This includes an examination of the following year's TQM to determine 4th quarter obligations which should be incurred in support of requirements for the start of the 1st quarter for the next fiscal year)

Finally, the model has the capability to compare requirements (as forecasted from the Cost Estimation Model) to the comptroller provided budget allocation to determine unfunded deficiencies by individual CAC. The budget inputs, factor adjustments, deficiency determination, computations, and model outputs will be detailed in Appendix D.

C. SPREADSHEET DESIGN AND COMPONENTS

1. Spreadsheet Format

The resource allocation portion of the CERAM is segregated into numerous components. As in the cost estimation section of the model, the components are referred to as Data Sets. Each spreadsheet is designed to compute funding allocations and comparisons on an annual and quarterly basis for all Program 8 O&MMC TOA. The spreadsheet is organized as shown in Figure 4.1.

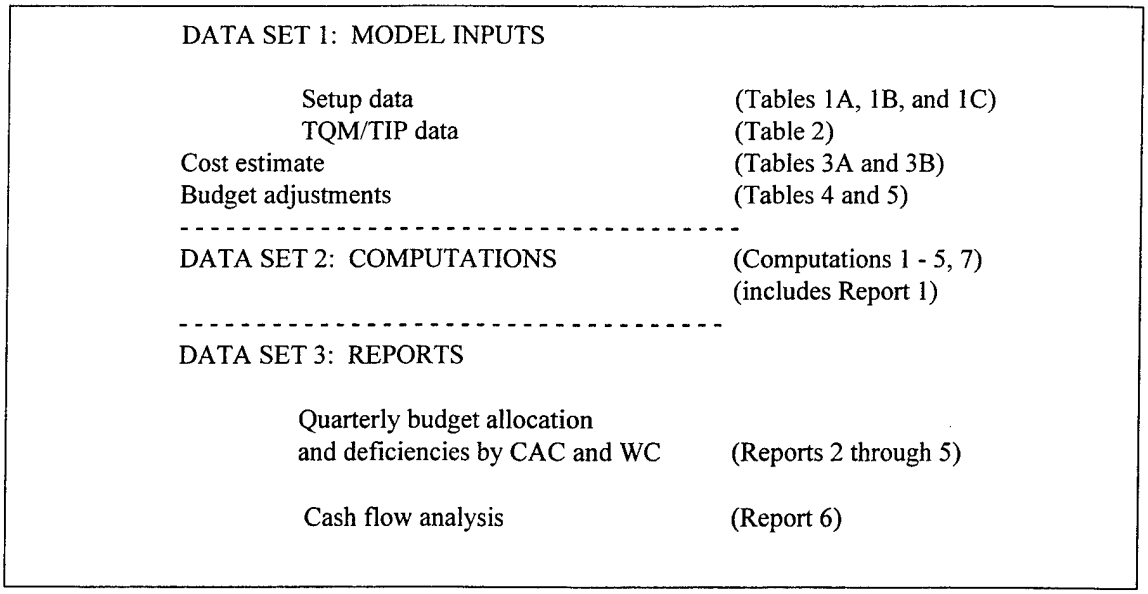


Figure 4.1. Spreadsheet Format Summary.

2. Data Sets

The information contained in Figure 4.1 will be detailed in Appendix D in order to describe the purpose, makeup, and specific set up data for each computation, table, or report. As established in Chapter I, the MCES budget authorization of $1.073 million for FY 96 will be used to adjust the school's budget in this portion of the model. This dollar figure will remain constant and will not be modified for any subsequent budget distributions made at the end of the fiscal year. With the fixed budget allocation, Data Set #1 is used to input or setup the remaining computations in Data Sets #2 and 3. The comptroller provided TOA and quarterly budget constraints, quarterly student activity level for the current fiscal year and the first quarter of the following year, estimations calculated from the Cost Estimation Model, and percentage and numerical adjustments to the budget are combined to be sourced by the computations in Data Set #2. Data Set #2 (Computations 1 through 4) are calculated in percentages of effort for the inputted activity level or resource requirement needed to fund the Programs of Instruction and the support sections (work centers) that contribute to the instruction of POIs. Computation 5 calculates the cost estimate by quarter and total for the fiscal year based on the requirement determined in the Cost Estimation

Model, and serves as a baseline from which budget adjustments and or percentage factor adjustments are computed in Report #1 of Data Set #2. Computation 7 calculates the cost estimate by quarter and for the fiscal year based on the activity level requirements of the first quarter of the following year to ensure that resources are properly obligated at the end of the fiscal year.

Data Set #3 (Report 2A/B through 5A/B) provides reports, by quarter, for the estimated budget requirement, the authorized budget, the difference between requirement and budget, and the percent of authorized budget for the quarter. The reports are computed based on the budget adjustments calculated in Data Set #2, and are predicated on the activity level factors for student throughput, work center resource requirement factors, and scheduled obligation factors. From these reports, subordinate reports compute the allocation of the authorized budget to the individual work centers and Programs of Instruction. The final report, Report 6, provides an obligation rate or cash flow requirement in consolidated format which identifies funding shortages and/or surpluses, relative to the authorized TOA.

3. Example of a CAC in the Resource Allocation Model

The following example will track the flow of a cost accounting code through the computations in the Resource Allocation Model. It will facilitate the understanding of how and where the model calculates the allocated budget for a specific CAC (GK0, Basic Combat Engineer) and will serve as a surrogate for all of the information contained in Appendix D supporting this chapter. Table 4.1 provides the model spreadsheet levels which lists the general data or calculations that are contained in each sheet. Table 4.2 will provide the location, cell information, input location/ calculations, costs, factors and/or percentages involved in the computations.

Sheet	Purpose
P	Data input for fiscal year TOA and Comptroller imposed budget restrictions. Calculates scheduled obligations and allows input of unscheduled obligation rates. (Tables 1 A,B,C)
	Data for student throughput and number of courses. (Table 2)
Q	Total cost estimate from Report #3, of Cost Estimation Model. (Tables 3 A, B)
R	First budget adjustment, calculates percentage of budget to be funded based on total annual budget requirement. (Table 4)
S	Second budget adjustment, calculates by addition/subtraction finer adjustment to budget computed in Table 4.
T	Student throughput factors, activity level by quarter. (Computation #1)
U	Cost estimate factors, quarterly obligation rates based on student throughput. (Computation #2)
V	Work center factors, proportional share of required funding from CEM. (Computation #3)
W	Budget factors, proportional share of TOA allocated by quarter based on budget controls. (Computation #4)
X	Cost estimate by quarter, allocation of required funding based on scheduled obligations, cost estimation factors, and distribution of TOA. (Computation #5)
Y	Computes the quarterly allocation of TOA for the fiscal year. (Report #1)
Z	Computation of quarterly funding allocation to support current quarter obligations. (Computation #7)
AA, AB AC, AD	Quarterly budget by CAC and WC. (Reports #2, 3, 4, 5)
AE	Obligation/ cash flow analysis. (Report #6)

Table 4.1. Model Spreadsheet Levels.

Sheet	Address	Cell Information	Calculation	Cost ($000)	% or Quantity
P	B10	Total TOA authorized	Inputted data	1073.270	
	C12..F12	Quarterly TOA constraints	Comptroller specified		
	C14..F14	Percentage of TOA by quarter	(C12-D29)/E31 (D12-E29)/E31 (E12-F29)/E31 (F12-G29)/E31		31.00% 33.46% 17.29% 18.21%
	D29..G29	Quarterly scheduled TOA obligations	Computed fixed costs independent of GK0		
	C23..G25	Scheduled obligations by CAC	@SUM(D23..G25)		
	C29	Total scheduled obligations	@SUM(C23..C28)	365.290	
	E31	TOA available after scheduled obligations	B10-C29	707.980	
	B39..E39	Unscheduled TOA obligation rates	Inputted data		25%
	L21	Budget year 1st quarter student throughput	From TQM		245
	M21	Budget year 2nd quarter student throughput	From TQM		272
	N21	Budget year 3rd quarter student throughput	From TQM		245
	O21	Budget year 4th quarter student throughput	From TQM		245
	K21	Budget year total student throughput	From TQM		1,008
	Q21	Following year total student throughput	From TIP		917
	R21	1st quarter of following year student throughput	From TIP		223
Q	F44	Direct course material costs	O:E46	70.000	
	P44	Direct course material costs - allocated to WC (CEIC)	Q:F44	70.000	
R	C43	First budget adjustment-percentage	Inputted adjustment		100%
	D43	Direct course material costs	Q:F44	70.000	
	E43	Percentage adjustment	R:C43/100*R:D43	70.000	
S	C43	Second budget adjustment- add	Inputted adjustment	0	
	D43	Second budget adjustment-subtract	Inputted adjustment	0	
	E43	From percentage adjustment	R:E43	70.000	
	F43	Value/numerical adjustment	(E43+C43)-D43	70.000	

Table 4.2. Cost Information for CAC GK0.

Sheet	Address	Cell Information	Calculation	Cost ($000)	% or Quantity
T	C45	Student throughput factor 1st quarter	@IF((P:K21=0),0, (P:M21/ P:K21)		0.270
	D45	Student throughput factor 2nd quarter	@IF((P:K21=0),0, (P:N21/ P:K21)		0.240
	E45	Student throughput factor 3rd quarter	@IF((P:K21=0),0, (P:O21/ P:K21)		0.240
	F45	Student throughput factor 4th quarter	@IF((P:Q21=0),0, (P:R21/ P:Q21)		0.240
	G45	Sum of student throughput factors	@SUM(C45..F45)		1.000
U	C43	Cost estimate factor 1st quarter	@IF((P:K21=0),0, (P:M21/ P:K21)		0.270
	D43	Cost estimate factor 2nd quarter	@IF((P:K21=0),0, (P:N21/ P:K21)		0.240
	E43	Cost estimate factor 3rd quarter	@IF((P:K21=0),0, (P:O21/ P:K21)		0.240
	F43	Cost estimate factor 4th quarter	@IF((P:K21=0),0, (P:O21/ P:K21)		0.240
	G43	Sum of cost estimate factors	@SUM(C43..F43)		1.000
V	K43	WC cost factor	@IF((Q:D44=0),0, (Q:P44/Q:D44)		1.000
W	C43	Percentage of TOA 1st quarter	P:C14		0.310
	D43	Percentage of TOA 2nd quarter	P:D14		0.340
	E43	Percentage of TOA 3rd quarter	P:E14		0.170
	F43	Percentage of TOA 4th quarter	P:F14		0.180
	G43	Sum of percentages, TOA by qtr	@SUM(C43..F43)		1.000
X	C43	Cost estimate for 1st quarter	Q:D44*U:C43	17.030	
	D43	Cost estimate for 2nd quarter	Q:D44*U:D43	18.920	
	E43	Cost estimate for 3rd quarter	Q:D44*U:E43	17.030	
	F43	Cost estimate for 4th quarter	Q:D44*U:F43	17.030	
	G43	Sum of cost estimates by quarter	@SUM(C43..F43)	70.000	
Y	C43	1st quarter allocation of TOA	S:F43*W:C43	21.700	
	D43	2nd quarter allocation of TOA	S:F43*W:D43	23.420	
	E43	3rd quarter allocation of TOA	S:F43*W:E43	12.110	
	F43	4th quarter allocation of TOA	S:F43*W:F43	12.750	
	G43	Sum of quarterly allocation of TOA	@SUM(C43..F43)	69.970	
	I43	Direct course material costs - allocated to WC (CEIC)	Q:P44	70.000	
	J43	Difference between cost estimate and allocation	I43-G43	0.030	

Table 4.2. (con't) Cost Information for CAC GK0.

Sheet	Address	Cell Information	Calculation	Cost ($000)	% or Quantity
Z	C43	1st quarter obligations	Q:D44*T:C45	18.920	
	D43	2nd quarter obligations	Q:D44*T:D45	17.030	
	E43	3rd quarter obligations	Q:D44*T:E45	17.030	
	F43	4th quarter obligations	Q:D44*T:F45	17.030	
	G43	Sum of quarterly obligations	@SUM(C43..F43)	70.000	
AA	D45	Cost requirement for 1st quarter	X:C43	17.030	
	E45	1st quarter budget allocation	Y:C43	21.700	
	F45	Difference between budget and requirement	E45-D45	4.670	
	G45	Percent that CAC is funded	@IF((D45=0),0, (E45/D45)		127%
	K105	Budget allocation to WC	E45*V:K43	21.700	
AB	D45	Cost requirement for 2nd quarter	X:D43	18.920	
	E45	2nd quarter budget allocation	Y:D43	23.420	
	F45	Difference between budget and requirement	E45-D45	4.500	
	G45	Percent that CAC is funded	@IF((D45=0),0, (E45/D45)		124%
	K105	Budget allocation to WC	E45*V:K43	23.420	
AC	D45	Cost requirement for 3rd quarter	X:E43	17.030	
	E45	3rd quarter budget allocation	Y:E43	12.110	
	F45	Difference between budget and requirement	E45-D45	-4.920	
	G45	Percent that CAC is funded	@IF((D45=0),0, (E45/D45)		71%
	K105	Budget allocation to WC	E45*V:K43	12.110	
AB	D45	Cost requirement for 4th quarter	X:F43	17.030	
	E45	4th quarter budget allocation	Y:F43	12.750	
	F45	Difference between budget and requirement	E45-D45	-4.280	
	G45	Percent that CAC is funded	@IF((D45=0),0, (E45/D45)		75%
	K105	Budget allocation to WC	E45*V:K43	12.750	
AE	D43	Obligation for 1st quarter	Z:C43	18.920	
	E43	1st quarter budget	Y:C43	21.700	
	F43	Difference between budget and obligation	E43-D43	2.780	
	H43	Obligation for 2nd quarter	Z:D43	17.030	
	I43	2nd quarter budget	Y:D43	23.420	
	J43	Difference between budget and obligation	I43-H43	6.400	

Table 4.2. (con't) Cost Information for CAC GK0.

Sheet	Address	Cell Information	Calculation	Cost ($000)	% or Quantity
AF	D43	Obligation for 3rd quarter	Z:E43	17.030	
	E43	3rd quarter budget	Y:E43	12.110	
	F43	Difference between budget and obligation	E43-D43	-4.920	
	H43	Obligation for 4th quarter	Z:F43	17.030	
	I43	4th quarter budget	Y:F43	12.750	
	J43	Difference between budget and obligation	I43-H43	-4.280	

Table 4.2. (con't) Cost Information for CAC GK0.

A more detailed summary of the information in Tables 4.1 and 4.2 is presented in Appendix D. A review of the appendix will draw together the information provided in this section and the chapter as a whole. Additionally, the remainder of the overhead and course CACs will be described with more specific annotations for the activity-based costing concepts.

4. The Effect of Activity Level Variation

The original TIP/TQM inputted activity level for FY 96 was 1008 Basic Combat Engineer students. If, during the course of the fiscal year, the output requirements changed, without a corresponding funding increase, the Resource Allocation Model provides the capability to adjust the activity level and resources required to fund the POI at the new level. Table 4.3 is a consolidated report generated for a student throughput of 1100 students. This report is provided to show how the variable costs, from Table 3.2, associated with the POI vary as the activity level is changed. These changes in required resources are attributable to the costs that are a function of variation in the number of class iterations and/or per student costs associated with the POI and school support functions that are directly identifiable with the course.

For illustrative purposes, an additional change was made in the report's calculation. For an activity level of 1100, a percentage adjusted funding level of 95% was used rather than providing for a 100% funding of the POI. In order to balance the resources available for obligation with the authorized budget, a numerical adjustment also had to be made. The adjustments would be rather severe budget decrements for a single POI, but are provided to show the capabilities that the model possesses. In most

cases, a smaller reduction would be made in a particular POI and costs would be made in other CACs/WCs to remain within the authorized budget.

Sheet	Address	Cell Information	Cost ($000) @ 1008 Students	% or Qty	Cost ($000) @ 1100 Students	% or Qty
P	B10	Total TOA authorized	1073.270		1073.270	
	C12..F12	Quarterly TOA constraints				
	C14..F14	Percentage of TOA by quarter		31.00% 33.46% 17.29% 18.21%		31.02% 33.48% 17.28% 18.19%
	D29..G29	Quarterly scheduled TOA obligations				
	C23..G25	Scheduled obligations by CAC				
	C29	Total scheduled obligations	365.290		366.762	
	E31	TOA available after scheduled obligations	707.980		706.508	
	B39..E39	Unscheduled TOA obligation rates		25%		25%
	L21	Budget year 1st quarter student throughput		245		268
	M21	Budget year 2nd quarter student throughput		272		297
	N21	Budget year 3rd quarter student throughput		245		268
	O21	Budget year 4th quarter student throughput		245		268
	K21	Budget year total student throughput		1,008		1,100
	Q21	Following year total student throughput		917		917
	R21	1st quarter of following year student throughput		223		223
Q	F44	Direct course material costs	70.000		76.000	
	P44	Direct course material costs - allocated to WC (CEIC)	70.000		76.000	
R	C43	First budget adjustment- percentage		100%		95%
	D43	Direct course material costs	70.000		72.200	
	E43	Percentage adjustment	70.000		72.200	
S	C43	Second budget adjustment- add	0.000		0.000	
	D43	Second budget adjustment- subtract	0.000		6.397	
	E43	From percentage adjustment	70.000		72.200	
	F43	Value/numerical adjustment	70.000		65.803	

Table 4.3. Variable Activity Level for CAC GK0.

Sheet	Address	Cell Information	Cost ($000) @ 1008 Students	% or Qty	Cost ($000) @ 1100 Students	% or Qty
T	C45	Student throughput factor 1st quarter		0.270		0.270
	D45	Student throughput factor 2nd quarter		0.240		0.240
	E45	Student throughput factor 3rd quarter		0.240		0.240
	F45	Student throughput factor 4th quarter		0.240		0.240
	G45	Sum of student throughput factors		1.000		1.000
U	C43	Cost estimate factor 1st quarter		0.270		0.243
	D43	Cost estimate factor 2nd quarter		0.240		0.270
	E43	Cost estimate factor 3rd quarter		0.240		0.243
	F43	Cost estimate factor 4th quarter		0.240		0.243
	G43	Sum of cost estimate factors		1.000		1.000
V	K43	WC cost factor		1.000		1.000
W	C43	Percentage of TOA 1st quarter		0.310		0.310
	D43	Percentage of TOA 2nd quarter		0.330		0.335
	E43	Percentage of TOA 3rd quarter		0.170		0.173
	F43	Percentage of TOA 4th quarter		0.180		0.182
	G43	Sum of percentages of TOA by quarter		1.000		1.000
X	C43	Cost estimate for 1st quarter	17.027		18.486	
	D43	Cost estimate for 2nd quarter	18.919		20.541	
	E43	Cost estimate for 3rd quarter	17.027		18.486	
	F43	Cost estimate for 4th quarter	17.027		18.486	
	G43	Sum of cost estimates by quarter	70.000		76.000	
Y	C43	1st quarter allocation of TOA	21.701		20.409	
	D43	2nd quarter allocation of TOA	23.423		22.028	
	E43	3rd quarter allocation of TOA	12.105		11.370	
	F43	4th quarter allocation of TOA	12.745		11.971	
	G43	Sum of quarterly allocation of TOA	69.973		65.778	
	I43	Direct course material costs - allocated to WC (CEIC)	70.000		76.000	
	J43	Difference between cost estimate and allocation	0.027		10.222	

Table 4.3. (con't) Variable Activity Level for CAC GK0.

Sheet	Address	Cell Information	Cost ($000) @ 1008 Students	% or Qty	Cost ($000) @ 1100 Students	% or Qty
Z	C43	1st quarter obligations	18.919		20.541	
	D43	2nd quarter obligations	17.027		18.486	
	E43	3rd quarter obligations	17.027		18.486	
	F43	4th quarter obligations	17.027		18.486	
	G43	Sum of quarterly obligations	70.000		76.000	
AA	D45	Cost requirement for 1st quarter	17.027		18.486	
	E45	1st quarter budget allocation	21.701		20.409	
	F45	Difference between budget and requirement	4.674		1.923	
	G45	Percent that CAC is funded		127%		110%
	K105	Budget allocation to WC	21.701		20.409	
AB	D45	Cost requirement for 2nd quarter	18.919		20.541	
	E45	2nd quarter budget allocation	23.423		22.028	
	F45	Difference between budget and requirement	4.504		1.487	
	G45	Percent that CAC is funded		124%		107%
	K105	Budget allocation to WC	23.423		22.028	
AC	D45	Cost requirement for 3rd quarter	17.027		18.486	
	E45	3rd quarter budget allocation	12.105		11.370	
	F45	Difference between budget and requirement	-4.922		-7.116	
	G45	Percent that CAC is funded		71%		62%
	K105	Budget allocation to WC	12.105		11.370	
AB	D45	Cost requirement for 4th quarter	17.027		18.486	
	E45	4th quarter budget allocation	12.745		11.971	
	F45	Difference between budget and requirement	-4.282		-6.516	
	G45	Percent that CAC is funded		75%		65%
	K105	Budget allocation to WC	12.745		11.971	
AE	D43	Obligation for 1st quarter	18.919		20.541	
	E43	1st quarter budget	21.701		20.409	
	F43	Difference between budget and obligation	2.782		-0.131	
	H43	Obligation for 2nd quarter	17.027		18.486	
	I43	2nd quarter budget	23.420		22.028	
	J43	Difference between budget and obligation	6.396		3.541	

Table 4.3. (con't) Variable Activity Level for CAC GK0.

Sheet	Address	Cell Information	Cost ($000) @ 1008 Students	% or Qty	Cost ($000) @ 1100 Students	% or Qty
AF	D43	Obligation for 3rd quarter	17.027		18.486	
	E43	3rd quarter budget	12.105		11.320	
	F43	Difference between budget and obligation	-4.922		-7.116	
	H43	Obligation for 4th quarter	17.027		18.486	
	I43	4th quarter budget	12.745		11.971	
	J43	Difference between budget and obligation	-4.282		-6.516	

Table 4.3. (con't) Variable Activity Level for CAC GK0.

Chapter V will assess the application of budgeting modeling in Marine Corps Formal Schools and summarize the information that has been presented in the preceding chapters and the accompanying appendices. The next chapter will draw together the impetus for the model, as well as the inputs and outputs that give credibility to the logical approach and sequence of the computations. Additionally, the chapter will highlight the capabilities that the model provides as a management tool for estimating and executing a budget for an organization that contends with varying activity levels under conditions of finite resource allocations.

V. APPLICATION OF BUDGET MODELING IN MARINE CORPS FORMAL SCHOOLS

The foundation for this thesis was addressed by three questions posed in Chapter I. Answers to these questions were required to determine the feasibility for applying the conceptual framework and specific requirements of activity-based costing to budget modeling for Marine Corps Formal Schools. In order to insure that the precepts contained in these challenges were met, and to serve as a starting point to determine the feasibility, a review of the questions with answers is appropriate.

A. AVAILABLE INFORMATION

Is it possible to develop budgets for Marine Corps Formal Schools using unit costing concepts? Based on the spreadsheet model used by the Marine Corps Engineer School described in the previous chapters, it is possible to apply unit costing concepts in budget development. It is possible to satisfy an answer to this question because the activities that consume resources can be identified, and costs can be assigned to those activities. The course design requirements of the Systems Approach to Training (SAT) which were detailed in Chapter II provide the basis for incurring costs which are attributable to each course. The Course Descriptive Data (CDD) and Program of Instruction (POI) define the resource and support requirements for each course offered by the formal school. While the CDD/POI provide information for the costs that are incurred by courses, the Training Input Plan (TIP) and the Training Quota Memorandum (TQM) furnish the student throughput, or activity level, which dictate the overall level of resources required to conduct the instruction only. With the combination of the direct course cost data and the cost drivers or activity level, it is possible to apply unit costing concepts in the development and estimation of formal school budgets directly related to the courses. These two sources of data are already available with the documents that manpower planners and Marine Corps Formal Schools generate, so there is no new information that is required to apply unit costing concepts for budget estimation attributable to course costs. While Chapter II provides a point of departure for the application of the unit costing conceptual framework to the Engineer School, further association of costs and an evaluation of resource

dependencies for Marine Corps formal schools, in general, needs to be conducted. The logical approach, taken in the Marine Corps Engineer School's Cost Estimation and Resource Allocation Model, for modeling the cost-volume relationship, cost estimation and resource allocation strengthens the answer to this question and will be further addressed in the following questions.

B. INFORMATION THAT MUST BE DETERMINED

1. The Nature and Behavior of Cost Items

In order to apply unit costing concepts in budget estimation, is it possible to determine the nature and behavior of formal school costs items, which must be broken down into direct, indirect, overhead, and general/ administrative costs and subsequently be allocated to the school's outputs? The resource requirement information that is contained in the CDD/POI is integral to the execution of all courses of instruction in the Marine Corps school. These costs are estimated based on the outputs of the training development system (Systems Approach to Training) and the inputs that are generated by the manpower and training requirements from the TIP/TQM. However, these costs are computed on a per class iteration, not per student, basis for course costs only. Additionally, there had not been an effort made to allocate school support costs or other fixed costs (civilian salaries, contracts, printing, etc.) directly to the courses that are supported.

In order to overcome the shortcoming of current cost estimation practices, the costs incurred by formal schools must be broken down into the categories addressed in the question above. In accomplishing this task, the approach presented in the CERAM assesses the interrelationships among all of the Cost Accounting Codes and Work Center accounts within the command for overhead as well as for direct costs. It was through the evaluation and analysis of internal dependencies and cost account interactions that the development and design of the model could help the budget manager to distinguish which costs could be considered direct, indirect, overhead, or general/ administrative. The ability to determine the treatment of

costs, that is how costs associated with school support functions interact with the costs directly attributable to POIs, further refines the capability to apply unit costing/ activity-based costing within the model.

Therefore, the ability for the account managers to understand the internal organizational dependencies and the predictability of how costs are affected by changes in activity level provides the logic behind and the design approach taken in the Cost Estimation Model (CEM) of the Engineer School described in Chapter III and Appendices A through C. The methodical evaluation that is furnished for the CEM provides a good example and rationale for the ability to determine the relationships and treatment of costs.

2. Budget Modeling

Can spreadsheet budget modeling be used to support cost estimation, resource allocation, and budget execution? Based on analysis of the CERAM, and the description provided in Chapter IV and Appendix D, it is possible to develop a spreadsheet model that will support cost estimation, resource allocation, and budget execution for the training programs such as those in the formal school. While the characteristics of the model presented in this thesis are germane to a single command, the logical approach to cost estimation and resource allocation based on organizational dependencies and activity level is sound and applicable to schools in similar settings. For cost estimation, the spreadsheet provides the user with the capability to assess how costs change as output requirements, material/ support costs, maintenance costs, investment requirements, salaries, and other costs vary. Additionally, the Cost Estimation Model provides a valuable tool for aggregating costs for Program Objectives Memorandum submissions and the identification of funding trade-offs once the budget is funded.

Once the budget is funded, the Resource Allocation Model allows the user to balance requirements with the authorization. If the budget does not reflect the optimal level of resources necessary to operate and maintain the organization or if output requirements change during the course of a fiscal year, there is a need to determine how to allocate the budget across the cost account code structure based on

resources to meet fixed cost demands and activity level for variable costs. The level of effort determination for activity variation, in conjunction with the factor and percentage adjustments, allows the model user the capability to assess funding trade-offs and to identify funding deficiencies, as displayed in Table 4.3 for a variable activity level and decremented funding percentages.

The output reports of the Resource Allocation Model provide the basis for budget execution once the CAC/ WC allocations are computed. The account managers have the capability to know, in advance of obligations, exactly the substance of their quarterly and annual budget allocations. Additionally, if activity levels are altered during the course of the fiscal year, changes in resource requirements can be identified.

C. APPLICATION OF MODELING IN MARINE CORPS SCHOOLS

Answers to the questions answered above, in concert with the description and analysis of the CERAM in the preceding chapters and appendices provide the groundwork upon which Marine Corps Formal Schools can build, if it desires to develop budget estimates and resource allocations based on the tenets of activity-based costing. The successful implementation of such a budgeting methodology will require school commands to examine their internal resource requirements and organizational dependencies, the impact of student output demands, and their current accounting and cost accumulation methods. While each school will undoubtedly differ in each of these areas, the logical and functional relationships for the impact of cost drivers, with regard to activity level will be more closely related. The Functions/ Relationships sections of the Appendices can serve as an invaluable point of departure in assessing these similar aspects. They provide relationships between and among the functions of the command and within the programs of instruction for how costs are incurred based on activity levels within the school.

The ability to determine the nature and behavior of cost items is critical to any efforts made to replicate the model presented in this thesis. The school should follow the approach described in Chapter III and IV, Section C, as well as the supporting Appendices for the design methodology contained in this model. The task of establishing the nature of costs, why those costs are incurred, and what exactly is supporting by them is crucial to understanding the activity-based concepts. The gathering of the data

necessary to gain this knowledge will advance the application of budget "modeling" in Marine Corps schools regardless of whether an actual model is created. The information regarding the treatment of costs will further the ability to assess cost estimation, cost containment, and whether budgeted resources are actually supporting the intended purpose.

It is impossible to provide a generic method or strategy by which cost information can be gathered, or how best to examine the cost relationships within an individual command, but the logic and approaches presented in this thesis contribute tested insight into how it has been done. It is by no means the only way to combat the issues addressed regarding budget formulation, justification, and execution. However, if other applications for cost estimation and resource allocation are attempted, a thorough evaluation of the techniques presented in this thesis are recommended.

Chapter VI will address the primary and subsidiary research questions upon which this thesis is based as well as offer conclusions, recommendations, and topics for further research.

VI. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

The basis for this thesis was presented in the primary and subsidiary questions outlined in the Introduction. In summary, it is appropriate to re-address these questions to insure that adequate answers have been provided for each of them.

1. Primary Research Question

Can a justifiable method, based on unit costing concepts, be used to develop budgets for Marine Corps Formal Schools?

As addressed in Chapter V, it is possible to apply unit costing concepts to budget development in Marine Corps schools. Based on the training development and course design requirements which define the requisite resources to conduct a Program of Instruction, and the training requirement documents which furnish the activity level for output, budget estimation can be initiated using the unit costing concepts. However, further refinements in the treatment of costs must be imposed to fully employ the conceptual framework. In order to more accurately answer this question, the following subsidiary questions were posed.

2. Subsidiary Questions

a. Cost Breakdown

Can formal school costs be broken down into direct, indirect, overhead, and general/ administrative costs; and can costs be allocated to the outputs that are supported (produced)?

This question can be answered through the evaluation of cost account and work center dependencies relative to the nature of costs and the output or activity level that is supported. The approach presented in the CERAM assesses these interrelationships and the interaction of support costs that can predictability be associated with, and allocated directly with the courses. It was by virtue of the matrix

design philosophy of the model that cost account interactions could be evaluated and cost treatment and breakdown could be accomplished. The model design techniques described in Chapter III, coupled with account dependency analysis allowed the command to distinguish which costs could be considered direct, indirect, overhead, or general/ administrative.

b. Model Development

Is it possible to develop a spreadsheet budget model that can support cost estimation; resource allocation once budget requirements are identified; and budget execution once allocations are authorized?

While there may be other means to answer this question, the CERAM's logical development and justifiable methodology provide a credible approach to accomplish the task of designing a spreadsheet model which satisfies this requirement. The model fulfills the challenges for budget estimation, allocation, execution. It also provides the user the capability to make trade-offs, value judgments, and identify deficiencies between requirements and authorizations, as discussed in Chapter IV.

B. CONCLUSIONS

This thesis attempted to identify the shortcomings of the current practice for cost estimation in Marine Corps Formal Schools, which does not adequately assess the impact of activity level or changes in student throughput when budgets are determined. The budgeting methodology that is presented in this study is designed to reflect any such variation in activity level, thereby revealing how costs change when numbers of students change. Additionally, the capability to identify the nature of costs and how those costs are associated and/ or change with variable student throughput were also evaluated.

In an era of declining budgets, DoD activities will have to assess improved methods and means to determine, justify, and execute budget allocations. The capabilities offered by the logic and methods applied in the CERAM improve the visibility of cost identification, cost management, and cost control.

The use of models like the one presented in this study can add credibility to budget submissions as well as provide the crucial link between budgeted dollars and the supported requirements.

Similar commands may not have the technical capability to create a model as complex as the Marine Corps Engineer School CERAM, but the logic behind the activity-based concepts (contained in the Appendices) may provide valuable insight into how costs can be identified and estimated. A thorough evaluation of the Appendices will provide a greater level of detail for how the three activity based costing concepts outlined in Chapter I, Section C, are applied in cost estimation.

C. RECOMMENDATIONS

It is recommended that the CERAM be evaluated by other school commands and by budget review authorities for its logical approach to cost estimation and resource allocation. It is a sound model with invaluable underlying costing methods and functional relationships that would serve to enhance any budgeting practices conducted in similar commands or in budget reviews. While the collection of data and design/ documentation of spreadsheets like the CERAM is very tedious and time consuming, it is a one-time effort and the benefits, capabilities, and outputs of such an effort could be worth the effort. As stated in the Introduction Chapter, an era of declining defense budgets will require improved methodologies as well as more substantiated and detailed approaches for budget determination. The credibility of budget submissions that can be justified in detail, while logically and verifiably associating the requirements with the costs, become less tempting targets for arbitrary reductions.

D. TOPICS FOR FURTHER RESEARCH

Two topics are suggested for further research:

1. This thesis focused on cost estimation and resource allocation as it applied to a single command, under particular circumstances, as described. The approach to budgeting could be applied to another military school or organization that is either constrained by similar requirements or is not at all

structured like the Marine Corps Engineer School. The conceptual basis for cost treatment and allocation of costs to interrelated activities could be examined.

2. A result of the defense draw-down has been the consolidation of military schools which provide similar programs of instruction. The Inter-Service Training Review Organization (ITRO) was established to conduct analyses of courses that could be co-located or consolidated at other installations or formal schools. The initial evaluation of courses is dedicated to the content and commonality of instruction. Once courses are deemed to be capable of consolidation/ co-location based on the initial evaluation, cost analysis is performed to determine the cost effectiveness or budgetary impact of such a measure. The use of modeling techniques such as the one presented in this thesis should be applied to ITRO analysis to evaluate the impact of such determinations.

APPENDIX A. TABLE INFORMATION FOR COST ESTIMATION MODEL

This appendix, referred to a Figure 3.3 in the text, is used to detail the information contained in the MCES Cost Estimation Model. Data sets with the alpha designation "B" will not be included in the appendix because they contain historical data only and do not contribute to the calculations within the model, they are duplications of the "A" input tables and are for reference purposes only.

Data Set #1 Model Inputs

1. Table Number: 1A and 1B

2. Table Title: Setup Data (General)

3. Table Purpose: Data input for cost information for selected functional areas, which sources information to formulas in the model and allows gaming by model user to change cost inputs, permanent personnel strength, and percentage resource requirement factors .

4. Table Elements:

a) Permanent Personnel Table of Organization (T/O) and Bachelor Enlisted Quarters (BEQ) occupancy factor for Permanent Personnel and NCO students, and BEQ occupancy costs.

b) Civilian labor benefit factor applied to base salaries to determine costs for benefits funded by the command (expressed as a decimal value).

c) Nonallocable Temporary Additional Duty (TAD) costs.

d) Nonallocable Base reproduction services' costs and allocable per student costs.

e) Nonallocable MCES Headquarters Administration/Supply costs and allocable per class costs.

f) Nonallocable Administrative/ Personnel Section costs and allocable per student costs.

g) Nonallocable Graphics Section costs and allocable costs per course and per class.

h) School Reproduction Support Section costs.

i) Commanding Officer's Fund.

j) Nonallocable Supply Section costs.

k) Average per person laundry costs for Table of Equipment (T/E) materiel.

l) Nonallocable Administrative/ Supply costs for each instruction company.

m) Nonallocable Maintenance Section administration costs.

n) Contract costs.

o) Allocation of contract costs (net after paying camera and Port-a-Jon costs).

5. Remarks and Notes:

a) Table 1A is the table where data is actually inputted into the set of columns marked "CALCULATION INPUTS." These are the values actually used in the model calculations.

b) Table 1B is a reference table which shows the standard "HISTORICAL" factor or cost.

c) In both Tables 1A and 1B, the columns headed:

1. VALUE/P: Contains non-dollar values and values assigned to "P" which are percentage figures or number of personnel.

2. UNALLOC: Contains the dollar value for fixed costs which are unallocable.

3. $/CRS: Contains the variable costs allocated on a "per course" basis.

4. $/Class: Contains the variable costs allocated on a "per class" basis.

5. $/STUD: Contains the variable costs allocated on a "per student" basis.

e) Cells in Tables 1A and 1B which are not designated with a shaded cell are not currently used in model calculations.

TABLE 1A (DATA FROM INPUT SCREEN)

CALCULATION INPUTS

	Value/P	Unalloc	$/CRS	$/Class	$/Stud
MCES T/O Total Military	240	---	---	---	---
BEQ Occ rate (PermPers)	0.27	---	---	---	---
BEQ Occ rate (NCO Stud)	0.5	---	---	---	---
BEQ Occ Cost Per Person	0.007	---	---	---	0.008
Civ labor benefits factor	0.19	---	---	---	---
Temporary Add'l Duty	---	15.200	---	---	---
Base printing	---	12.000	---	0.000	0.0160
HQ (BB-28) Admin/Sup	---	5.000	---	0.015	---
Admin/Pers Admin/Sup	---	0.500	---	---	0.0017
Graphics Admin/Sup	---	3.300	0.600	0.118	---
Repro Sect Admin/Sup	---	---	---	0.025	---
Commanding Officer Fund	---	5.400	---	---	---
Supply	---	8.000	---	---	---
Laundry cost per person	0.001	---	---	---	0.001
H&S Co Admin/Sup	---	2.000	---	---	---
EEIC Admin/Sup	---	---	---	---	0.003
CEIC Admin/Sup	---	---	---	---	0.003
UIC Admin/Sup	---	---	---	---	0.003
Maint Sect Admin/Sup	---	9.500	---	---	---
Total Contracts	---	29.700	---	---	---
Less: Camera	---	2.913	---	---	---
Less: Port-A-Jon	---	6.480	---	---	---
Less: ( )	---	0.000	---	---	---
Value "P=" for:	0	---	---	---	---
Maint Admin (2H1I)	0.67	---	---	---	---
JEEM (GE0)	0	---	---	---	---
BEEM (GG0)	0	---	---	---	---
EERS (FD0)	0.12	---	---	---	---
BHEO (FJ0)	0.21	---	---	---	---

MARINE CORPS ENGINEER SCHOOL COST ESTIMATION AND RESOURCE ALLOCATION MODEL

DATA INPUT SCREEN FOR OPERATING COSTS AND CIVILIAN LABOR

REQUIRED INVESTMENT COST	287.6

Enter Data in Shaded Cells

HISTORICAL COSTS AND DATA

	Value/P	Unalloc	$/CRS	$/Class	$/Stud
MCES T/O Total Military	240				
BEQ Occ rate (PermPers)	0.27				
BEQ Occ rate (NCO Stud)	0.50				
BEQ Occ Cost Per Person	0.007				0.008
Temporary Add'l Duty		15.200			
Non-alloc Base printing		12.000			0.016
HQ (BB-28) Admin/Sup		5.000		0.015	
Admin/Pers Admin/Sup		0.500			0.0017
Graphics Admin/Sup		3.300	0.600	0.118	
Repro Sect Admin/Sup				0.025	
Commanding Officer Fund		5.400			
Supply		8.000			
Laundry cost per person	0.001				0.001
H&S Co Admin/Sup		2.000			
EEIC Admin/Sup					0.003
CEIC Admin/Sup					0.003
UIC Admin/Sup					0.003
Maint Sect Admin/Sup		9.500			
Total Contracts		29.700			
Less: Camera		2.913			
Less: Port-A-Jon		6.480			
Less: ( )					
Value "P=" for % of contract costs allocable to maint courses					
Maint Admin (2H1I)	0.67				
JEEM (GE0)	0				
BEEM (GG0)	0				
EERS (FD0)	0.12				
BHEO (FJ0)	0.21				

TABLE 1C (ASSIGNMENT OF COPIER SUPPORT COSTS)

Total unallocated printing costs:	8.000
Total copier support costs:	23.000
Total unallocated base printing costs:	31.000

CAC:	2H1B	2H1C	2H1E	2H1H	TOTAL
Number of copiers:	1	2	2	1	6
Fractional share:	0.167	0.333	0.333	0.167	
Cost spread:	3.833	7.667	7.667	3.833	

CIVILIAN LABOR COSTS

Civ labor benefits factor	0.19
POSITION	
Secretary	28.121
Legal Technician	27.241
Instr Syst Spec	43.878
Acad Admin Supv	25.287
Acad Admin Clerk	21.969
Graphics Supv	32.346
Maint Spec	35.547
Instructor	28.843

TABLE INFORMATION

1. Table Number: 1C.

2. Table Title: Copier Costs

3. Table Purpose: To assign to MCES Headquarters CACs nonallocable Base Reproduction (Base Repro) costs attributable to staff section copiers.

4. Table Element: Total number of copiers and location by CAC.

5. Functions and Calculations: The total unallocated Base Repro costs from Table 1A are reduced by that portion of total unallocated costs attributable to printing costs. Then the remaining costs-- for copier support -- are allocated to applicable overhead CACs.

6. Remarks and Notes

a. Currently seven copiers are allocated as follows:

(1) DI (CAC: 2H1B):	1
(2) Admin/Pers (CAC: 1H1L):	2
(3) School Repro (CAC: 2H1E):	2
(4) Supply/MMO (CAC: 2H1H):	2

TABLE 1C (ASSIGNMENT OF COPIER SUPPORT COSTS)

Total unallocated printing costs:	8.000
Total copier support costs:	23.000
Total unallocated base printing costs:	31.000

CAC:	2H1B	2H1C	2H1E	2H1H	TOTAL
Number of copiers:	1	2	2	1	6
Fractional share:	0.167	0.333	0.333	0.167	
Cost spread:	3.833	7.667	7.667	3.833	

FORMULAS

1. Location: Table 1C Sub location: Sheet A

CELL(S)	FORMULA	REMARKS
Q10	+Q8+Q9	Sums unallocated Base Repro Costs
S13	Sum (O13..R13)	Sums number of copiers in row 11.
O15	O13/S13	Calculates fractional share of total copiers
P15	W11/S13	by CAC (Function F(ii)).
Q15	Q15/S13	
R15	R15/S13	

TABLE INFORMATION

1. Table Number: 2A and 2B

2. Table Title: Civilian Labor Setup Data

3. Table Purpose: Lists salary and benefit data by civilian billet. Also, includes preliminary computations for use in the model.

4. Table Elements:

a) Basic Salary

b) Computation of benefits

c) Total labor costs

d) Labor factors

e) Allocated and nonallocated labor

5. Functions and Calculations:

a) Benefits are computed by multiplying basic salary times the civilian labor benefit factor from Table 1A.

b) Total labor cost is the sum of salary plus benefits.

c) The labor factor [LAB FACT] is the percentage (expressed as a decimal) of total labor cost which can be allocated.

d) Allocated labor costs are the labor allocation factor multiplied times the total labor cost.

e) Nonallocated labor is the difference between total labor cost and allocated labor.

6. Remarks and Notes:

a) The aggregated input table is where data is actually inputted for the "SALARY" and "LAB FACT" columns. The inputted data feeds Table 2A and become the computed values for this table which are sourced in the model calculations.

b) Table 2B is a reference table for standard historical salary costs and labor allocation factors [LAB FACT].

c) Currently, the labor allocation factors, by billet, are:

(1) Commanding Officer's Sec = 0

(2) Legal Technician = 0

(3) Instructional Systems Specialist = 0

(4) Academic Admin. Supervisor =	0.75
(5) Clerk Typist =	0.9
(6) Graphics Supervisor =	0.45
(7) Maintenance Specialist =	1.0
(8) Instructor =	1.0

e. Changes to labor allocation factors must be cross-checked and reconciled with "P" values set in allocation of civilian labor costs to courses in Table 2D..

f. Report #2 in Data Set #3 requires that total labor costs be distributed between the OCs for salary and benefits. The distribution is accomplished by using summary data from Table 2A to compute distribution factors for total labor costs where "S" is the proportion for salaries and "B" is the proportion for benefits as determined by the following:

If: S = total salaries	Then: S + B = T
B = total benefits	(S+B)/T = 1
T = total costs	(S+B)/T = 1

Thus: S/T = 1 - B/T and B/T = 1 - S/T

TABLE 2A

DATA FROM INPUT SCREEN

POSITION	SALARY	BENEFITS	TOTAL	LABOR FACTOR	ALLOC	UNALLOC
Secretary	28.121	5.343	33.464	0%	0.000	33.464
Legal Technician	27.241	5.176	32.417	0%	0.000	32.417
Instr Syst Spec	43.878	8.337	52.215	0%	0.000	52.215
Acad Admin Supv	25.287	4.805	30.092	75%	22.569	7.523
Acad Admin Clerk	21.969	4.174	26.143	90%	23.529	2.614
Graphics Supv	32.346	6.146	38.492	45%	17.321	21.170
Maint Spec	35.547	6.754	42.301	100%	42.301	0.000
Instructor	28.843	5.480	34.323	100%	34.323	0.000
SUBTOTALS	243.232	46.214	289.446		140.043	149.403

NOTE: Labor Factor equates to percent of time allocated to courses

FORMULAS

1. LOCATION: TABLE 2A SUB LOCATION: Sheet E

CELL(S)	FORMULA	REMARKS
C16	@Sum (C7..C14)	Sum of Column C
D7..D14	A:O19*C7 A:O19*C8 . . A:O19*C14	Each cell in column C is multiplied by the factor from Table 1A, cell A:O19.
D16	@Sum(D7..D14)	Sum of column D
E14..E14	C7+D7 C8+D8 . . C14+D14	For each row, the value in columns C is added to the corresponding value in column D.
E16	@ Sum(E7..E14)	Sum of column E
G7..G14	F7*E7 F8*E8 . . E14*E14	For each row, the value in column E is multiplied by the corresponding factor in column F.
G16	@Sum(G7..G14)	Sum of column G
H7..H14	E7-G7 E51-G51 . . E14-G14	For each row, the value in column G is subtracted from the corresponding value in column E
H16	@Sum(H7..H14)	Sum of column H (Function F(a)+F(b))

TABLE INFORMATION

1. Table Number: 2C and 2D

2. Table Title: Factor values for civilian labor.

3. Table Purpose: Lists factor values for use in civilian labor allocation calculations in the model.

4. Table Elements:

a) Value of N

b) Value of 1/N by course

c) Value of P

d) Distribution of allocable labor by either 1/N or P

5. Functions and Calculations:

a) N is the total number of courses active (i.e., having one or more students) in a fiscal year. This number is the sum of "COURSE COUNTERS" in Table 4A.

b) "1/N" is the reciprocal of N.

c) Functions F(c), F(d), and F(e) are used in this table where:

1) F(c) = Value of 1/N times the sum of the allocable labor costs for positions whose allocable costs are equally distributed across courses.

2) F(d) = P times the total allocable labor cost for MAINT where P varies as the percentage of labor allocable to any specific CAC, and the sum of P = 1 for the Maintenance Specialist.

3) F(e) = P times the total allocable labor costs of the Instructor where P varies as the percentage of labor allocable to any CAC, and the sum of P = 1 for the Instructor.

6. Remarks and Notes:

a) There are no inputs to these tables for model operations.

b) "1/N" equitably distributes allocable labor cost to active courses. This variable is not applicable to non-course CACs.

c) Values of "P" are expressed as a decimal for each civilian billet and associated CAC(s) to which allocated, based on the following:

1) Maintenance Specialist: 90% of the Maintenance Specialist salary is allocable to EEIC, 30% of which is dedicated to the Engineer Equipment Mechanic NCO Course (GFO), and 70% to the Basic Engineer Equipment Operator (GYO) course. Another 5% is allocable to the Basic Combat Engineer (GKO) course. The remaining 5% is allocated to the Basic Electrician (FDO) course. Thus, P has the following values, by CAC, for this civilian position:

GF0: P = (.9)(.3) = 0.27
GY0: P = (.9)(.7) = 0.63
GK0: P = 0.05
FD0: P = 0.05

(2) UIC Instructor: 10 % allocated to the general support of UIC courses and charged against administration/supplies for UIC (2HIL). The remainder of the instructor's salary is allocated as follows:

2HIL: P = 0.10
FA0: P = 0.05
FJ0: P = 0.10
FD0: P = 0.60
FE0: P = 0.10
FH0: P = 0.05

d) For each civilian position which has no allocable labor costs, there are no entries.

e. For each civilian position which has allocable labor costs, there are entries across either the row for "1/N" (when cost are equally distributed) or in the row for "P" (when costs are apportioned), but no one position can have entries for both 1/N and P.

f. For row "1/N" in each position, the value computed in 1/N times the value in the course "ACTIVE" row on the top of the matrix. Thus, if a course is not active, the computed value is zero.

g. The "DISTR." row calculates the dollar value of labor for each (overhead or course) CAC by multiplying the 1/N or P value, as applicable, times the allocable civilian labor costs (ALLOC column) in Table 2A.

h. The "TOTAL DISTRIBUTION BY COURSE" is the sum of all the "DISTR." results for each CAC.

TABLE 2C (DISTRIBUTION OF ALLOCATED CIVILIAN LABOR COSTS - OVERHEAD)

N=	19	1/N=	0.053	S=	0.840	B=	0.160			
POSITION		OVERHEAD	2H1I	2H1J	2H1K	2H1L	2H2B	2H2C	2H2D	2H2E
Secretary										
1/N			---	---	---	---	---	---	---	---
P			---	---	---	---	---	---	---	---
Distr										
Legal Technician										
1/N			---	---	---	---	---	---	---	---
P			---	---	---	---	---	---	---	---
Distr										
Instr Syst Spec										
1/N			---	---	---	---	---	---	---	---
P			---	---	---	---	---	---	---	---
Distr										
Acad Admin Supv										
1/N			---	---	---	---	---	---	---	---
P			---	---	---	---	---	---	---	---
Distr										
Acad Admin Clerk										
1/N			---	---	---	---	---	---	---	---
P			---	---	---	---	---	---	---	---
Distr										
Graphics Supv										
1/N			---	---	---	---	---	---	---	---
P			---	---	---	---	---	---	---	---
Distr										
Maint Spec										
1/N			---	---	---	---	---	---	---	---
P										
Distr										
Instructor										
1/N			---	---	---	---	---	---	---	---
P						0.100				
Distr						3.432				

FORMULAS

1. Location: Table 2C Sub location: Sheet F

CELL(S)	FORMULA	REMARKS
B3	@Sum(H:H7..H:H37)	Sum of the course counters from column H in Table 3A (value of "N")
D3	1/B3	Reciprocal of "N"
F3	1-(E:D16/E:E16)	Computes the fraction (as a decimal) of total labor which is salaries, or the value "S".
H3	1-(E:C16/E:E16)	Computes the fraction (as a decimal) of the total civilian labor which is benefits, or the value "B"
G39	G38*E:G14	For a "P" factor from Appendix 1 to Annex D which is entered in this table, multiply the cell to which the value is entered times the ALLOC value in column G of Table 2A for the corresponding civilian billet to compute the "DISTR." value in the next cell down of the column where the P was entered.

TABLE 2D (DISTRIBUTION OF ALLOCATED CIVILIAN LABOR COSTS - COURSE)

NOTE: Course Counter "0" = Inactive Course "1" = Active Course

	GB0	GE0	GF0	GG0	GH0	GL0	GX0	GY0	G20	GXX	GA0	GC0	GJ0
COURSE COUNTER	0	0	0	0	0	0	1	0	0	0	1	1	1
Secretary	---	---	---	---	---	---	---	---	---	---	---	---	---
1/N													
P													
Distr													
Legal Technician	---	---	---	---	---	---	---	---	---	---	---	---	---
1/N													
P													
Distr													
Instr Syst Spec	---	---	---	---	---	---	---	---	---	---	---	---	---
1/N													
P													
Distr													
Acad Admin Supv	---	---	---	---	---	---	---	---	---	---	---	---	---
1/N	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.05	0.05
P													
Distr	0.00	0.00	0.00	0.00	0.00	0.00	1.19	0.00	0.00	0.00	1.19	1.19	1.19
Acad Admin Clerk	---	---	---	---	---	---	---	---	---	---	---	---	---
1/N	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.05	0.05
P													
Distr	0.00	0.00	0.00	0.00	0.00	0.00	1.24	0.00	0.00	0.00	1.24	1.24	1.24
Graphics Supv	---	---	---	---	---	---	---	---	---	---	---	---	---
1/N	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.05	0.05
P													
Distr	0.00	0.00	0.00	0.00	0.00	0.00	0.91	0.00	0.00	0.00	0.91	0.91	0.91
Maint Spec	---	---	---	---	---	---	---	---	---	---	---	---	---
1/N													
P		0.27						0.63					
Distr	0.00	11.42	0.00	0.00	0.00	0.00	0.00	26.65	0.00	0.00	0.00	0.00	0.00
Instructor	---	---	---	---	---	---	---	---	---	---	---	---	---
1/N													
P													
Distr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.00	11.42	0.00	0.00	0.00	0.00	3.34	26.65	0.00	0.00	3.34	3.34	3.34

	G	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
1																	
2																	
3																	
4																	
5																	
6		GK0	GM0	GN0	GS0	GZ0	G10	G30	G40	FA0	FB0	FC0	FD0	FE0	FG0	FH0	FJO
7		1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
8																	
9		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10																	
11																	
12																	
13		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14																	
15																	
16																	
17		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18																	
19																	
20																	
21		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22		0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
23																	
24		1.19	1.19	1.19	1.19	1.19	1.19	0.00	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
25		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26		0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
27																	
28		1.24	1.24	1.24	1.24	1.24	1.24	0.00	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
29		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30		0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
31																	
32		0.91	0.91	0.91	0.91	0.91	0.91	0.00	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
33		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
34																	
35			0.05										0.05				
36		0.00	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.12	0.00	0.00	0.00	0.00
37		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
38																	
39										0.10		0.05	0.60	0.10		0.05	
40		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.43	0.00	1.72	20.59	3.43	0.00	1.72	0.00
41																	
42		3.34	5.45	3.34	3.34	3.34	3.34	0.00	3.34	6.77	3.34	5.05	26.05	6.77	3.34	5.05	3.34
43																	

FORMULAS

1. Location: Table 2D Sub location: Sheet G

CELL(S)	FORMULA	REMARKS
C7..L7	H:H7 . . . H:H16	The value for each Course Counter cell in column H of Table 3A is entered into the cell corresponding to its respective CAC in row 7.
M7.. W7	H:H18 . . . H:H28	
X7..AE7	H:H30 . . . H:H37	
C22..AF22	F:D3*C7 F:D3*D7 F:D3*AF7	For civilian positions which have allocable costs in 2A (column G) and are distributed by the factor "1/N,"then for each course CAC the value in the 1/N row for that position is the value 1/N from cell AC47 in Table 2C times each respective CAC's value in the course
C24..AF24	C22*E:G10 D22*E:G10 AF22*E:G10	"ACTIVE?" row (row 50 of Table 2D). The value in the "Distr." cell for each civilian position for each course CAC is the factor for the cell containing the value 1/N times the ALLOC value in column G of Table 2A for the corresponding civilian billet.
C26..AF26	F:D3*C7 F:D3*D7 . . F:D3*AF7	
C28..AF28	C26*E:G11 D26*E:G11 . AF26*E:G11	
C30..AF30	F:D3*C7 F:D3*D7 .	

	F:D3*AF7	
C32..AF32	C30*E:G12	
	D30*E:G12	
	.	
	AF30*E:G12	
D36	C35*E:G13	For a "P" factor which is entered in this table,
J35	J35*E:G13	multiply the cell to which the value is entered times the ALLOC value in column G of Table 2A for the corresponding civilian billet to compute the "Distr" value in the next cell down of the column where P was entered.
Q36	Q35*E:G13	
AA36	AA35*E:G13	
X40	X39*E:G14	
Z40	Z39*E:G14	
AA40	AA39*E:G14	
AB40	AB39*E:G14	
AD40	AD39*E:G14	
C42..AF42	@SUM(C24,C28, C32,C36,C40)	Sum of "Distr" for each civilian position having allocable labor costs in the respective column being computed. Computes F(c), F(c)+F(d),F(c)+F(e), or F(c)+F(d)+F(e) as applicable for each CAC.
	.	
	.	
	@SUM(AF24, AF28,AF32,AF36,AF40)	

TABLE INFORMATION

1. Table Number: 3A and 3B

2. Table Title: TIP/TQM Data

3. Table Purpose:

   a) Table 3A computes course, class, and student data for each course in the current fiscal year.

   b) Table 3B provides student throughput forecasts by fiscal year.

4. Table Elements:

   a) Student throughput by course.

   b) Number of classes per course.

   c) Course counter.

5. Functions and Calculations:

   a) Number of classes is computed by dividing the number of total students for a given FY by the maximum number of students per class in each course. Any fractional remainder is always rounded up to the next whole value number of classes.

   b) Course counter is a logic function which assigns the value of "1" to each course having 1 or more students. If there are no students scheduled, then the value is zero.

7. Remarks and Notes:

   a. "STUDENT INPUT" is the only data entry for this table. Values for the applicable fiscal year are derived from Table 3B.

TABLE 3A (STUDENT THROUGHPUT DATA FOR PROJECTED YEAR)

COURSE	CAC	STUDENT INPUT 1996	CLASSES PER CRS	COURSE COUNTER
ENGINEER EQUIPMENT OFFICER	GB0	0	0	0
ENGR EQUIPMENT MECH NCO	GE0	0	0	0
ENGR EQUIPMENT OPERATOR NCO	GF0	0	0	0
BASIC ENGR EQUIPMENT MECHANIC	GG0	0	0	0
ENGINEER EQUIPMENT CHIEF	GH0	0	0	0
BASIC METAL WORKER	GL0	0	0	0
SMALL CRAFT MECHANIC	GX0	45	3	1
BASIC ENGR EQUIPMENT OPERATOR	GY0	0	0	0
RESERVE ENGR EQUIP SUPERVISOR	G20	0	0	0
M9 ACE OPERATOR	GXX	0	0	0
COMBAT ENGINEER OFFICER	GA0	43	6	1
COMBAT ENGINEER NCO	GC0	52	3	1
ENGINEER OPERATIONS CHIEF	GJ0	29	2	1
BASIC COMBAT ENGINEER	GK0	1008	35	1
RESERVE COMBAT ENGINEER NCO	GM0	10	1	1
RESERVE COMBAT ENGINEER OFFICER	GN0	5	1	1
MINEFIELD MAINTENANCE COURSE	GS0	22	11	1
BASIC LANDING SUPPORT SPECIALIST	GZ0	299	10	1
RESERVE BASIC COMBAT ENGINEER	G10	15	1	1
LANDING SUPPORT SUPERVISOR	G30	0	0	0
RES BASIC LANDING SUPPORT SPEC	G40	6	1	1
BASIC ELECTRICIAN	FA0	202	7	1
BASIC REFRIGERATION MECHANIC	FB0	135	5	1
UTILITIES CHIEF	FC0	34	2	1
ELECT EQUIPMENT REPAIRMAN	FD0	204	7	1
ELECTRICIAN NCO	FE0	29	2	1
HYGIENE EQUIP OPERATOR NCO	FG0	58	2	1
UTILITIES OFFICER	FH0	1	1	1
BASIC HYGIENE EQUIP OPERATOR	FJ0	342	12	1

TABLE 3B (ANNUAL STUDENT THROUGHPUT)

NOTE: From Training Input Plan

COURSE	FISCAL YEAR 1994	1995	1996	1997	1998	1999
ENGINEER EQUIPMENT OFFICER	23	6	6	5	8	8
ENGR EQUIPMENT MECH NCO	48	45	44	44	43	43
ENGR EQUIPMENT OPERATOR NCO	45	45	44	44	43	43
BASIC ENGR EQUIPMENT MECHANIC	460	477	404	471	425	480
ENGINEER EQUIPMENT CHIEF	14	21	24	24	24	24
BASIC METAL WORKER	80	85	111	55	80	80
SMALL CRAFT MECHANIC	0	45	45	45	45	
BASIC ENGR EQUIPMENT OPERATOR	373	507	454	460	460	460
RESERVE ENGR EQUIP SUPERVISOR	13	12	12	12	12	12
M9 ACE OPERATOR	0	20	20	20	20	20
COMBAT ENGINEER OFFICER	43	41	43	39	39	39
COMBAT ENGINEER NCO	56	52	52	50	50	50
ENGINEER OPERATIONS CHIEF	31	32	29	30	29	30
BASIC COMBAT ENGINEER	994	1082	1008	917	993	1020
RESERVE COMBAT ENGINEER NCO	15	10	10	10	10	10
RESERVE COMBAT ENGINEER OFFICER	13	5	5	5	5	5
MINEFIELD MAINTENANCE COURSE	22	22	22	22	22	22
BASIC LANDING SUPPORT SPECIALIST	276	330	299	186	300	300
RESERVE BASIC COMBAT ENGINEER	9	15	15	15	15	15
LANDING SUPPORT SUPERVISOR	0	0	0	0	0	0
RES BASIC LANDING SUPPORT SPEC	10	22	6	0	0	0
BASIC ELECTRICIAN	195	203	202	167	202	210
BASIC REFRIGERATION MECHANIC	134	145	135	138	143	150
UTILITIES CHIEF	34	35	34	34	35	34
ELECT EQUIPMENT REPAIRMAN	179	180	204	180	180	180
ELECTRICIAN NCO	29	31	29	27	26	26
HYGIENE EQUIP OPERATOR NCO	60	60	58	60	58	60
UTILITIES OFFICER	2	1	1	2	1	1
BASIC HYGIENE EQUIP OPERATOR	250	291	342	189	270	270

FORMULAS

1. Location: Table 3A Sub location: Sheet H

CELLS	FORMULA	REMARKS
G7..G16	@INT(F7/N+0.9)	This set of formulas computes the number of classes per year per course in column G of Table 3A by dividing the corresponding number of total students for the year in column F by the maximum number of students per class. A value of 0.9 is added before the Integer value is computed (since there are no "fractions" of classes offered) to ensure the "roundoff" does not understate the number of classes for the year. The value for "N" by CAC is currently:
G18..G28	@INT(F18/N+0.9)	
	.	
	.	
G30..G37	@INT(F30/N+0.9)	

GB0	16	GA0	8	FA0	30
GE0	22	GC0	25	FB0	30
GF0	23	GJ0	16	FC0	20
GG0	30	GK0	30	FD0	30
GH0	20	GM0	30	FE0	22
GL0	20	GN0	20	FG0	30
GX0	15	GZ0	30	FH0	15
GY0	16	G10	30	FJ0	30
GZ0	25	G30	16		
GXX	16	G40	30		

H7..H16	@IF(G7>=1,1,0)	This set of logic formulas assigns the value of 1 in column H for each corresponding CAC that has one or more classes (i.e., value in column G is 1 or more); else, assigns a value of 0 to column H.
H18..H28	@IF(G8>=1,1,0)	
	.	
	.	
H30..H37	@IF(G37>=1,1,0)	

TABLE INFORMATION

1. Table Number: 4A and 4B

2. Table Title: Replacements/Enhancements/Investments

3. Table Purpose: Provide cost forecast information for model calculations for:

   a. Replacement of T/E and special allowance items.

   b. Upgrades and improvements to systems.

   c. O&M funded purchases of new capabilities/equipment required for operations and maintenance and not funded from other external sources.

4. Table Description

   a. Elements:

      1) Estimated investment (ESTIMATE)

      2) Recurring replacement/enhancement costs (FXD COST)

      3) Allocation of costs for investment (ALLOC)

   b. Functions and Calculations. Each allocation is computed as follows:

      1) Sum all "ESTIMATE" to get the TOTAL ESTIMATE.

      2) Sum all "FXD COST" to get the TOTAL FXD COST.

      3) The difference between TOTAL ESTIMATE and TOTAL FXD COST is the amount available for investment (AVAIL).

      4) ALLOC = P for a CAC times AVAIL plus any FXD COST assigned to the CAC.

5. Remarks and Notes:

   a. Table 4A is where data is from the CERAM input sheet is actually calculated for the "ESTIMATE," "FXD COST," and "VALUE P" columns. The inputted and computed values from this table are used in model calculations.

   b. Table 4B is the reference table.

   c. The sum of the values for "P" in the TOTAL cell must equal 1.

TABLE 4A (REPLACEMENT/ENHANCEMENT/INVESTMENT) INPUTS/CALCULATIONS

UNIT		INVESTMENT ESTIMATE REQUIRED	FIXED COST	VALUE P	ALLOC
Supply	2H1H	287.6	87.700	0%	87.700
H&S Co	2H1A	- - -	0.000	1%	1.937
HQ (D/I)	2H1B	- - -	0.000	5%	9.685
Graphics	2H1D	- - -	0.000	3%	5.811
BEQ (D/S)	2H1F	- - -	0.000	2%	3.874
CO Fund	2H1G	- - -	0.000	55%	106.535
Maint	2H1I	- - -	5.000	4%	12.748
EEIC	2H1J	- - -	0.000	0%	0.000
CEIC	2H1K	- - -	0.000	15%	29.055
UIC	2H1L	- - -	1.200	15%	30.255
TOTALS		287.6	93.900	100%	287.600

AVAILABLE AFTER FIXED COSTS	193.700

NOTE: UIC Fixed Cost recurring for upkeep of training area strong backs for Basic Electrician Course.

FORMULAS

1. Location: Table 4A Sub location: Sheet I

CELL(S)	FORMULA	REMARKS
C17	@SUM(C6..C15)	Sums column C
D17	@SUM(D6..D15)	Sums column D
D18	C17-D17	Computes amount available for investment after fixed costs are covered by subtracting total FIXED COSTS from TOTAL ESTIMATE
E17	@Sum(E6..E15)	Sums column E
F6..F15	(E6*D18)+D6 (E7*D18)+D7 . . (E15*D18)+D15	Calculates proportional share of available investment for each CAC by a CAC's corresponding "P" value in column E times the AVAIL funding from cell D18 (Function F(v)). Adds corresponding FIXED COSTS to compute total allocation
F17	@Sum(F6..F15)	Sums column F

TABLE INFORMATION

1. Table Number: 5A and 5B

2. Table Title: Maintenance costs

3. Table Purpose: Summarizes all maintenance cost from the information inputted in CERAM Input sheet #2.

4. Table Description

   a. Elements:

      1) Unallocated maintenance costs by overhead CAC.

      2) Cost per course

      3) Cost per class

   b. Functions and Calculations: None

7. Remarks and Notes:

   a. Table 5A is from actual inputs for calculations for the model.

   b. Table 5B provides the standard cost histrorical data.

TABLE 5A

COURSE/CAC		MAINTENANCE SECTION			INSTRUCTION COMPANIES		
		UNALLOC	PER COURSE	PER CLASS	UNALLOC	PER COURSE	PER CLASS
MAINTENANCE SECTION	2H2B						
					ENGR EQUIP INSTR CO		
ENGR EQUIP INSTR CO	2H2C						
ENGINEER EQUIPMENT OFFICER	GB0			0.000			0.000
ENGR EQUIPMENT MECH NCO	GE0			0.000			0.000
ENGR EQUIPMENT OPERATOR NCO	GF0	0.000	0.000	26.000	0.000	0.000	0.000
BASIC ENGR EQUIPMENT MECHANIC	GG0			0.000			0.000
ENGINEER EQUIPMENT CHIEF	GH0			0.000			0.000
BASIC METAL WORKER	GL0			0.000			0.000
SMALL CRAFT MECHANIC	GX0			0.000			0.000
BASIC ENGR EQUIPMENT OPERATOR	GY0	0.000	0.000	7.378	0.000	0.000	0.000
RESERVE ENGR EQUIP SUPERVISOR	G20			0.000			0.000
M9 ACE OPERATOR	GXX			0.000			0.000
					COMBAT ENGR INSTR CO		
COMBAT ENGR INSTR CO	2H2D			0.000			0.000
COMBAT ENGINEER OFFICER	GA0			0.000			0.000
COMBAT ENGINEER NCO	GC0			0.000			0.000
ENGINEER OPERATIONS CHIEF	GJ0			0.000			0.000
BASIC COMBAT ENGINEER	GK0	0.000	0.000	0.330	0.000	0.000	0.000
RESERVE COMBAT ENGINEER NCO	GM0			0.000			0.000
RESERVE COMBAT ENGINEER OFFICER	GN0			0.000			0.000
MINEFIELD MAINTENANCE COURSE	GS0			0.000			0.000
BASIC LANDING SUPPORT SPECIALIST	GZ0			0.000			0.000
RESERVE BASIC COMBAT ENGINEER	G10			0.000			0.000
LANDING SUPPORT SUPERVISOR	G30			0.000			0.000
RES BASIC LANDING SUPPORT SPEC	G40			0.000			
					UTIL INSTR CO		
UTIL INSTR CO	2H2E	0.000	0.000	0.000	9.410	0.000	0.000
BASIC ELECTRICIAN	FA0	0.000	0.000	0.000	0.000	0.000	0.300
BASIC REFRIGERATION MECHANIC	FB0	0.000	0.000	0.000	0.000	0.000	0.800
UTILITIES CHIEF	FC0	0.000	0.000	0.000	0.000	0.000	0.000
ELECT EQUIPMENT REPAIRMAN	FD0	0.000	0.000	1.700	0.000	0.000	1.700
ELECTRICIAN NCO	FE0			0.000			0.000
HYGIENE EQUIP OPERATOR NCO	FG0			0.000			0.000
UTILITIES OFFICER	FH0			0.000			0.000
BASIC HYGIENE EQUIP OPERATOR	FJ0	0.000	0.000	0.000	0.000	0.000	4.400

TABLE INFORMATION

1. Table Number: 6A and 6B

2. Table Title: Course Materials Costs

3. Table Purpose: Provides data on fixed and variable costs for materials and supplies directly used in instruction for a course.

   a. Table 6A provides data inputs for the model to calculate course material costs.

   b. Table 6B provides historical course cost data.

4. Table Description

   a. Elements:

      1) Course material costs which are not a function of number of classes or students, and not covered under other CACs.

      2) Material costs per class which cannot be allocated on a per student basis.

      3) Material costs per student.

   b. Functions and Calculations: None.

5. Remarks and Notes:

   a. CERAM Input #2 is for actual inputs to the model.

   b. CERAM Input #2 furnishes information for a course CAC as follows:

      1) CAC: Gives the descriptor and title.

      2) Course Costs: Provides cost information on direct costs which can be attributed to the course, but cannot reasonably be allocated on a per class or per student basis.

      3) Class Costs: Provides cost information on direct costs which can be attributed to each class in the course, but cannot reasonably be allocated on a per student basis.

      4) Student Costs: Costs allocated on a per student basis.

TABLE 6A (COURSE MATERIEL COSTS) FY 1996 DATA

COURSE	CAC	COURSE COST	CLASS COST	STUDENT COST	CLASS PER STUDENT COST
ENGINEER EQUIPMENT OFFICER	GB0	0.00	0.00	0.000	0.000
ENGR EQUIPMENT MECH NCO	GE0	0.00	0.00	0.000	0.000
ENGR EQUIPMENT OPERATOR NCO	GF0	0.00	0.00	0.000	0.000
BASIC ENGR EQUIPMENT MECHANIC	GG0	0.00	0.00	0.000	0.000
ENGINEER EQUIPMENT CHIEF	GH0	0.00	0.00	0.000	0.000
BASIC METAL WORKER	GL0	0.00	0.00	0.000	0.000
SMALL CRAFT MECHANIC	GX0	0.00	20.00	0.000	0.444
BASIC ENGR EQUIPMENT OPERATOR	GY0	0.00	0.00	0.000	0.000
RESERVE ENGR EQUIP SUPERVISOR	G20	0.00	0.00	0.000	0.000
M9 ACE OPERATOR	GXX	0.00	0.00	0.000	0.000
COMBAT ENGINEER OFFICER	GA0	0.00	10.80	0.000	0.251
COMBAT ENGINEER NCO	GC0	0.00	0.40	0.000	0.008
ENGINEER OPERATIONS CHIEF	GJ0	0.00	7.85	0.000	0.271
BASIC COMBAT ENGINEER	GK0	0.00	2.00	0.000	0.002
RESERVE COMBAT ENGINEER NCO	GM0	0.00	0.00	0.000	0.000
RESERVE COMBAT ENGINEER OFFICER	GN0	0.00	0.06	0.000	0.013
MINEFIELD MAINTENANCE COURSE	GS0	0.00	0.05	0.000	0.002
BASIC LANDING SUPPORT SPECIALIST	GZ0	0.00	0.50	0.000	0.002
RESERVE BASIC COMBAT ENGINEER	G10	0.00	0.00	0.000	0.000
LANDING SUPPORT SUPERVISOR	G30	0.00	0.00	0.000	0.000
RES BASIC LANDING SUPPORT SPEC	G40	0.00	0.00	0.000	0.000
BASIC ELECTRICIAN	FA0	0.00	2.60	0.000	0.013
BASIC REFRIGERATION MECHANIC	FB0	0.00	0.70	0.000	0.005
UTILITIES CHIEF	FC0	0.00	0.00	0.000	0.000
ELECT EQUIPMENT REPAIRMAN	FD0	0.00	6.00	0.000	0.029
ELECTRICIAN NCO	FE0	0.00	0.70	0.000	0.024
HYGIENE EQUIP OPERATOR NCO	FG0	0.00	7.00	0.000	0.121
UTILITIES OFFICER	FH0	0.00	0.00	0.000	0.000
BASIC HYGIENE EQUIP OPERATOR	FJ0	0.00	3.30	0.000	0.010

CAC/COST RELATIONSHIPS

Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		20.00
2H0 B			GY0		3.30
2H0 C					
			G20		0.00
2H1 A			GXX		0.00
2H1 B					
2H1 C					
2H1 D			GA0		10.80
2H1 E			GJ0		7.85
2H1 F			GC0		0.40
2H1 G			GS0		0.05
2H1 H			GK0		2.00
2H1 I			GM0		0.00
2H1 J			GN0		0.06
2H1 K			GZ0		0.50
2H1 L			G10		0.00
			G30		0.00
2H1 R			G40		0.00
2H2 A			FA0		2.60
2H2 B			FB0		0.70
2H2 C			FC0		0.00
2H2 D			FD0		6.00
2H2 E			FEO		0.70
			FG0		7.00
GB0		0.00	FH0		0.00
GE0		0.00	FJ0		3.30
GF0		0.00			
GG0		0.00			
GH0		0.00			
GL0		0.00			

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

MARINE CORPS ENGINEER SCHOOL COST ESTIMATION AND RESOURCE ALLOCATION MODEL

INPUT SCREEN FOR COURSE/STUDENT COSTS

COURSE	CAC	MAINT SHOP PER CLASS	COMPANY MAINT PER CLASS	COURSE MATERIAL PER CLASS
ENGINEER EQUIPMENT OFFICER	GB0			0.00
ENGR EQUIPMENT MECH NCO	GE0			0.00
ENGR EQUIPMENT OPERATOR NCO	GF0	26.000	0.000	0.00
BASIC ENGR EQUIPMENT MECHANIC	GG0			0.00
ENGINEER EQUIPMENT CHIEF	GH0			0.00
BASIC METAL WORKER	GL0			0.00
SMALL CRAFT MECHANIC	GX0			20.00
BASIC ENGR EQUIPMENT OPERATOR	GY0	7.378	0.000	0.00
RESERVE ENGR EQUIP SUPERVISOR	G20			0.00
M9 ACE OPERATOR	GXX			0.00
COMBAT ENGINEER OFFICER	GA0			10.80
COMBAT ENGINEER NCO	GC0			0.40
ENGINEER OPERATIONS CHIEF	GJ0			7.85
BASIC COMBAT ENGINEER	GK0			2.00
RESERVE COMBAT ENGINEER NCO	GM0	0.330	0.000	0.00
RESERVE COMBAT ENGINEER OFFICER	GN0			0.06
MINEFIELD MAINTENANCE COURSE	GS0			0.05
BASIC LANDING SUPPORT SPECIALIST	GZ0			0.50
RESERVE BASIC COMBAT ENGINEER	G10			0.00
LANDING SUPPORT SUPERVISOR	G30			0.00
RES BASIC LANDING SUPPORT SPEC	G40			0.00
BASIC ELECTRICIAN	FA0	0.000	0.300	2.60
BASIC REFRIGERATION MECHANIC	FB0	0.000	0.800	0.70
UTILITIES CHIEF	FC0	0.000	0.000	0.00
ELECT EQUIPMENT REPAIRMAN	FD0	0.000	1.700	6.00
ELECTRICIAN NCO	FE0	0.000	0.000	0.70
HYGIENE EQUIP OPERATOR NCO	FG0	1.700	0.000	7.00
UTILITIES OFFICER	FH0	0.000	0.000	0.00
BASIC HYGIENE EQUIP OPERATOR	FJ0	0.000	4.400	3.30

APPENDIX B. COST INFORMATION -- OVERHEAD CACS

GENERAL INFORMATION. This appendix refers to Figure 3.3 (Data Set #2, Computations) and contains cost information for each CAC classified as "overhead" functions. In general, any CAC which sources funds in general support of school administration and operations or might otherwise be defined as an "indirect cost" have been grouped under this appendix.

APPENDIX DESCRIPTION

1. Each section furnishes information for an overhead CAC as follows:

a. CAC: Gives the descriptor and title.

b. Model Sheet Level: Gives the area of the model where the cost information applies.

c. Principal Cost Elements: Summarizes general categories of costs incurred under the CAC (e.g., class IV materials, repair parts, etc.).

d. CAC/Cost Relationships and Functions: Relates the CAC to other CACs (e.g., costs under the "Repro" CAC are related to the CACs for the courses supported), and describes the mathematical functions used to express the interrelationship or dependency.

2. COMPUTATIONS. The computations in Data Set #2 are a composite of all of the following overhead CACs. The spreadsheet for Data Set #2 is presented first to provide a reference to understand where the multiple CACs fit into the computations. The description of how to read the spreadsheet is provided in Chapter III, Figures 3.1 and 3.2.

3. COST ACCOUNT CODES. The following tables provide the CACs that will be presented in this appendix. The codes are listed in two groups, one for overhead CACs and the other for CACs to which overhead is allocated (Courses.)

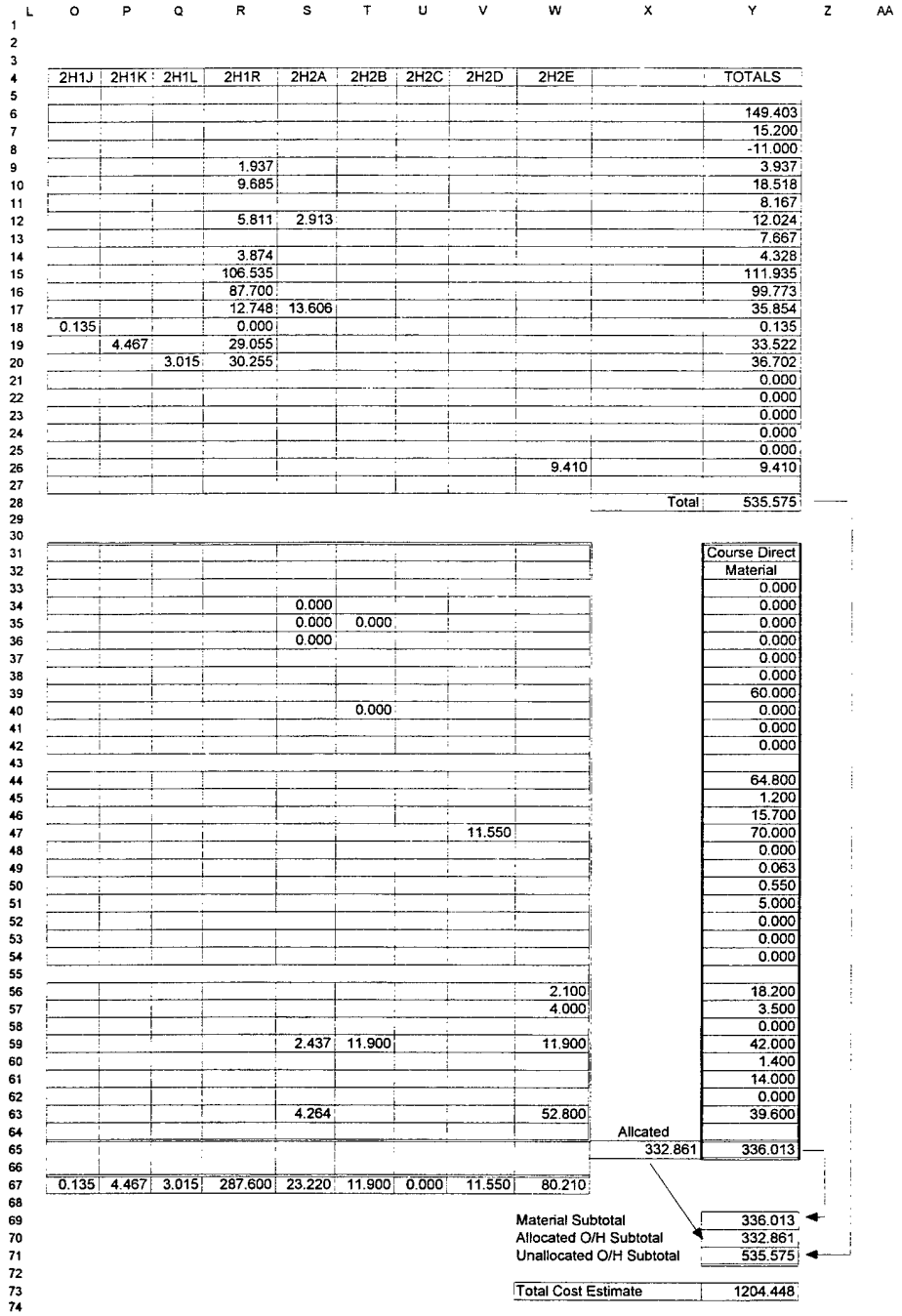
OVERHEAD CACs	SHORT TITLES	CACs
Civilian Labor	Civ Lab	2H0A
Temporary Additional Duty	TAD	2H0B
Base Printing/Repro	B Repro	2H0C
H&S Company	H&S	2H1A
BB-28 Headquarters	BB-28	2H1B
Personnel Office	Pers	2H1C
Graphics Shop	Graphics	2H1D
School Reproduction	School Repro	2H1E
Bachelor Enlisted Quarters	BEQ	2H1F
Commanding Officer's Fund	CO Fund	2H1G
Supply		2H1H
Maintenance Shop Administration	Maint Shop Admin	2H1I
Engineer Equipment Instruction Company Administration	EEIC Admin	2H1J
Combat Engineer Instruction Company Administration	CEIC Admin	2H1K
Utilities Instruction Company Administration	UIC Admin	2H1L
Investment	Invest	2H1R
Contracts		2H2A
Maintenance Shop		2H2B
Engineer Equipment Instruction Company Maintenance	EEIC Maint	2H2C
Combat Engineer Instruction Company Maintenance	CEIC Maint	2H2D
Utilities Instruction Company Maintenance	UIC Maint	2H2E

COURSES	Short Titles	CACs
Engineer Equipment Officer	EEO	GB0
Engineer Equipment Mechanic NCO	EEM NCO	GE0
Engineer Equipment Operator NCO	EEO NCO	GF0
Basic Engineer Equipment Mechanic	BEEM	GG0
Engineer Equipment Chief	EEC	GH0
Basic Metal Worker	BMW	GL0
Small Craft Mechanic	SCM	GX0
Basic Engineer Equipment Operator	BEEO	GY0
Reserve Engineer Equipment Supervisor	REES	G20
M9 ACE Operator		GXX
Combat Engineer Officer	CEO	GA0
Combat Engineer NCO	CE NCO	GC0
Engineer Operations Chief	EOC	GJ0
Basic Combat Engineer	BCE	GK0
Reserve Combat Engineer NCO	RCE NCO	GM0
Reserve Combat Engineer Officer	RCEO	GN0
Minefield Maintenance Course	MMC	GS0
Basic Landing Support Specialist	BLSS	GZ0
Reserve Basic Combat Engineer	RBCE	G10
Landing Support Supervisor	LSS	G30
Reserve Basic Landing Support Specialist	RBLSS	G40
Basic Electrician	BE	FA0
Basic Refrigeration Mechanic	BRM	FB0
Utilities Chief	UC	FC0
Electrical Equipment Repair Specialist	REES	FD0
Electrician NCO		FE0
Hygiene Equipment Operator NCO	HEO NCO	FG0
Utilities Officer	UO	FH0
Basic Hygiene Equipment Operator	BHEO	FJ0

DATA SET #2 COST ESTIMATION MODEL

Unallocated Overhead	OVERHEAD	2H0A	2H0B	2H0C	2H1A	2H1B	2H1C	2H1D	2H1E	2H1F	2H1G	2H1H	2H1I
CIVILIAN LABOR	2H0A	149.403											
TAD	2H0B		15.200										
BASE PRINTING	2H0C			-11.000									
H&S COMPANY	2H1A				2.000								
BB-28 HEADQUARTERS	2H1B			3.833		5.000							
PERSONNEL OFFICE	2H1C			7.667			0.500						
GRAPHICS SHOP	2H1D							3.300					
SCHOOL REPRO	2H1E			7.667									
BEQ	2H1F									0.454			
CO FUND	2H1G										5.400		
SUPPLY	2H1H			3.833								8.240	
MAINTENANCE SHOP ADMIN	2H1I												9.500
EEIC ADMIN	2H1J												
CEIC ADMIN	2H1K												
UIC ADMIN	2H1L	3.432											
INVESTMENT	2H1R												
CONTRACTS	2H2A												
MAINTENANCE SHOP	2H2B												
EEIC MAINTENANCE	2H2C												
CEIC MAINTENANCE	2H2D												
UIC MAINTENANCE	2H2E												

Allocated Overhead	COURSES											
ENGR EQUIP OFFICER	GB0	0.000	0.000	0.000	0.000	0.000	0.000	0.000			0.000	
ENGR EQUIP MECH NCO	GE0	11.421	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	
ENGR EQUIPMENT OPERATOR NCO	GF0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	
BASIC ENGR EQUIP MECHANIC	GG0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	
ENGR EQUIP CHIEF	GH0	0.000	0.000	0.000	0.000	0.000	0.000	0.000			0.000	
BASIC METAL WORKER	GL0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	
SMALL CRAFT MECHANIC	GX0	3.338	0.720	0.045	0.077	0.954	0.075	0.360			0.045	
BASIC ENGR EQUIP OPERATOR	GY0	26.650	0.000	0.000	0.000	0.000	0.000	0.000			0.000	
RESERVE ENGR EQUIP SUPERVISOR	G20	0.000	0.000	0.000	0.000	0.000	0.000				0.000	
M9 ACE OPERATOR	GXX	0.000	0.000	0.000	0.000	0.000	0.000	0.000			0.000	
COMBAT ENGINEER OFFICER	GA0	3.338	0.688	0.090	0.073	1.308	0.150				0.043	
COMBAT ENGINEER NCO	GC0	3.338	0.832	0.045	0.088	0.954	0.075	0.208			0.052	
ENGINEER OPERATIONS CHIEF	GJ0	3.338	0.464	0.030	0.049	0.836	0.050				0.029	
BASIC COMBAT ENGINEER	GK0	3.338	16.128	0.525	1.714	4.730	0.875	8.064			1.008	
RESERVE COMBAT ENGINEER NCO	GM0	5.453	0.160	0.015	0.017	0.718	0.025	0.080			0.010	
RESERVE COMBAT ENGR OFFICER	GN0	3.338	0.080	0.015	0.009	0.718	0.025				0.005	
MINEFIELD MAINTENANCE COURSE	GS0	3.338	0.352	0.165	0.037	1.898	0.275	0.088			0.022	
BASIC LANDING SUPT SPECIALIST	GZ0	3.338	4.784	0.150	0.508	1.780	0.250	2.392			0.299	
RESERVE BASIC COMBAT ENGR	G10	3.338	0.240	0.015	0.026	0.718	0.025	0.120			0.015	
LANDING SUPPORT SUPERVISOR	G30	0.000	0.000	0.000	0.000	0.000	0.000				0.000	
RES BASIC LANDING SUPPORT SPEC	G40	3.338	0.096	0.015	0.010	0.718	0.025				0.006	
BASIC ELECTRICIAN	FA0	6.770	3.232	0.105	0.343	1.426	0.175	1.616			0.202	
BASIC REFRIGERATION MECHANIC	FB0	3.338	2.160	0.075	0.230	1.190	0.125	1.080			0.135	
UTILITIES CHIEF	FC0	5.054	0.544	0.030	0.058	0.836	0.050				0.034	
ELECT EQUIPMENT REPAIRMAN	FD0	26.047	3.264	0.105	0.347	1.426	0.175	1.632			0.204	
ELECTRICIAN NCO	FE0	6.770	0.464	0.030	0.049	0.836	0.050	0.116			0.029	
HYGIENE EQUIP OPERATOR NCO	FG0	3.338	0.928	0.030	0.099	0.836	0.050	0.232			0.058	
UTILITIES OFFICER	FH0	5.054	0.016	0.015	0.002	0.718	0.025				0.001	
BASIC HYGIENE EQUIP OPERATOR	FJ0	3.338	5.472	0.180	0.581	2.016	0.300	2.736			0.342	
OVERHEAD CAC TOTALS		289.446	15.200	52.624	2.000	6.680	4.816	27.916	2.800	19.178	5.400	10.779	9.500



L	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1													
2													
3													
4	2H1J	2H1K	2H1L	2H1R	2H2A	2H2B	2H2C	2H2D	2H2E		TOTALS		
5													
6											149.403		
7											15.200		
8											-11.000		
9				1.937							3.937		
10				9.685							18.518		
11											8.167		
12				5.811	2.913						12.024		
13											7.667		
14				3.874							4.328		
15				106.535							111.935		
16				87.700							99.773		
17				12.748	13.606						35.854		
18	0.135			0.000							0.135		
19		4.467		29.055							33.522		
20			3.015	30.255							36.702		
21											0.000		
22											0.000		
23											0.000		
24											0.000		
25											0.000		
26									9.410		9.410		
27													
28										Total	535.575		
29													
30													
31											Course Direct Material		
32													
33											0.000		
34					0.000						0.000		
35					0.000	0.000					0.000		
36					0.000						0.000		
37											0.000		
38											0.000		
39											60.000		
40						0.000					0.000		
41											0.000		
42											0.000		
43													
44											64.800		
45											1.200		
46											15.700		
47								11.550			70.000		
48											0.000		
49											0.063		
50											0.550		
51											5.000		
52											0.000		
53											0.000		
54											0.000		
55													
56									2.100		18.200		
57									4.000		3.500		
58											0.000		
59					2.437	11.900			11.900		42.000		
60											1.400		
61											14.000		
62											0.000		
63					4.264				52.800		39.600		
64										Allcated			
65										332.861	336.013		
66													
67	0.135	4.467	3.015	287.600	23.220	11.900	0.000	11.550	80.210				
68													
69										Material Subtotal	336.013		
70										Allocated O/H Subtotal	332.861		
71										Unallocated O/H Subtotal	535.575		
72													
73										Total Cost Estimate	1204.448		
74													

COST INFORMATION - OVERHEAD

1. CAC: 2H0A (Civilian Labor)

2. Principal Cost Elements: Salaries, benefits, and award set asides.

3. CAC/Cost Relationships and Functions

a. General Description: Model functions for this CAC calculate labor costs in direct support of courses and other labor costs in general support of school operations.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Functions:

1) F(a) = Sum of total labor costs which are unallocable.

2) F(b) = Sum of the unallocable labor costs for positions which are partially

3) F(c) = Value of 1/N times the sum of the allocable labor costs for positions whose allocable costs are equally distributed across courses.

4) F(d) = P times the total allocable labor cost for Maintenance Specialist where P varies as the percentage of labor allocable to any specific CAC, and the sum of P = 1 for the Maintenance Specialist.

5) F(e) = P times the total allocable labor costs of the Instructor where P varies as the percentage of labor allocable to any specific CAC, and the sum of P = 1 for the Utilities Instructor.

4. Remarks and Notes:

a. Currently, all labor costs for:

1) Commanding Officer's secretary, Legal Technician, and Instructional Systems Specialist are not allocated.

2) Maintenance Specialist and UIC Instructor are entirely allocated.

b. Currently, part of the labor costs for the Academic Administrative Supvervisor, Clerk Typist, and Graphics Supervisor are allocated.

c. The values for:

1) "N" and "1/N" derived in Table 2C. (Distribution of Allocated Civilian Labor Costs)

2) Allocable and unallocable labor costs are derived from Table 2A. (Allocation of Civilian Labor Costs)

3) The variable "P" is expressed as a decimal for each civilian billet and associated CAC(s) to which allocated, based on the following:

a) Maint: 90% of the Maintenance Specialist salary is allocable to Engineer Equipment Instruction Company (EEIC), 30% of which is dedicated to the Engineer Equipment Mechanic NCO Course (GFO), and 70% to the Basic Engineer Equipment Operator (GYO) course. Another 5% is allocable to the Basic Combat Engineer (GKO) course. The remaining 5% is allocated to the Basic Electrician (FDO) course. Thus, P has the following values, by CAC, for this civilian position:

GF0: P = (.9)(.3) = 0.27
GY0: P = (.9)(.7) = 0.63
GK0: P = 0.05
FD0: P = 0.05

b) Instructor: 10 % allocated to the general support of Utilities Instruction Company (UIC) courses and charged against administration/supplies for Utilities Instruction Company (2HIL). The remainder of the instructor's salary is allocated as follows:

2HIL: P = 0.10
FA0: P = 0.05
FJ0: P = 0.10
FD0: P = 0.60
FE0: P = 0.10
FH0: P = 0.05

d. Currently, the allocable cost for the Administrative Supervisor and Clerk and the Graphics Supervisor are all in direct support of courses active in the fiscal year. Support to courses, in terms of time expended, is approximately equitably distributed. Therefore, 1/N times the allocable portion of labor costs for each billet is the annual amount chargeable to the course CAC. Allocation percentages are detailed in Table 2A.

e. Calculations are performed in Tables 2C and 2D using the functions listed in paragraph 4 of this section. Results of the calculations are then transferred to Data Set #2, Cost Estimation Computation.

CAC/COST RELATIONSHIPS

1. CAC: 2H0A

2. Relationship to other CACs

CAC	Relation	Remarks
2H0 A	PA	F(a) + F(b)
2H0 B		
2H0 C		
2H1 A		
2H1 B		
2H1 C		
2H1 D		
2H1 E		
2H1 F		
2H1 G		
2H1 H		
2H1 I		
2H1 J		
2H1 K		
2H1 L	S	F(e)
2H1 R		
2H2 A		
2H2 B		
2H2 C		
2H2 D		
2H2 E		
GB0	S	F(c)
GE0	S	F(c)
GFO	S	F(c) + F(d)
GG0	S	F(c)
GH0	S	F(c)
GL0	S	F(c)

CAC	Relation	Remarks
GXO	S	F(c)
GY0	S	F(c) + F(d)
G20	S	F(c)
GXX	S	F(c)
GA0	S	F(c)
GJ0	S	F(c)
GC0	S	F(c)
GS0	S	F(c)
GK0	S	F(c) + F(d)
GM0	S	F(c)
GN0	S	F(c)
GZ0	S	F(c)
G10	S	F(c)
G40	S	F(c)
FA0	S	F(c)
FB0	S	F(c)
FC0	S	F(c) + F(e)
FD0	S	F(c) + F(d)+ F(e)
FE0	S	F(c) + F(e)
FG0	S	F(c)
FH0	S	F(c) + F(e)
FJ0	S	F(c) + F(d)

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: Data Set #2 Sublocation: Sheet L Sublocation: CAC 2H0A

CELL(S)	FORMULA	REMARKS
C6	E:H16	Total unallocated costs from Table 2A
C20	F:G39	Distribution of allocated cost from Table 2C
C33..C42	G:C42 G:C43 . . G:L42	Distribution of allocated costs from Table 2D to corresponding CACs in DATA SET #2
C44..C54	G:M42 G:N42 . . G:W42	
C56..C63	G:X42 G:Y42 . . G:AE42	

COST INFORMATION - OVERHEAD

1. CAC: 2H0B (TAD)

2. Principal Cost Elements: Temporary Additional Duty (TAD)

3. CAC/Cost Relationships and Functions

a. General Description: This CAC includes all unallocable TAD costs for travel, per diem, etc. associated with TAD for special training, activities, and medical care away from Camp Lejeune, NC which is not funded by other sources external to MCES.

b. Relationships: This CAC is an unallocable cost and not related to any other CAC's.

4. Remarks and Notes: The current annual projection is a fixed value of $15.2K which is inputted in input sheet and calculated in Table 1A.

CAC/COST RELATIONSHIPS

1. CAC: 2H0B

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B	UA	$15.2K	GY0		
2H0 C					
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0		
2H1 I			GM0		
2H1 J			GN0		
2H1 K			GZ0		
2H1 L			G10		
2H1 R			G30		
			G40		
2H2 A			FA0		
2H2 B			FB0		
2H2 C			FC0		
2H2 D			FD0		
2H2 E			FEO		
			FG0		
GB0			FH0		
GE0			FJ0		
GF0					
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H0B

CELL(S)	FORMULA	REMARKS
D7	D:E18	From TAD, input sheet to Table 1A

COST INFORMATION - OVERHEAD

1. CAC: 2H0C (Base Repro)

2. Principal Cost Elements: Base reproduction services

3. CAC/Cost Relationships and Functions

a. General Description: This CAC includes unallocable fixed costs in general support of school operations, and allocable costs are calculated and assigned directly to courses.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Functions

1) F(i) = Per student Base Repro support cost times number of students in a course.

2) F(ii) = Fractional share of total number of copies times total copier costs.

4. Remarks and Notes

a. Unallocable printing costs are approximately $8K annually. Additionally, costs of $23K are incurred as the MCES reimbursement to Base Repro for maintenance of copier machines. Thus a total of $31K is incurred as a fixed costs, and is contained in Table 1C.

b. Copiers are located in the Administrative (1), Personnel (1), Supply (1), Maintenance Management Office (1), DI (1), and School Reproduction (2) sections. Currently, per student costs are estimated at $22.00 contained in Table 1A.

c. Number of students per course is contained in Table 3A.

d. Copier costs are currently spread among HQ MCES CAC in Table 1C of the model.

CAC/COST RELATIONSHIPS

1. CAC: 2H0C

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO	S	F(i)
2H0 B			GY0	S	F(i)
2H0 C	PA	$8K			
			G20	S	F(i)
2H1 A			GXX	S	F(i)
2H1 B	S	F(ii)			
2H1 C	S	F(ii)			
2H1 D			GA0	S	F(i)
2H1 E	S	F(ii)	GC0	S	F(i)
2H1 F			GJ0	S	F(i)
2H1 G			GK0	S	F(i)
2H1 H	S	F(ii)	GM0	S	F(i)
2H1 I			GN0	S	F(i)
2H1 J			GS0	S	F(i)
2H1 K			GZ0	S	F(i)
2H1 L			G10	S	F(i)
2H1 R			G30	S	F(i)
			G40	S	F(i)
2H2 A					
2H2 B			FA0	S	F(i)
2H2 C			FB0	S	F(i)
2H2 D			FC0	S	F(i)
2H2 E			FD0	S	F(i)
			FE0	S	F(i)
GB0	S	F(i)	FG0	S	F(i)
GE0	S	F(i)	FH0	S	F(i)
GF0	S	F(i)	FJ0	S	F(i)
GG0	S	F(i)			
GH0	S	F(i)			
GL0	S	F(i)			

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H0C

CELL(S)	FORMULA	REMARKS
E8	D:E19-A:Q9	Remaining unallocated printing costs after subtracting reimbursable copier support costs paid to Base Repro in Table 1C from total unallocated costs in Table 1A
E10	A:O15	From spread of copier costs in row 13 of Table 1C (Function F(ii)).
E11	A:P15	
E13	A:Q15	
E16	A:D15	
D32..D41	D:H19*H:F7 D:H19*H:F8 . . D:H19*H:F16	Cost per student from Base Repro cell D:H19 in Table 1A times number of students per course CAC from column F in Table 3A (Function (F(i))
E44..E54	D:H19*H:F18 D:H19*H:F19 . . D:H19*H:F28	
E56..E63	D:H19*H:F30 D:H19*H:F31 . . D:H19*H:F37	

COST INFORMATION - OVERHEAD

1. CAC: 2H1A (H&S Co)

2. Principal Cost Elements: Administration and general supplies.

3. CAC/Cost Relationships and Functions

a. General Description: This CAC includes support costs for the operations of H&S Company and its permanent personnel for those costs not covered by other CACs. All costs are unallocable.

b. Relationships: Provided in CAC/Cost Relationships section.

4. Remarks and Notes: The current annual projection is a fixed value of $5K which is contained in Table 1A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1A

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C			G20		
			GXX		
2H1 A	UA	$5K			
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0		
2H1 I			GM0		
2H1 J			GN0		
2H1 K			GZ0		
2H1 L			G10		
2H1 R			G30		
			G40		
2H2 B			FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FD0		
			FE0		
GB0			FG0		
GE0			FH0		
GF0			FJ0		
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1A

CELL(S)	FORMULA	REMARKS
F9	D:E27	From H&S cell E27 in Table 1A

COST INFORMATION - OVERHEAD

1. CAC: 2H1B (MCES HQ--BB28)

2. Principal Cost Elements: Administration and general supplies, MCES Headquarters.

3. CAC/Cost Relationships and Functions

a. General Description: This CAC supports cost for the operations of the School Headquarters element not covered by other CACs. Part of the costs are allocable to the number of classes per course.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Functions: F(j) = Cost per class for administrative support (HQ) times number of classes for a course.

4. Remarks and Notes:

a. Current annual projection for unallocable costs is a fixed cost of $5K.

b. Currently, cost per class for admin supplies is estimated at $15.00.

c. Fixed and variable costs are inputted in the data input sheet and are calculated in Table 1A.

d. Number of classes for each course is contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1B

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO	S	F(j)
2H0 B			GY0	S	F(j)
2H0 C			GXX	S	F(j)
			GA0	S	F(j)
2H1 A			GJ0	S	F(j)
2H1 B	UA	$5K	GC0	S	F(j)
2H1 C					
2H1 D			GK0	S	F(j)
2H1 E			GM0	S	F(j)
2H1 F			GN0	S	F(j)
2H1 G			GS0	S	F(j)
2H1 H			GZ0	S	F(j)
2H1 I			G10	S	F(j)
2H1 J			G30	S	F(j)
2H1 K			G40	S	F(j)
2H1 L					
2H1 R			FA0	S	F(j)
2H2 A			FB0	S	F(j)
2H2 B			FC0	S	F(j)
2H2 C			FDO	S	F(j)
2H2 D			FE0	S	F(j)
2H2 E			FG0	S	F(j)
			FH0	S	F(j)
GB0	S	F(j)	FJ0	S	F(j)
GE0	S	F(j)			
GF0	S	F(j)			
GG0	S	F(j)			
GH0	S	F(j)			
GL0	S	F(j)			

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1B

CELL(S)	FORMULA	REMARKS
G10	D:E20	From HQ (BB28) cell D:E20 in Table 1A
G33..G42	D:G20*G7 D:G20*G8 . . D:G20*G16	Cost per class from HQ (BB28) cell D:G20 in Table 1A times number of classes per course CAC from column G in Table 3A (Function F(j))
G44..G54	D:G20*G18 D:G20*G19 . . D:G20*G28	
G56..G63	D:G20*G30 D:G20*G31 . . D:G20*G37	

COST INFORMATION - OVERHEAD

1. CAC: 2H1C (Admin/Pers Section)

2. Principal Cost Elements: Administration and general supplies for the Personnel Office.

3. CAC/Cost Relationships and Functions

   a. General Description: This CAC supports costs for the operations of the Admin/Personnel Section of MCES. Part of the costs are allocable on a per student basis.

   b. Relationships: Provided in CAC/Cost Relationships section.

   c. Function: F(k) = cost per student for administrative support (Admin/Pers) times number of students for a course.

4. Remarks and Notes:

   a. Current annual projection for unallocable costs is a fixed cost of $0.5K.

   b. Currently, cost per student is estimated to be $1.50.

   c. Fixed and variable costs are inputted in the data input sheet and are calculated in Table 1A.

   d. Number of students for each course in contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1C

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO	S	F(k)
2H0 B			GY0	S	F(k)
2H0 C			G20	S	F(k)
			GXX	S	F(k)
2H1 A					
2H1 B					
2H1 C	PA	$0.5K			
2H1 D			GA0	S	F(k)
2H1 E			GJ0	S	F(k)
2H1 F			GC0	S	F(k)
2H1 G			GS0	S	F(k)
2H1 H			GK0	S	F(k)
2H1 I			GM0	S	F(k)
2H1 J			GN0	S	F(k)
2H1 K			GZ0	S	F(k)
2H1 L			G10	S	F(k)
2H1 R			G30	S	F(k)
			G40	S	F(k)
2H2 A					
2H2 B			FA0	S	F(k)
2H2 C			FB0	S	F(k)
2H2 D			FC0	S	F(k)
2H2 E			FDO	S	F(k)
			FE0	S	F(k)
GB0	S	F(k)	FG0	S	F(k)
GE0	S	F(k)	FH0	S	F(k)
GF0	S	F(k)	FJ0	S	F(k)
GG0	S	F(k)			
GH0	S	F(k)			
GL0	S	F(k)			

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1C

CELL(S)	FORMULA	REMARKS
H11	D:E21	From Admin/Pers cell D:E21 in Table 1A
H33..H42	D:H21*H:F7 D:H21*H:F8 . . D:H21*H:F16	Cost per student from Admin/Pers cell D:H21 in Table 1A times number of students per course CAC from column F in Table 3A (Function F(k))
H44..H54	D:H21*H:F18 D:H21*H:F19 . . D:H21*H:F28	
H56..H63	D:H21*H:F30 D:H21*H:F31 . . D:H21*H:F37	

COST INFORMATION - OVERHEAD

1. CAC: 2H1D (Graphics Section)

2. Principal Cost Elements: Administration and general supplies

3. CAC/Cost Relationships and Functions:

a. General Description: This CAC supports costs for the operations of the Graphics Section. Part of the costs are allocable to each course. Additionally, extra costs are incurred for some courses having project planning/estimation requirement which incur additional costs.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Function: F(l) = cost per class for administrative/project support (Graphics) times number of classes for course (See para. 4.d).

4. Remarks and Notes:

a. Current annual projection for unallocable costs is a fixed value of $3.3K.

b. Currently, cost per course is approximately $0.3K on the average.

c. Cost per course is incurred whether or not the course is active because courseware and training aids are considered to be in a continuous "up-date" cycle.

d. Currently, the following courses are allocated additional variable cost of $20 per class:

1) EEO	(CAC: GB0)
2) EEONCO	(CAC: GF0)
3) EEC	(CAC: GH0)
4) REES	(CAC: G20)
5) CEO	(CAC: GA0)
6) EOC	(CAC: GJ0)
7) UC	(CAC: FC0)
8) UO	(CAC: FH0)

e. Fixed and variable costs are inputted in the data input sheet and are calculated in Table 1A.

f. Number of classes for each course is contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1D

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO	S	$0.3K
2H0 B					
2H0 C			GY0	S	$0.3K
2H1 A			G20	S	$0.3K + F(l)
2H1 B			GXX	S	$0.3K
2H1 C			GA0	S	$0.3K + F(l)
2H1 D	PA	$3.3K			
2H1 E					
2H1 F			GJ0	S	$0.3K + F(l)
2H1 G			GC0	S	$0.3K
2H1 H			GS0	S	$0.3K
2H1 I					
2H1 J			GK0	S	$0.3K
2H1 K			GM0	S	$0.3K
2H1 L			GN0	S	$0.3K
2H1 R					
2H2 A			GZ0	S	$0.3K
2H2 B			G10	S	$0.3K
2H2 C			G30	S	$0.3K
2H2 D			G40	S	$0.3K
2H2 E			FA0	S	$0.3K
GB0	S	$0.3K + F(l)	FB0	S	$0.3K
GE0	S	$0.3K	FC0	S	$0.3K + F(1)
GF0	S	$0.3K + F(l)	FDO	S	$0.3K
GG0	S	$0.3K	FE0	S	$0.3K
GH0	S	$0.3K + F(l)	FG0	S	$0.3K
GL0	S	$0.3K	FH0	S	$0.3K + F(1)
			FJ0	S	$0.3K + F(1)

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1D

CELL(S)	FORMULA	REMARKS
I12	D:E22	From Graphics cell D:E22 in Table 1A
		From Graphics cell D:F22 for per course cost plus fixed costs.
I33..I42	@IF(H:G7<1,0,D:F22) + (D:G22*H:G7) @IF(H:G8<1,0,D:F22) + (D:G22*H:G7) . @IF(H:G16<1,0,D:F22) + (D:G22*H:G16)	
I44..I54	@IF(H:G18<1,0,D:F22) + (D:G22*H:G18) @IF(H:G19<1,0,D:F22) + (D:G22*H:G19) . @IF(H:G28<1,0,D:F22) + (D:G22*H:G28)	
I56..I63	@IF(H:G30<1,0,D:F22) + (D:G22*H:G30) @IF(H:G31<1,0,D:F22) + (D:G22*H:G31) . @IF(H:G37<1,0,D:F22) + (D:G22*H:G37)	
		Cost for courses that have a fixed cost per course from Graphics cell D:F22 and a variable cost per class from Graphics cell D:G22 in Table 1A. Number of classes is taken from column G in Table 3A for the corresponding CAC (Function F(l))

COST INFORMATION - OVERHEAD

1. CAC: 2H1E (Repro Support Section)

2. Principal Cost Elements: Administration and general supplies

3. CAC/Cost Relationships and Functions

a. General Description: This CAC supports reproduction/copying services for requirements which are below the cost-effective production costs to submit to Base Reproduction per their criteria.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Function: F(m) = Cost per class for administrative support (ScolRepro) times number of classes per course.

4. Remarks and Notes:

a. All costs are allocable to courses.

b. Currently, cost per class is estimated to be $25.00.

c. Cost per class is inputted in the data input sheet and are calculated in Table 1A.

d. Number of classes per course is contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1E

2. Relationship to other CACs

CAC	Relation	Remarks			
2H0 A			GXO	S	F(m)
2H0 B			GY0	S	F(m)
2H0 C			G20	S	F(m)
			GXX	S	F(m)
2H1 A					
2H1 B					
2H1 C					
2H1 D			GA0	S	F(m)
2H1 E	TA		GJ0	S	F(m)
2H1 F			GC0	S	F(m)
2H1 G			GS0	S	F(m)
2H1 H			GK0	S	F(m)
2H1 I			GM0	S	F(m)
2H1 J			GN0	S	F(m)
2H1 K			GZ0	S	F(m)
2H1 L			G10	S	F(m)
2H1 R			G30	S	F(m)
			G40	S	F(m)
2H2 A					
2H2 B			FA0	S	F(m)
2H2 C			FB0	S	F(m)
2H2 D			FC0	S	F(m)
2H2 E			FDO	S	F(m)
			FE0	S	F(m)
GB0	S	F(m)	FG0	S	F(m)
GE0	S	F(m)	FH0	S	F(m)
GF0	S	F(m)	FJ0	S	F(m)
GG0	S	F(m)			
GH0	S	F(m)			
GL0	S	F(m)			

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1E

CELL(S)	FORMULA	REMARKS
J33..J42	D:G23*H:G7 D:G23*H:G8 . . D:G23*H:G16	Cost per class from Repro Section cell D:G23 in Table 1A times number of classes per course CAC from column G in Table 3A. (Function F(m))
J44..J54	D:G23*H:G18 D:G23*H:G19 . . D:G23*H:G28	
J56..J63	D:G23*H:G30 D:G23*H:G31 . . D:G23*H:G37	

COST INFORMATION - OVERHEAD

1. CAC: 2H1F (BEQ)

2. Principal Cost Elements: Administrative and housekeeping supplies for the Bachelor Enlisted Quarters

3. CAC/Cost Relationships and Functions

a. General Description: Model functions for this CAC calculate BEQ occupancy costs. Many costs are allocable on a per student basis; however, some costs are attributable to BEQ occupancy by permanent personnel.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Functions

1) F(n) = P times the total T/O, times average billeting cost per person where P equals the percentage (expressed as a decimal) of permanent personnel billeted in the BEQ on average.

2) F (o) = Billeting cost per person times number of students per course.

3) P*F(o) = Billeting costs for courses where only a percentage of the class (i.e., "P") are billeted in the BEQ (para. 4.c and 4.e).

4. Remarks and Notes

a. Costs for billeting permanent personnel are not allocated.

b. Courses at the officer and SNCO levels are assumed to incur no BEQ costs.

c. Courses at the NCO level (except Reserve courses) are estimated to have less billeting costs because a percentage reside in the Camp Lejeune area) -- See para. 4.e.

d. The BEQ occupancy factor (PermPers) is inputted in the data input sheet and calculated in Table 1A, and sets the value of P for F(n).

e. The BEQ occupancy factor (NCO Stud) is inputted in the data input sheet and calculated in Table 1A, and sets the value of "P" times F(o).

f. Cost per BEQ occupant averages $8.00, and is inputted in the data input sheet and calculated in Table 1A.

g. Number of students per course is contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1F

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO	S	F(o)
2H0 B			GY0	S	F(o)
2H0 C			G20		
			GXX	S	P*F(o)
2H1 A			GA0		
2H1 B			GJ0		
2H1 C			GC0	S	P*F(o)
2H1 D			GS0	S	P*F(o)
2H1 E			GK0	S	F(o)
2H1 F	PA	F(n)	GM0	S	F(o)
2H1 G			GN0		
2H1 H			GZ0	S	F(o)
2H1 I			G10	S	F(o)
2H1 J			G30		
2H1 K			G40	S	F(o)
2H1 L			FA0	S	F(o)
2H1 R			FB0	S	F(o)
2H2 A					
2H2 B			FC0		
2H2 C			FD0	S	F(o)
2H2 D			FE0	S	P*F(o)
2H2 E			FG0	S	P*F(o)
			FHO		
GB0			FJO	S	F(o)
GE0	S	P*F(o)			
GF0	S	P*F(o)			
GG0	S	F(o)			
GH0					
GL0	S	F(o)			

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1F

CELL(S)	FORMULA	REMARKS
K14	D:D11*D:D12*D:D14	From Table 1A: T/O total from cell D:D11 times PermPers occupancy rate from cell D:D12 times cost per person in cell D:D14 (Function F(n)).
K34	(D:D13*D:H14)*H:F8	Cost per student from BEQ occupancy cost in column D:D14 of Table 1A times number of students per course CAC from column F in Table 3A (Function: F(o)).
K35	(D:D13*D:H14)*H:F9	
K36	D:H14*H:F10	
K38	D:H14*H:F12	
K39	D:H14*H:F13	
K40	D:H14*H:F14	
K42	(D:D13*D:H14)*H:F16	
K45	(D:D13*D:H14)*H:F19	
K47	(D:D13*D:H14)*H:F21	
K48	(D:D13*D:H14)*H:F22	
K50	D:H14*H:F24	
K51	D:H14*H:F25	BEQ occupancy rate for NCO students from cell D:D13 in Table 1A times cost per student for BEQ occupancy in cell D:H14 of Table 1A times number of students per course CAC from column F in Table 3A (Function: P*F(o)).
K52	D:H14*H:F26	
K56	D:H14*H:F30	
K57	D:H14*H:F31	
K59	D:H14*H:F33	
K60	D:H14*H:F34	
K61	D:H14*H:F35	
K63	D:H14*H:F37	

COST INFORMATION - OVERHEAD

1. CAC 2H1G (CO's Fund)

2. Principal Cost Elements: Supplies and training.

3. CAC/Cost Relationships and Functions

a. General Description: This CAC supports costs not otherwise covered by other CACs to meet general support requirements for specialized training, Area Guard, destructive weather preparedness, and self-help projects in support of safety and welfare of the Courthouse Bay Area personnel/units.

b. Relationships: Provided in CAC/Cost Relationships section.

4. Remarks and Notes:

a. All costs are currently unallocable.

b. Current annual projection is a fixed value of $5.4K which is inputted in the data input sheet and calculated in Table 1A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1G

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C			GZ0		
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G	UA	$5.4K	GS0		
2H1 H			GK0		
2H1 I			GM0		
2H1 J			GN0		
2H1 K			GZ0		
2H1 L			G10		
2H1 R			G30		
			G40		
2H2 A					
2H2 B			FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FD0		
			FE0		
GB0			FG0		
GE0			FH0		
GF0			FJ0		
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1G

CELL(S)	FORMULA	REMARKS
L15	D:E24	From CO Fund cell D:E24 in Table 1A

COST INFORMATION - OVERHEAD

1. CAC: 2H1H (Supply)

2. Principal Cost Element: Administration/supplies for Supply, Maintenance Management Officer, Area Guard, and Armory; hazardous material and destructive weather supplies; and replenishment/replacement of T/E items (unit funded) and special allowances.

3. CAC/Cost Relationships and Functions

a. General Description: This CAC supports costs of materials, supplies, and maintenance/repair costs, not otherwise assigned to other CACs, in general support of School operations. Additionally, some laundry costs for T/E items are allocated.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Functions:

1) F(p) = Sum of fixed costs plus laundry costs for permanent personnel.

2) F(q) = Laundry cost per person times number of students.

4. Remarks and Notes

a. For programming and budgeting purposes, this CAC also includes funding for replenishment/replacement which are estimated under CAC: 2H1R in the model.

b. Currently, annual costs are estimated to be:

1) $38K (Supply/MMO: $20.3K, Armory: $0.6K, copier: $13.1K, EROSAL (repair parts): $11.8K, paper: $2.2K for fixed recurring costs contained in Table 1A.

2) $1.00 average laundry cost per person is inputted in the data input sheet and calculated in Table 1A.

3) Student laundry costs are allocated, and student numbers are contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1H

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO	S	F(q)
2H0 B			GY0	S	F(q)
2H0 C			GZ0	S	F(q)
			G20	S	F(q)
2H1 A					
2H1 B			GXX	S	F(q)
2H1 C					
2H1 D			GA0	S	F(q)
2H1 E			GJ0	S	F(q)
2H1 F			GC0	S	F(q)
2H1 G			GS0	S	F(q)
2H1 H	PA	$38K + F(p)	GK0	S	F(q)
2H1 I			GM0	S	F(q)
2H1 J			GN0	S	F(q)
2H1 K			GZ0	S	F(q)
2H1 L			G10	S	F(q)
2H1 R			G30	S	F(q)
			G40	S	F(q)
2H2 A					
2H2 B			FA0	S	F(q)
2H2 C			FB0	S	F(q)
2H2 D			FC0	S	F(q)
2H2 E			FDO	S	F(q)
			FE0	S	F(q)
GB0	S	F(q)	FG0	S	F(q)
GE0	S	F(q)	FH0	S	F(q)
GF0	S	F(q)	FJ0	S	F(q)
GG0	S	F(q)			
GH0	S	F(q)			
GL0	S	F(q)			

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1H

CELL(S)	FORMULA	REMARKS
M16	D:E25+(D:D11*D:D26)	Table 1A: Unallocated Supply costs from cell D:E25 plus number of permanent personnel from cell D:D11 times laundry costs per person in cell D:D26 (Function: F(p)).
M33..M42	D:H26*F7 D:H26*F8 . . D:H26*F16	From cost of laundry per student in cell H24 in Table 1A times number of students per course CAC from column F in Table 3A (Function: F(q)).
M44..M54	D:H26*F18 D:H26*F19 . . D:H26*F28	
M56..M63	D:H26*F30 D:H26*F31 . . D:H26*F37	

COST INFORMATION - OVERHEAD

1. CAC: 2H1I (Maint Admin)

2. Principal Cost Elements: Maintenance administration and supplies (less Maintenance Management Office)

3. CAC/Cost Relationships and Functions

a. General Description: This CAC includes unallocable costs for the Maintenance Section as well as unallocable preventive maintenance support costs.

b. Relationships: Provided in CAC/Cost Relationships section.

4. Remarks and Notes

a. Maintenance Management Office administration and supply costs are covered under CAC: 2H1H.

b. Contract costs are included in the calculations for CAC: 2H2A.

c. Current annual projection for unallocable costs is a fixed value of $9.5K inputted in the data input sheet and calculated in Table 1A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1I

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C			GZ0		
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0		
2H1 I	UA	$9.5K	GM0		
2H1 J			GN0		
2H1 K			GZ0		
2H1 L			G10		
2H1 R			G30		
			G40		
2H2 A					
2H2 B			FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FDO		
			FE0		
GB0			FG0		
GE0			FH0		
GF0			FJ0		
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1I

CELL(S)	FORMULA	REMARKS
N32	D:E32	From input sheet to Maint Admin/Sup cell D:E32 in Table 1A

COST INFORMATION - OVERHEAD

1. CAC: 2H1J (EEIC)

2. Principal Cost Elements: Administration and general supplies for Engineer Equipment Instruction Company (EEIC)

3. CAC/Cost Relationships and Functions

a. General Description: This CAC includes support costs for the operations of Engineer Equipment Instruction Company and personnel administration for those costs allocable to the company level but neither allocable to specific courses on a regular basis, nor covered by other CACs.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Functions: F(r) = Company admin/supply cost per person times number of students.

4. Remarks and Notes

a. Admin/supply cost per person for instructional companies are currently estimated to be $3.00 per student, and is inputted in the data input sheet and calculated in Table 1A.

b. Number of students is contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1J

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C			GZ0		
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0		
2H1 I			GM0		
2H1 J	UA	F(r)	GN0		
2H1 K			GZ0		
2H1 L			G10		
2H1 R			G30		
			G40		
2H2 A					
2H2 B			FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FDO		
			FE0		
GB0			FG0		
GE0			FH0		
GF0			FJ0		
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1J

CELL(S)	FORMULA	REMARKS
N22	D:H28*@SUM(H:F7..H:F16)	Cost per student from cell EEIC cell D:H28 in Table 1A times the sum of the number of students for EEIC courses from column F in Table 3A (Function F(n)).

COST INFORMATION - OVERHEAD

1. CAC: 2H1K (CEIC)

2. Principal Cost Elements: Administration and ground supplies for Combat Engineer Instruction Company (CEIC)

3. CAC/Cost Relationships and Functions

a. General Description: This CAC includes support costs for the operations of Combat Engineer Instruction Company and personnel administration for those costs allocable to the company level, but is neither allocable to specific courses on a regular basis nor covered by other CACs.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Function: F(r) = Company admin/supply cost per person times number of students.

4. Remarks and Notes

a. Admin/supply cost per person for instructional companies are currently estimated to be $3.00 per student, and is inputted in the data input sheet and calculated in Table 1A.

b. Number of students is contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1K

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C			GZ0		
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0		
2H1 I			GM0		
2H1 J			GN0		
2H1 K	UA	F(r)	GZ0		
2H1 L			G10		
2H1 R			G30		
			G40		
2H2 A					
2H2 B			FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FDO		
			FE0		
GB0			FG0		
GE0			FH0		
GF0			FJO		
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1K

CELL(S)	FORMULA	REMARKS
P19	D:H29*@SUM(H:F18..H:F28)	Cost per student from CEIC Admin cell D:H29 in Table 1A times the sum of students for CEIC courses from column F in Table 3A (Function: F(r)).

COST INFORMATION - OVERHEAD

1. CAC: 2H1L (UIC)

2. Principal Cost Elements: Administration and supplies for Utilities Instruction Company (UIC)

3. CAC/Cost Relationships and Functions

a. General Description: This CAC includes support costs for the operations of Utilities Instruction Company and personnel administration for those costs allocable to the company level, but neither allocated to specific courses on a regular basis nor covered by other CACs.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Function: F(r) = Company admin/supply cost per person times number of students.

4. Remarks and Notes

a. Admin/supply costs per person for instructional companies are currently estimated to be $3.00 per student, and is inputted in the data input sheet and calculated in Table 1A.

b. Number of students is contained in Table 3A.

CAC/COST RELATIONSHIPS

1. CAC: 2H1L

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C			GZ0		
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0		
2H1 I			GM0		
2H1 J			GN0		
2H1 K			GZ0		
2H1 L	UA	F(r)	G10		
2H1 R			G30		
			G40		
2H2 A					
2H2 B			FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FDO		
		FE0			
GB0			FG0		
GE0			FH0		
GF0			FJO		
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1L

CELL(S)	FORMULA	REMARKS
Q20	D:H30*@SUM (H:F30..H:F37)	Cost per student from UIC Admin cell D:H30 in Table 1A times the sum of students for UIC courses from column F in Table 3A (Function: F(r))

COST INFORMATION - OVERHEAD

1. CAC: 2H1R (Investment)

2. Principal Cost Elements: Replenishment, replacement, enhancements, upgrades, and investments.

3. CAC/Cost Relationships and Functions

a. General Description: This CAC calculates costs described in paragraph 4 in support of school operations attributable to major end items, components, special allowances, training aids/areas and maintenance support. ADP and ADP-supported systems, and T/E deficiencies or replacement of unserviceable/beyond economic repair items.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Functions F(v) = Sum of fixed recurring investment costs for a specific CAC plus P times the net available investment funds where P varies as the percentage of net funds available for allocation to specific CACs.

4. Remarks and Notes

a. F(s), F(t), and F(u) have been reserved for future use.

b. Total annual investment required is estimated to be $287.6K, is inputted in the data input sheet and calculated is in Table 4A.

1) Normal fixed recurring investment costs for repair/replacement of unit funded T/E items plus normal upkeep of ADP systems are estimated to currently be $87.7K, and allocated directly to CAC 2H1H. Additionally:

a) A fixed value of $5.0K is currently recommended for tools for Maintenance Section (allocated to CAC: 2H1I).

b) A fixed value of $1.2K is currently recommended for Utilities Instruction Company (beginning in FY96) for repair/replacement of strong-back frames in the electricians' training area (allocated to CAC: 2H1L).

2) Net investment funds available are calculated in Table 4A.

3) The variable "P" is expressed as a decimal, and is contained in Table 4A. Currently the value of "P" is recommended for the following CACs (and the sum of P = 1):

a) H&S Co (CAC 2H1A): P = 0.01

b) MCES HQ [DI] (CAC: 2H1B): P = 0.05

c) Graphics (CAC: 2H1D): P = 0.03

d) BEQ [DS] (CAC 2H1F): P = 0.02

e) CO's Fund (CAC: 2H1G): P = 0.55

f) Maint Section (CAC: 2H1I): P = 0.04

g) EEIC (CAC: 2H1J): P = 0.10

h) CEIC (CAC: 2H1K): P = 0.10

i) UIC (CAC: 2H1L): P = 0.02

c. All costs for this CAC are allocated to CAC 2H1H for programming (POM) and initial budgeting.

d. NOTE: Future estimates of costs for this CAC should include computations developed by building amortization tables for depreciation and replacement of training items and possibly major end-items.

CAC/COST RELATIONSHIPS

1. CAC: 2H1R

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C			GZ0		
			G20		
2H1 A	S	F(v)	GXX		
2H1 B	S	F(v)			
2H1 C					
2H1 D	S	F(v)	GA0		
2H1 E			GJ0		
2H1 F	S	F(v)	GC0		
2H1 G	S	F(v)	GS0		
2H1 H	S	$87.7K	GK0		
2H1 I	S	$5.0K + F(v)	GM0		
2H1 J	S	F(v)	GN0		
2H1 K	S	F(v)	GZ0		
2H1 L	S	$1.2K + F(v)	G10		
2H1 R	X		G30		
			G40		
2H2 A					
2H2 B			FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FDO		
			FE0		
GB0			FG0		
GE0			FH0		
GF0			FJO		
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H1R

CELL(S)	FORMULA	REMARKS
R9	I:F7	From allocation of investment by CAC in column F of Table 4A.
R10	I:F8	
R12	I:F9	
R14	I:F10	
R15	I:F11	
R16	I:F12	
R17	I:F13	
R18	I:F14	
R19	I:F15	
R20	I:F15	

COST INFORMATION - OVERHEAD

1. CAC: 2H2A (Contracts)

2. Principal Cost Elements: Service and support contracts

3. CAC/Cost Relationships and Functions

a. General Description: This CAC includes service and support contracts, except copy machines and like items, in support of school operations.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Function: F(w) = P times (total cost of contracts minus the costs for the camera and Port-a-Jon) where P varies as the percentage of costs allocated to specific CACs supported by contracts.

4. Remarks and Notes

a. Currently the recurring annual fixed costs for contracts total $29,700 and is contained in Table 1A.

1) ITEX Camera: $2,913

2) Rental Uniforms: $2,689

3) Wiping Cloths: $1,153

4) Port-a-Jon: $6,480

5) Safety Kleen: $9,135

b. Camera costs are allocated to Graphics Section (CAC: 2H1D).

c. Port-a-Jon costs are allocated to the BEEO course (CAC: GF0).

d. P is percentage of contract costs (after subtracting costs for the camera and Port-a-Jons) which are allocated to other CACs.

e. The variable "P" is expressed as a decimal, and the current values assigned to P and allocated to specific CACs are:

1) Maint Admin (CAC: 2H1I): P = 0.67

2) EEMNCO (CAC: GE0): P = 0.09

3) BEEM (CAC: GG0): P = 0.18

4) EERS (CAC: FD0): P = 0.03

5) BHEO (CAC: FJ0): P = 0.03

f. Annual costs for the camera and Port-a-Jon contracts are inputted in the data input sheet and calculated in Table 1A.

g. Values assigned to "P" are inputted in the data input sheet and calculated in Table 1A.

h. Costs attributable to contract maintenance for copier machines, which are under a Base Repro contract, are not included in this CAC. Such costs are listed in Table 1C.

CAC/COST RELATIONSHIPS

1. CAC: 2H2A

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C			GZ0		
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D	S	Fm Table 1A	GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0		
2H1 I	S	F(w)	GM0		
2H1 J			GN0		
2H1 K			GZ0		
2H1 L			G10		
2H1 L			G30		
			G40		
2H2 A	PA				
2H2 B			FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FDO	S	F(w)
			FE0		
GB0			FG0		
GE0			FH0		
GF0	S	F(w)	FJO	S	F(w)
GG0	S	Fm Table 1A			
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H2A

CELL(S)	FORMULA	REMARKS
S12	D:E35	From Contracts (camera) in cell D:E35 in Table 1A
R34	D:E34-(D:E35+D:E36)*D:D40	From Contracts (Port-a-Jon) in cell D:E34 in Table 1A
R21	D:E34-(D:E35+D:E36)*D:D41	
R33	D:E34-(D:E35+D:E36)*D:D42	
R35	D:E34-(D:E35+D:E36)*D:D42	
R58	D:E34-(D:E35+D:E36)*D:D43	
R62	D:E34-(D:E35+D:E36)*D:D44	

From Table 1A: Computes allocable share of contracts to courses by first computing total contract cost in cell D:E34 minus the sum of unallocable contracts in cells D:E35 and D:E36. Second, multiplies the factor in column D (rows 41 through 44) to determine proportional costs for Maint Admin and courses supported (Function F(w)).

COST INFORMATION - OVERHEAD

1. CAC: 2H2B (Equipment Maintenance)

2. Principal Cost Elements: Organizational maintenance

3. CAC/Cost Relationships and Functions

a. General Description: This CAC covers major end-item and component maintenance costs -- primarily for corrective maintenance [less maintenance costs covered by CACs: 2H1I, 2H2C, 2H2D, and 2H2E].

b. Relationships: Provided in CAC/Cost Relationships section.

c. Function: F(x) = Maintenance cost per class of a specific course times the number of classes.

4. Remarks and Notes

a. Currently, all maintenance cost for CAC 2H2B are allocable to the following courses on a per class cost basis:

1) EEONCO (CAC: GF0):	$26,000K
2) BEEO (CAC: GY0):	$ 7.378K
3) BCE (CAC: GK0):	$ 0.330K
4) EERS (CAC: FD0):	$ 1.700K

b. Fixed and variable costs are contained in Table 5A.

c. Number of classes for each course is contained in Table 3A.

d. Maintenance costs are not currently estimated to the "per student" level.

CAC/COST RELATIONSHIPS

1. CAC: 2H2C

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0	S	F(x)
2H0 C					
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0	S	F(x)
2H1 I			GM0		
2H1 J			GN0		
2H1 K			GZ0		
2H1 L			G10		
2H1 R			G30		
			G40		
2H2 A					
2H2 B	TA		FA0		
2H2 C			FB0		
2H2 D			FC0		
2H2 E			FDO	S	F(x)
			FE0		
GB0			FG0		
GE0			FH0		
GF0	S	F(x)	FJO		
GG0					
GH0					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H2B

CELL(S)	FORMULA	REMARKS
T35	J:D12+(J:E12*H:G9)	Sum of the cost for Maint Sec support per course CAC in column D of Table 5A plus the per class cost of the respective course from column E in Table 5A times the corresponding number of classes for the course CAC from column G in Table 3A (Function: F(x)).
T40	J:D17+(J:E17*H:G14)	
T47	J:D25+(J:E25*H:G21)	
T59	J:D38+(J:E38*H:G33)	

COST INFORMATION - OVERHEAD

1. CAC: 2H2C (Equipment Maintenance -- EEIC)

2. Principal Cost Elements: N/A

3. CAC/Cost Relationships and Functions: N/A

4. Remarks and Notes: Currently, all costs are covered under CAC 2H2B.

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H2C

CELL(S)	FORMULA	REMARKS
No formulas		

COST INFORMATION - OVERHEAD

1. CAC: 2H2D (Equipment Maintenance -- CEIC)

2. Principal Cost Elements: N/A

3. CAC/Cost Relationships and Functions: N/A

4. Remarks and Notes: Currently, all costs are covered under CAC 2H2B.

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H2D

CELL(S)	FORMULA	REMARKS
No formulas		

COST INFORMATION - OVERHEAD

1. CAC: 2H2E (Equipment Maintenance -- UIC)

2. Principal Cost Elements: Organizational maintenance

3. CAC/Cost Relationships and Functions

a. General Description: This CAC covers primarily noncombustive systems' repair costs for utilities equipment.

b. Relationships: Provided in CAC/Cost Relationships section.

c. Function: F(y) = Cost of maintenance per class times the number of classes annually.

4. Remarks and Notes

a. Currently, a fixed value of $9.410K annually is not allocable to specific courses.

b. Currently, the allocable costs to courses are:

1) BE (CAC: FA0): $0.3K per class.

2) BRM (CAC: FB0): $0.8K per class.

3) EERS (CAC: FD0): $1.7K per class.

4) BHEO (CAC: FJ0): $4.4K per class.

d. Fixed and variable costs are contained in Table 5A.

e. Maintenance costs are not estimated to the "per student" level.

CAC/COST RELATIONSHIPS

1. CAC: 2H2E

2. Relationship to other CACs

CAC	Relation	Remarks	CAC	Relation	Remarks
2H0 A			GXO		
2H0 B			GY0		
2H0 C					
			G20		
2H1 A			GXX		
2H1 B					
2H1 C					
2H1 D			GA0		
2H1 E			GJ0		
2H1 F			GC0		
2H1 G			GS0		
2H1 H			GK0		
2H1 I			GM0		
2H1 J			GN0		
2H1 K			GZ0		
2H1 L			G10		
2H1 R					
			G40		
2H2 A					
2H2 B			FA0	S	F(y)
2H2 C			FB0	S	F(y)
2H2 D			FC0		
2H2 E	PA	$9.410K	FDO	S	F(y)
			FE0		
GB0			FG0		
GE0			FH0		
GFO			FJO	S	F(y)
GG0					
GHO					
GL0					

UA: Unallocable Costs
PA: Partially Allocable Costs
TA: Totally Allocable Costs
S: Supported CAC/Function

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: CAC 2H2E

CELL(S)	FORMULA	REMARKS
W26	J:F34	From UIC Maint cell J:F34 in Table 5A
W56	J:G35+(J:H35*H:G30)	Sum of the cost for UIC Maint allocated per course in column G of Table 5A plus the perclass cost of the respective course from column H of Table 5A times the corresponding number of classes for the course CAC from column G in Table 3A (Function: F(y)).
W57	J:G36+(J:H36*H:G31)	
W59	J:G38+(J:H38*H:G33)	
W63	J:G42+(J:H42*H:G37)	

FORMULAS

1. Location: DATA SET #2 Sublocation: Sheet L Sublocation: Total Unallocated Overhead

CELL(S)	FORMULA	REMARKS
Y6..Y26	@SUM(C6..W6)	Vertical sub-subtotal of unallocated overhead costs.
	.	
	.	
	@SUM(C26..W26)	
Y28	@SUM(Y6..Y26)	Subtotal of all unallocated overhead costs.
Y33..Y42	K:F6+(H:G7*K:G6)+(H:F7*K:H6)	
	.	
	.	
	K:F15+(H:G16*K:G15)+(H:F16*K:H15)	
Y44..Y54	K:F17+(H:G18*K:G17)+(H:F18*K:H17)	
	.	
	.	
	K:F27+(H:G28*K:G27)+(H:F28*K:H27)	
Y56..Y63	K:F29+(H:G30*K:G29)+(H:F30*K:H29)	
	.	
	.	
	K:F36+(H:G37*K:G36)+(H:F37*K:H36)	Course CAC sub-subtotal direct material costs.
C67..W67	@SUM(C6..C63)	Overhead CAC sub-subtotal.
	.	
	@SUM(W6..W63)	
Y65 & Y69	@SUM(Y33..Y63)	Subtotal of course direct material costs.
X65 & Y70	@SUM(C33..W63)	Subtotal of allocated overhead costs.
Y71	Y28	Subtotal of unallocated overhead costs.
Y73	@SUM(C69..C71)	Total Cost Estimate for overhead costs and direct material costs.

APPENDIX C. COST ESTIMATION MODEL REPORTS

This appendix refers to Figure 3.3 (Data Set #3) and provides the model outputs in the form of reports. All dollar values are in $(000).

REPORT #1

The "Programming By Object Class" report gives the cost forecast for a fiscal year in the form needed to submit Program Objective Memorandum inputs.

a. Objective Class's (OC's) are listed horizontally across the top of the report by OC number. Associated CAC's for overhead totals, by OC, are then listed horizontally below the OC number. And below the OC/CAC headers are the total estimates by OC/CAC of unallocated costs for programming purposes.

b. Courses and allocated overhead costs for each OC are then listed. Direct costs are listed under the column "Course."

c. The "Total" column provides total programming cost estimates for unallocated overhead and each course.

d. "TOTAL FY ESTIMATED COST" gives the cumulative total forecasted Program 8 O&MMC costs for the fiscal year being projected. The following formula section furnishes the model cell information for this report.

REPORT #1: PROGRAMMING BY OBJECT CLASS (OC) FY: 1996

UNALLOCABLE OVERHEAD	OC: / CAC:	11 2H0	12 2H0	21 2H0	24 2H0	25 2H1	25 2H2	26 2H1	26 2H2	COURSE MATERIAL COSTS	TOTAL ACROSS
		128.433	24.402	15.200	12.000	3.300	16.519	326.311	9.410		535.575
ALLOCATED COSTS											
ENGINEER EQUIPMENT OFFICER	GB0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENGR EQUIPMENT MECH NCO	GE0	9.598	1.824		0.000	0.000	0.000	0.000	0.000	0.000	11.421
ENGR EQUIPMENT OPERATOR NCO	GF0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
BASIC ENGR EQUIPMENT MECHANIC	GG0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENGINEER EQUIPMENT CHIEF	GH0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
BASIC METAL WORKER	GL0	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
SMALL CRAFT MECHANIC	GX0	2.805	0.533		0.720	0.954	0.000	0.602	0.000	60.000	65.613
BASIC ENGR EQUIPMENT OPERATOR	GY0	22.395	4.255		0.000	0.000	0.000	0.000	0.000	0.000	26.650
RESERVE ENGR EQUIP SUPERVISOR	G20	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
M9 ACE OPERATOR	GXX	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
COMBAT ENGINEER OFFICER	GA0	2.805	0.533		0.688	1.308	0.000	0.356	0.000	64.800	70.490
COMBAT ENGINEER NCO	GC0	2.805	0.533		0.832	0.954	0.000	0.468	0.000	1.200	6.792
ENGINEER OPERATIONS CHIEF	GJ0	2.805	0.533		0.464	0.836	0.000	0.158	0.000	15.700	20.496
BASIC COMBAT ENGINEER	GK0	2.805	0.533		16.128	4.730	0.000	12.186	11.550	70.000	117.931
RESERVE COMBAT ENGINEER NCO	GM0	4.582	0.871		0.160	0.718	0.000	0.147	0.000	0.000	6.478
RESERVE COMBAT ENGINEER OFFICER	GN0	2.805	0.533		0.080	0.718	0.000	0.054	0.000	0.063	4.252
MINEFIELD MAINTENANCE COURSE	GS0	2.805	0.533		0.352	1.898	0.000	0.587	0.000	0.550	6.725
BASIC LANDING SUPPORT SPECIALIST	GZ0	2.805	0.533		4.784	1.780	0.000	3.599	0.000	5.000	18.501
RESERVE BASIC COMBAT ENGINEER	G10	2.805	0.533		0.240	0.718	0.000	0.201	0.000	0.000	4.496
LANDING SUPPORT SUPERVISOR	G30	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
RES BASIC LANDING SUPPORT SPEC	G40	2.805	0.533		0.096	0.718	0.000	0.056	0.000	0.000	4.208
BASIC ELECTRICIAN	FA0	5.689	1.081		3.232	1.426	0.000	2.441	2.100	18.200	34.170
BASIC REFRIGERATION MECHANIC	FB0	2.805	0.533		2.160	1.190	0.000	1.645	4.000	3.500	15.832
UTILITIES CHIEF	FC0	4.247	0.807		0.544	0.836	0.000	0.172	0.000	0.000	6.606
ELECT EQUIPMENT REPAIRMAN	FD0	21.888	4.159		3.264	1.426	2.437	2.463	23.800	42.000	101.436
ELECTRICIAN NCO	FE0	5.689	1.081		0.464	0.836	0.000	0.274	0.000	1.400	9.744
HYGIENE EQUIP OPERATOR NCO	FG0	2.805	0.533		0.928	0.836	0.000	0.469	0.000	14.000	19.570
UTILITIES OFFICER	FH0	4.247	0.807		0.016	0.718	0.000	0.043	0.000	0.000	5.831
BASIC HYGIENE EQUIP OPERATOR	FJ0	2.805	0.533		5.472	2.016	4.264	4.139	52.800	39.600	111.630
											668.874

TOTAL FY ESTIMATED COST = 1204.448

FORMULAS

1. Location: DATA SET #3 Sublocation: REPORT #1 Sublocation: Sheet M

CELL(S)	FORMULA	REMARKS
E3	H:F5	Inputs the fiscal year for the cost estimate from the TQM/TIP data in Table 3A.
F10	F:F3*@SUM(L:C6..L:C26)	Computes unallocated civilian labor overhead (less benefits) from column B in the cost computation by multiplying total unallocated labor by the salary factor "S" in Table 2C.
G10	F:H3*@SUM(L:C6..L:C26)	Computes unallocated benefits' costs for civilian labor from column B in the cost computation by multiplying total unallocated labor by the benefits factor "B" in Table 2C.
H10	L:D7	Total TAD (unallocated) from the cost computation.
I10	@SUM (L:E6..L:E26)	Sums unallocated overhead costs from the cost computation for Base Repro.
J10	L:I12	Sums unallocated graphics cost from the cost computation.
K10	@SUM(L:S6..L:S26)	Sums unallocated contract costs from the cost model.
L10	@SUM(L:F6..L:H26)+ @SUM(L:J6..L:R26)	Sums allocated overhead costs for all maintenance costs from the cost computation.
M10	@SUM(L:T6..L:W26)	Sums unallocated maintenance costs.
O10	@SUM(F10..M10)	Gives row total for unallocated costs.
F14..F42	F:F3*L:C33 F:F3*L:C34 . . F:F3*L:C63	Computes allocated civilian labor (less benefits) for each course using labor costs in column B of the cost computation and the salary factor "S" from Table 2C.
G14..G42	F:H3*L:C33 F:H3*L:C34 . . F:H3*L:C63	Computes allocated civilian labor benefits for each course using labor costs in column B of the cost computation and the benefit factor "B" from Table 2C.

I14..I42	L:E33 L:E34 . . L:E63	Sums allocated Base Repro costs, by course, from the cost computations.
J14..J42	L:I33 L:I34 . . L:I63	Sums allocated graphics costs, by course, from the cost computations.
K14..K42	L:S33 L:S34 . . L:S63	Sums allocated contract costs, by course, from the cost computations.
L14..L42	@SUM(L:F33,H33,J33..R33) . . @SUM(L:F63,H63,J63..R63)	Sums allocated costs, by course, for H&S, BB-28, Pers, School Repro, BEQ, CO Fund, Supply, Maint, Admin, EEIC Admin, CEIC Admin, UIC Admin, and Investment from the cost computations.
M14..M42	@SUM(L:T33..L:W33) . . @SUM(L:T63..L:W63)	Sums allocated costs, by course, for maintenance from the cost computations.
N14..N42	L:Y33 L:Y34 . . L:Y63	Inputs direct course costs, by course, from column X in the cost computations.
O14..O42	@SUM(F14..N14) @SUM(F15..N15) . . @SUM(F42..N42)	Sums each row of allocated costs in this report.
O43	@SUM(O14..O42)	Total of allocated costs.
O45	O10+O43	Sums totals of allocated and unallocated costs from column O in the report.

REPORT #2

The "Summary of Cost Estimation Information" report gives a summary of school student throughput and cost information.

a. Course and company summaries are included with the "$/STU" column giving the average cost per student for that fiscal year. This average cost contains both allocated overhead and direct materials.

REPORT #2: SUMMARY OF COST ESTIMATION INFORMATION

FISCAL YEAR:	1996

ACTIVE COURSES:	19.00
TOTAL CLASSES:	112.00
TOTAL STUDENTS:	2539.00

UNALLOCABLE OVERHEAD:	535.575
ALLOCABLE OVERHEAD:	332.861
DIRECT MATERIALS:	336.013
TOTAL FOR FISCAL YEAR:	1204.448

COURSE	# STUD	COST	$/STU
EEO	0	0.00	0.00
EEM NCO	0	11.42	0.00
EEO NCO	0	0.00	0.00
BEEM	0	0.00	0.00
EEC	0	0.00	0.00
BMW	0	0.00	0.00
SCM	45	65.61	1.46
BEEO	0	26.65	0.00
REES	0	0.00	0.00
M9 ACE OP	0	0.00	0.00
EEIC TOT:	45	103.68	

COURSE	# STUD	COST	$/STU
CEO	43	70.49	1.64
CE NCO	52	6.79	0.13
EOC	29	20.50	0.71
BCE	1008	117.93	0.12
RCE NCO	10	6.48	0.65
RCEO	5	4.25	0.85
MMC	22	6.73	0.31
BLSS	299	18.50	0.06
RBCE	15	4.50	0.30
LSS	0	0.00	0.00
RBLSS	6	4.21	0.70
CEIC TOT:	1489	260.37	

COURSE	# STUD	COST	$/STU
BE	202	34.17	0.17
BRM	135	15.83	0.12
UC	34	6.61	0.19
EER	204	101.44	0.50
EL NCO	29	9.74	0.34
HEO NCO	58	19.57	0.34
UO	1	5.83	5.83
BHEO	342	111.63	0.33
UIC TOT:	1005	304.82	

FORMULAS

1. Location: DATA SET #3 Sublocation: REPORT #2 Sublocation: Sheet N

CELL(S)	FORMULA	REMARKS
C3	H:F5	Inputs the fiscal year for the cost estimate from the TQM/TIP data in Table 3A.
C5	F:B3	Inputs the total number of active courses from "N" in Table 2C.
C6	@SUM(H:G7..H:G37)	Inputs the total number of classes by summing column G of Table 3A.
C7	@SUM(H:F7..H:F37)	Inputs the total number of students by summing column F of Table 3A.
D10	@SUM(L:C6..L:W26)	Sums all unallocated overhead from the cost computations.
D11	@SUM(L:C33..L:W63)	Sums all allocated overhead from the cost computations.
C12	L:Y69	Inputs the sum of all direct costs from the cost computations.
C13	@SUM(D10..D12)	Sums direct and overhead costs in this report.
B17..B26	H:F7 H:F8 . H:F16	Inputs number of students, by course, for EEIC from Table 3A
C17..C26	M:O14 M:O15 . M:O23	Inputs cost per course from column N in Report #1.
D17..D26	@IF((B17=0),0,(C17/B17) @IF((B18=0),0,(C18/B18) @IF((B26=0),0,(C26/B26)	Computes average cost per student by dividing column C of this report by column B for each EEIC course.
G17..G27	H:F18 H:F19 . H:F28	Inputs number of students, by course, for CEIC from Table 3A.
H17..H27	M:O24 M:O25 . M:O34	Inputs cost per course from column N in Report #1.

I17..I27	@IF((G17=0),0,(H17/G17) @IF((G18=0),0,(H18/G18) @IF((G27=0),0,(H27/G27)	Computes average cost per student by dividing column H of this report by column G for each CEIC course.
L17..L24	H:F30 H:F31 . . H:F37	Inputs number of students, by course, for UIC from Table 3A.
M14..M24	M:O35 M:O36 . . M:O42	Inputs cost per course from column N in Report #1.
N14..N24	@IF((L17=0),0,(M17/L17) @IF((L18=0),0,(M18/L18) . . @IF((L24=0),0,(M24/L24)	Computes average cost per student by dividing column M of this report by column L for each UIC course.
B29	@SUM(B17..B27)	Sums each column.
C29	@SUM(C17..C27)	
G29	@SUM(G17..G27)	
H29	@SUM(H17..H27)	
L29	@SUM(L17..L27)	
M29	@SUM(M17..M27)	

REPORT #3

The "Budget Model Inputs" report is the primary cost information data table for the Budget Model. This report also provides useful planning and forecasting information.

a. The first four columns are the "Cost Estimate by CAC." The "TOTAL" column is the total estimated annual cost for each CAC.

b. To the right are the "Projected Allocation of Funds" for each Work Center (WC). While the term allocation doesn't necessarily mean that funds for a CAC will actually be distributed to various WC, the allocation does represent an estimate of how much of the total funding for the CAC will be in support of each WC's requirements.

c. The TOTAL ESTIMATED BUDGET gives the total estimated cost for the fiscal year and the estimated WC allocation totals.

d. In the future, WC estimates could be used in the form of either "lines of credit" or actual funding allocations which then would "buy support" via an internal MCES accounting system.

REPORT #3:
BUDGET MODEL INPUTS
FISCAL YEAR: 1996

COST ESTIMATE (BY CAC)

PROJECTED ALLOCATION OF FUNDS

CAC	SUBCAC	DESCRIP		TOTAL	ADM/PERS	D/I	GRAPHICS	D/S	SUPPLY	MAINT	H&S	EEIC	CEIC	UIC
V2H0	2H0A	CIV LAB	289.45						289.45					
	2H0B	TAD	15.20			15.20								
	2H0C	B REPRO	52.62		3.83	4.33			3.83			0.72	23.82	16.08
				357.27										
V2H1	2H1A	H&S	2.00								2.00			
	2H1B	BB-28	6.68			6.68								
	2H1C	PERS	4.82		4.82									
	2H1D	GRAPH	27.92				3.30					0.95	14.38	9.28
	2H1E	S REPRO	2.80			-0.00						0.08	1.78	0.95
	2H1F	BEQ	19.18					19.18						
	2H1G	CO FUND	5.40						5.40					
	2H1H	SUPPLY	10.78						10.78					
	2H1R	INVEST	287.60			9.69	5.81	3.87	194.24	12.75	1.94	0.00	29.06	30.26
	2H1I	MNT ADM	9.50							9.50				
	2H1J	EEIC ADM	0.14									0.14		
	2H1K	CEIC ADM	4.47										4.47	
	2H1L	UIC ADM	3.02											3.02
				384.29										
V2H2	2H2A	CONTRACT	23.22				2.91		0.00	13.61		0.00		6.70
	2H2B	MAINT	11.90							0.00		0.00	0.00	11.90
	2H2C	EEIC MNT	0.00									0.00		
	2H2D	CEIC MNT	11.55										11.55	
	2H2E	UIC MNT	80.21											80.21
				126.88										
VGB0		EEO	0.00									0.00		
VGE0		EEM NCO	0.00									0.00		
VGF0		EEO NCO	0.00									0.00		
VGG0		BEEM	0.00									0.00		
VGH0		EEC	0.00									0.00		
VGL0		BMW	0.00									0.00		
VGX0		SCM	60.00									60.00		
VGY0		BEEO	0.00									0.00		
VG20		REES	0.00									0.00		
VGXX		M9 ACE OP	0.00									0.00		
VGA0		CEO	64.80										64.80	
VGC0		CE NCO	1.20										1.20	
VGJ0		EOC	15.70										15.70	
VGK0		BCE	70.00										70.00	
VGM0		RCE NCO	0.00										0.00	
VGN0		RCEO	0.06										0.06	
VGS0		MMC	0.55										0.55	
VGZ0		BLSS	5.00										5.00	
VG10		RBCE	0.00										0.00	
VG30		LSS	0.00										0.00	
VG40		RBLSS	0.00										0.00	
VFA0		BE	18.20											18.20
VFB0		BRM	3.50											3.50
VFC0		UC	0.00											0.00
VFD0		EER	42.00											42.00
VFE0		EL NCO	1.40											1.40
VFG0		HEO NCO	14.00											14.00
VFH0		UO	0.00											0.00
VFJ0		BHEO	39.60											39.60
					ADM/PERS	D/I	GRAPHICS	D/S	SUPPLY	MAINT	H&S	EEIC	CEIC	UIC
					8.65	35.90	12.02	23.05	503.69	35.85	3.94	61.88	242.36	277.10
TOTAL ESTIMATED BUDGET			=	1204.45										

FORMULAS

1. Location: DATA SET #3 Sublocation: REPORT #3 Sublocation: Sheet O

CELL(S)	FORMULA	REMARKS
B3	H:F5	Inputs the fiscal year for the cost estimate from the TQM/TIP data in Table 3A.
E9 E10 E11	L:C67 L:D67 L:E67	Inputs respective 2H0 column totals from the cost estimation model computation (Sheet L) into the corresponding CAC.
F12	@SUM(E9..E11)	Sums CAC's for 2H0 in this report.
C13..C25	F67 G67 . Q67	Inputs respective 2H1 column totals from the computations into the corresponding CAC.
F26	@SUM(C13..C25)	Sums CAC's for 2H1 for this report.
E27..E31	L:S67 L:T67 . L:W67	Inputs respective column totals from the cost estimation model computation (Sheet L) into the corresponding CAC.
F32	@SUM(E27..E31)	Sums CAC's for 2H2 in this report.
E33..Y33	L:Y33 L:Y34 . . L:Y63	Inputs respective direct course costs from the cost estimation model computations (Sheet L) into the corresponding CACs.
F65	@SUM(F12,F26,F32,E33..E61)	Sums 2H0, 2H1, 2H2, and all direct course costs.

This portion of Report #3 is somewhat subjective. The Work Center (WC) breakout is designed to reflect allocation of those costs which could be used as cost ceilings or lines of credit attributable to WCs. In general, a study of cells, by CAC, where values "hit" in the computations in Data Set #2 is used as the basis to make WC allocations. Because a variety of allocation schemes are used, the formulas below reflect the spreadsheet level (i.e., A:, L:) where the cell contents are pulled. Cells/Formulas are listed by rows to facilitate tracking allocations.

K9	+E9	All civilian labor is accounted under Supply.
H10	+E10	All TAD is accounted under DI.
G11	A:O15	Base Repro costs reflect a WC's share of copier machine costs from Table 1C plus printing costs as computed in the model/ computations.
H11	@SUM(L:E8,A:P15,A:Q15)	
K11	A:R15	
N11	@SUM(L:E33..L:E42)	
O11	@SUM(L:E44..L:E54)	
P11	@SUM(L:E56..L:E63)	
M13	+E13	All H&S costs is accounted under H&S.
H14	+E14	All BB-28 costs is accounted under DI.
G15	+E15	All Personnel costs is accounted under Admin/Pers.
I16	+E16-@SUM(N16..P16)	Costs accounted by Graphics are total graphics costs less that portion allocated to other WCs.
N16	@SUM(L:I33..L:I42)	Apportions allocated graphics costs from the cost computations to the company WCs.
O16	@SUM(L:I44..L:I54)	
P16	@SUM(L:I56..L:I63)	
H17	+E17-@SUM(N16..P17)	Costs accounted by DI are total School Repro less that portion allocated to other WCs.
N17	@SUM(L:J33..L:J42)	Apportions allocated School Repro costs from the cost computations to the company WCs .
	@SUM(L:J44..L:J54)	
	@SUM(L:J56..L:J63)	
J18	+E18	All BEQ cost is accounted for by the DS.
K19	+E19	All CO Funds is accounted for by Supply.
K20	L:M67	All Supply (less investment for 2HIR) is accounted for by Supply.

H21	L:R10	Investment (CAC 2HIR) is apportioned
I21	L:R12	according to allocation in the cost
J21	L:R14	computation and assigned to applicable
K21	L:R15+L:R16	WCs. The Supply WC accounts for
L21	L:R17	investment for both Supply and the MCES
M21	L:R9	CO fund.
N21	L:R18	
O21	L:R19	
P21	L:R20	
L22	+E22	All Maint Admin is accounted under Maint WC
N23	+E23	All EEIC Admin is accounted for by EEIC
O24	+E24	All CEIC Admin is accounted for by CEIC
P25	+E25	All UIC Admin is accounted by UIC
I27	L:S12	
K27	E27-@SUM(I27,L27,N27,P27)	Contract costs are apportioned according
L27	L:S17	to the allocation in the cost computations
N27	@SUM(L:S34..L:S36)	and assigned to applicable WCs. Costs not
P27	L:S59+L:S63	allocated to other WCs are accounted for under Supply.
L28	E28-@SUM(N28..P28)	School Maint are apportioned according to allocation in the cost computation and assigned to applicable WCs. Cost not allocated are accounted for by Maint.
N28	@SUM(L:T33..L:T42)	
O28	@SUM(L:T44..L:T54)	
P28	@SUM(L:T56..L:T63)	
N29	@SUM(L:U24,L:U33..L:U42)	EEIC company maintenance, not otherwise covered by CAC 2H2B, is summed from the cost computations.
O30	@SUM(L:V25,L:V44..L:V54)	CEIC company maintenance, not otherwise covered by CAC 2H2B, is summed from the cost computations.
P31	@SUM(L:W26,L:W56..L:W63)	UIC company maintenance, not otherwise covered by CAC 2H2B, is summed from the cost computations.
N33..N42	+E33 +E34 . +E42	All EEIC direct material course costs are accounted for under EEIC.

O43..O53	+E43 +E44 . +E53	All CEIC direct material course cost is accounted for under CEIC.
P54..P61	+E54 +E55 . +E61	All UIC direct material course cost is accounted for under UIC.
G63..P63	@SUM(G9..G61) @SUM(H9..H61) . . @SUM(P9..P61)	Sums each column across row 141.

APPENDIX D. RESOURCE ALLOCATION MODEL

This appendix details the budget inputs, factor adjustments, computations, deficiency determination, and model outputs for the Resource Allocation Model.

MODEL INPUTS

1. GENERAL INFORMATION. The first section describes the inputs/outputs, use, and other information for each table in Data Set #1. The second section details the logic and calculations contained in Data Set #2. The last segment specifies the report outputs for the Resource Allocation Model, with the final fiscal year budget, and determines allocations for each accounting code for the courses and work centers.

2. DESCRIPTION. Each subsection furnishes information as follows:

a. Table Title: Gives table title and other summary information.

b. Table Description: Describes the purpose/use of the table.

c. Functions: Describes the mathematical functions to make data manipulations and/or allocations.

d. Remarks and Notes: Covers items not discussed elsewhere which are essential to model operations.

TABLE INFORMATION

1. Table Number: 1A

2. Table Title: Budget Data

3. Table Purpose: Contains Comptroller generated inputs on Total Obligation Authority (TOA).

4. Table Description

a. Elements:

1) Fiscal Year Total Obligation Authority (TOA)

2) Quarterly budget controls (QTR TOA)

3) Percentages of TOA and QTR TOA

b. Functions and Calculations: Row 12 contains quarterly computations for the percentage of annual TOA available in each quarter as dictated by the budget controls after obligations for scheduled obligations (See Table 1B).

TOTAL OBLIGATION AUTHORITY INPUT

DATA SET #1: INPUT DATA IN SHADED CELLS

TABLE 1A: BUDGET DATA FY: 1996

	TOA TOTAL	1ST QTR	2ND QTR	3RD QTR	4TH QTR
TOA=	**1073.270**				
QTR TOA=		321.90	321.90	214.60	214.60
% TOA	100.0%	31.00%	33.46%	17.29%	18.21%

TABLE 1B: SCHEDULED OBLIGATIONS

DESCRIPTION	CAC	TOTAL	1ST QTR	2ND QTR	3RD QTR	4TH QTR
CIV LABOR:	2H0A	289.446	72.362	72.362	72.362	72.362
CONTRACTS	2H2A	23.220	16.659	-2.145	5.854	2.852
BASE PRINTING	2H0C	52.624	13.400	14.784	13.956	10.484
--		0.000				
--		0.000				
--		0.000				
TOTAL SCHED TOA:		365.290	102.421	85.001	92.172	85.697

TOTAL TOA AVAILABLE AFTER SCHED TOA: 707.980

TABLE 1C: UNSCHEDULED OBLIGATION RATES

1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
0.25	0.25	0.25	0.25	1.00

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet P Sublocation: Table 1A

CELL(S)	FORMULA	REMARKS
B10	FY TOA	Inputs the Total Obligation Authority for the year.
C12..F12	QTR TOA	Inputs quarterly comptroller imposed budget restrictions.
B14	@SUM(C14..F14)	Sum of quarterly TOA as percentage of annual TOA.
C14	(C12-D29)/C29	Quarterly percentage of annual TOA available after scheduled obligations are subtracted, divided by the annual total of scheduled obligations.
D14	(D12-E29)/C29	
E14	(E12-F29)/C29	
F14	(F12-G29)/C29	

TABLE INFORMATION

1. Table Number: 1B

2. Table Title: Scheduled Obligations

3. Table Purpose: To display the schedule of funding requirements which are recurring and fixed for the fiscal year.

4. Table Description

a. Elements: Currently, funding for civilian labor, contracts, and copier maintenance reimbursement to Base Repro are treated as the only "scheduled" obligations.

b. Functions and Calculations:

1) The amount of funding required for each CAC, by quarter for each scheduled item is entered in columns D through G. Column C calculates the sum of the scheduled obligations for the year.

2) Cell E31 calculates the Total TOA available for budget allocation after scheduled obligations are fenced. Cells D29 through G29 fence the quarterly scheduled obligations after which quarterly budget allocations can be made.

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet P Sublocation: Table 1B

CELL(S)	FORMULA	REMARKS
C23	@SUM(D23..G23)	Calculates total scheduled obligations.
.	.	
C28	@SUM(D28..G28)	
C29	B10-(@SUM(C23..C28)	Calculates TOA minus total scheduled obligations.
D23..G23	E:E16/4	Calculates the quarterly scheduled obligation for civilian labor from Table 2A of the Cost Estimation Model.
D24	AA:M86	The quarterly scheduled obligation for Contracts from the 1st quarter report from the Resource Allocation Model.
E24	AB:M84	The quarterly scheduled obligation for Contracts from the 2nd quarter report from the Resource Allocation Model.
F24	AC:M84	The quarterly scheduled obligation for Contracts from the 3rd quarter report from the Resource Allocation Model.
G24	AD:M84	The quarterly scheduled obligation for Contracts from the 4th quarter report from the Resource Allocation Model.
D29	@SUM(D23..D28)	Sums the quarterly scheduled obligations.
.		
G29	@SUM(G23..G28)	
E31	B10-C29	Calculates the TOA available after scheduled TOA is subtracted.

TABLE INFORMATION

1. Table Number: 1C

2. Table Title: Unscheduled Obligation Rates

3. Table Purpose: Allows input of an "estimated" spread of funding by quarter after covering scheduled obligations (see Table 1B).

4. Table Description:

   a. Elements: None

   b. Functions and Calculations: None

5. Remarks and Notes

   a. This table permits the model user to express mathematically a preferred or forecasted allocation of funds by quarter. For example, if the model user expects funding requirements to be equally distributed by quarter, then a decimal value for one-quarter (i.e., 0.25) would be entered for each quarter.

   b. Values for columns B through E must always equal = 1, and the sum of the row is provided in cell F39 for quick reference.

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet P Sublocation: Table 1C

CELL(S)	FORMULA	REMARKS
B39..E39	Unscheduled obligation rates	Input for unscheduled obligation rates by quarter.
F39	@SUM(B39..E39)	Sums the quarterly unscheduled obligation rates.

TABLE INFORMATION

1. Table Number: 2

2. Table Title: Student Throughput

3. Table Purpose: Provides quarterly student throughput data, by course, for the current fiscal year and total student throughput for the next year. Additionally, the table spreads the number of students equitably by quarter, based on the number of classes offered per quarter and fiscal year.

4. Table Description

a. Elements:

1) Courses

2) Number of students

b. Functions and Calculations: Calculates the number of students per quarter and fiscal year for each course and the total number of students per quarter and year for all courses from Training Quota Memorandum inputs.

5. Remarks and Notes: Quarterly data (columns L through O, and R) is generated and inputted by the Director of Instruction for MCES.

TABLE 2: STUDENT THROUGHPUT

COURSE	CAC	FY 1996 TOTAL	1ST QTR	2ND QTR	3RD QTR	4TH QTR	FY 1996 TOTAL	FY 1997 TOTAL	FY 97 1ST QTR
EEO	GB0	0	0	0	0	0	0	0	0
EEM NCO	GE0	0	0	0	0	0	0	0	0
EEO NCO	GF0	0	0	0	0	0	0	0	0
BEEM	GG0	0	0	0	0	0	0	0	0
EEC	GH0	0	0	0	0	0	0	0	0
BMW	GL0	0	0	0	0	0	0	0	0
SCM	GX0	45	15	15	15	0	45	45	15
BEEO	GY0	0	0	0	0	0	0	0	0
REES	G20	0	0	0	0	0	0	0	0
M9 ACE OP	GXX	0	0	0	0	0	0	0	0
CEO	GA0	43	14	7	7	14	43	39	13
CE NCO	GC0	52	0	17	17	17	52	50	0
EOC	GJ0	29	15	15	0	0	29	30	15
BCE	GK0	1008	245	272	245	245	1008	917	223
RCE NCO	GM0	10	0	0	0	10	10	10	0
RCEO	GN0	5	0	0	5	0	5	5	0
MMC	GS0	22	6	6	6	4	22	22	6
BLSS	GZ0	299	82	82	54	82	299	186	51
RBCE	G10	15	0	0	15	0	15	15	0
LSS	G30	0	0	0	0	0	0	0	0
RBLSS	G40	6	0	0	6	0	6	0	0
BE	FA0	202	29	58	58	58	202	167	24
BRM	FB0	135	27	54	27	27	135	0	0
UC	FC0	34	0	17	17	0	34	34	0
EER	FD0	204	68	68	68	0	204	180	60
EL NCO	FE0	29	15	0	0	15	29	27	14
HEO NCO	FG0	58	29	0	29	0	58	60	30
UO	FH0	1	0	0	1	0	1	2	0
BHEO	FJ0	342	103	103	103	34	342	189	57
TOTALS:		2539	647	713	673	506	2539	1978	507

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet P Sublocation: Table 2

CELL(S)	FORMULA	REMARKS
K7	H:F7	Inputs the total current fiscal year student throughput.
.	.	
K16	H:F16	
K18	H:F18	
.	.	
K28	H:F28	
K30	H:F30	
.	.	
K37	H:F37	
L7	0	Calculates the student throughput by quarter based on class scheduling and/or quarterly class capacity. Class scheduling is input for Training Quota Memorandum. Additional scheduling constraints exist because facilities and/or instructors are involved in the instruction of multiple POI's, so class schedules must be staggered to insure resources are available when classes convene.
L8	(1/3)*K8	
L9	(1/3)*K9	
L10	(5/16)*K10	
L11	0	
L12	(1/4)*K12	
L13	(1/3)*K13	
L14	(8/32)*K14	
L15	0	
L16	0	
L18	(2/6)*K18	
L19	0	
L20	(1/2)*K20	
L21	(9/37)*K21	
L22	0	
L23	0	
L24	(3/11)*K24	
L25	(3/11)*K25	
L26	0	
L27	0	
L28	0	
L30	(1/7)*K30	
L31	(1/5)*K31	
L32	0	
L33	(2/6)*K33	
L34	(1/2)*K34	
L35	(1/2)*K35	
L36	0	
L37	(3/10)*K37	

M7	0	Calculates the student throughput by quarter based on class scheduling and/or quarterly class capacity. Class scheduling is input for Training Quota Memorandum. Additional scheduling constraints exist because facilities and/or instructors are involved in the instruction of multiple POI's, so class schedules must be staggered to insure resources are available when classes convene.
M8	(1/3)*K8	
M9	(1/3)*K9	
M10	(4/16)*K10	
M11	(1/1)*K11	
M12	(1/4)*K12	
M13	(1/3)*K13	
M14	(8/32)*K14	
M15	0	
M16	0	
M18	(2/6)*K18	
M19	(1/3)*K19	
M20	(1/2)*K20	
M21	(10/37)*K21	
M22	0	
M23	0	
M24	(3/11)*K24	
M25	(3/11)*K25	
M26	0	
M27	0	
M28	0	
M30	(2/7)*K30	
M31	(2/5)*K31	
M32	0	
M33	(2/6)*K33	
M34	(1/2)*K34	
M35	0	
M36	0	
M37	(3/10)*K37	

N7	(1/1)*K7	Calculates the student throughput by quarter based on class scheduling and/or quarterly class capacity. Class scheduling is input for Training Quota Memorandum. Additional scheduling constraints exist because facilities and/or instructors are involved in the instruction of multiple POI's, so class schedules must be staggered to insure resources are available when classes convene.
N8	(1/3)*K8	
N9	0	
N10	(3/16)*K10	
N11	0	
N12	(1/4)*K12	
N13	(1/3)*K13	
N14	(9/32)*K14	
N15	0	
N16	0	
N18	(1/6)*K18	
N19	(1/3)*K19	
N20	0	
N21	(9/37)*K21	
N22	0	
N23	(1/1)*K23	
N24	(3/11)*K24	
N25	(2/11)*K25	
N26	(1/1)*K26	

N27	0	
N28	(1/1)*K28	
N30	(2/7)*K30	
N31	(1/5)*K31	
N32	(1/2)*K32	
N33	(2/6)*K33	
N34	0	
N35	(1/2)*K35	
N36	(1/1)*K36	
N37	(3/10)*K37	
O7	0	Calculates the student throughput by quarter based
O8	0	on class scheduling and/or quarterly class capacity.
O9	(1/3)*K9	Class scheduling is input for Training Quota
O10	(4/16)*K10	Memorandum. Additional scheduling constraints
O11	0	exist because facilities and/or instructors are
O12	(1/4)*K12	involved in the instruction of multiple POI's, so
O13	0	class schedules must be staggered to insure resources
		are available when classes convene.
O14	(7/32)*K14	
O15	(1/1)*K15	
O16	0	
O18	(2/6)*K18	
O19	(1/3)*K19	
O20	0	
O21	(9/37)*K21	
O22	(1/1)*K22	
O23	0	
O24	(2/11)*K24	
O25	(3/11)*K25	
O26	0	
O27	0	
O28	0	
O30	(2/7)*K30	
O31	(1/5)*K31	
O32	0	
O33	(0/6)*K33	
O34	(1/2)*K34	
O35	0	
O36	0	
O37	(1/10)*K37	
P7	@SUM(L7..O7)	Sums quarterly student throughput as check for
.		column K.
.		
P37	@SUM(L37..O37)	
Q7	H:Q7	Inputs the total fiscal year student throughput for
.	.	the following year from Table 3B of the Cost
Q16	H:Q16	Estimation Model.

Q18	H:Q18
.	.
Q28	H:Q28
Q30	H:Q30
.	.
Q37	H:Q37

R7	0
R8	(1/3)*Q8
R9	(1/3)*Q9
R10	(5/16)*Q10
R11	0
R12	(1/4)*Q12
R13	(1/3)*Q13
R14	(8/32)*Q14
R15	0
R16	0
R18	(2/6)*Q18
R19	0
R20	(1/2)*Q20
R21	(9/37)*Q21
R22	0
R23	0
R24	(3/11)*Q24
R25	(3/11)*Q25
R26	0
R27	0
R28	0
R30	(1/7)*Q30
R31	(1/5)*Q31
R32	0
R33	(2/6)*Q33
R34	(1/2)*Q34
R35	(1/2)*Q35
R36	0
R37	(3/10)*Q37

Calculates the student throughput by quarter based on class scheduling and/or quarterly class capacity. Class scheduling is input for Training Quota Memorandum. Additional scheduling constraints exist because facilities and/or instructors are involved in the instruction of multiple POI's, so class schedules must be staggered to insure resources are available when classes convene. This calculation is for the 1st quarter of the next fiscal year.

TABLE INFORMATION

1. Table Number: 3A and 3B

2. Table Title: Cost Forecast (Cost Estimate (by CAC)) and Work Center Cost Forecast

3. Table Purpose: Inputs the cost estimates from Report #3 of the Cost Estimation Model for the current (i.e., year being budgeted) into the Resource Allocation Model for the budgeted year.

4. Table Description

a. Elements:

1) Total cost estimate (requirements) by CAC.

2) Allocation of the cost estimate, by CAC, to each work center.

b. Functions and Calculations: Data in Table 3A and 3B is gathered from Report #3, Sheet O from Cost Estimation Model.

5. Remarks and Notes: Work Centers are the school support sections that are associated with overhead CACs.

TABLE 3A: COST FORECAST

COST ESTIMATE (BY CAC)

CAC	SUBCAC	DESCRIP	TOTAL	←	From Alloc of Funds TOTAL
V2H0	2H0A	CIV LAB	289.45		289.45
	2H0B	TAD	15.20		15.20
	2H0C	B REPRO	52.62		52.62
V2H1	2H1A	H&S	2.00		2.00
	2H1B	BB-28	6.68		6.68
	2H1C	PERS	4.82		4.82
	2H1D	GRAPH	27.92		27.92
	2H1E	S REPRO	2.80		2.80
	2H1F	BEQ	19.18		19.18
	2H1G	CO FUND	5.40		5.40
	2H1H	SUPPLY	10.78		10.78
	2H1R	INVEST	287.60		287.60
	2H1I	MNT ADM	9.50		9.50
	2H1J	EEIC ADM	0.14		0.14
	2H1K	CEIC ADM	4.47		4.47
	2H1L	UIC ADM	3.02		3.02
V2H2	2H2A	CONTRACT	23.22		23.22
	2H2B	MAINT	11.90		11.90
	2H2C	EEIC MNT	0.00		0.00
	2H2D	CEIC MNT	11.55		11.55
	2H2E	UIC MNT	80.21		80.21
VGB0		EEO	0.00		0.00
VGE0		EEM NCO	0.00		0.00
VGF0		EEO NCO	0.00		0.00
VGG0		BEEM	0.00		0.00
VGH0		EEC	0.00		0.00
VGL0		BMW	0.00		0.00
VGX0		SCM	60.00		60.00
VGY0		BEEO	0.00		0.00
VG20		REES	0.00		0.00
VGXX		M9 ACE OP	0.00		0.00
VGA0		CEO	64.80		64.80
VGC0		CE NCO	1.20		1.20
VGJ0		EOC	15.70		15.70
VGK0		BCE	70.00		70.00
VGM0		RCE NCO	0.00		0.00
VGN0		RCEO	0.06		0.06
VGS0		MMC	0.55		0.55
VGZ0		BLSS	5.00		5.00
VG10		RBCE	0.00		0.00
VG30		LSS	0.00		0.00
VG40		RBLSS	0.00		0.00
VFA0		BE	18.20		18.20
VFB0		BRM	3.50		3.50
VFC0		UC	0.00		0.00
VFD0		EER	42.00		42.00
VFE0		EL NCO	1.40		1.40
VFG0		HEO NCO	14.00		14.00
VFH0		UO	0.00		0.00
VFJ0		BHEO	39.60		39.60
TOTAL ESTIMATED BUDGET			1204.448		1204.448

TABLE 3B: WORK CENTER COST FORECAST

ADM/PERS	D/I	GRAPHICS	D/S	SUPPLY	MAINT	H&S	EEIC	CEIC	UIC
				289.45					
	15.20								
3.83	4.33			3.83			0.72	23.82	16.08
						2.00			
	6.68								
4.82									
		3.30					0.95	14.38	9.28
	-0.00						0.08	1.78	0.95
			19.18						
				5.40					
				10.78					
9.69	5.81	3.87	194.24	12.75	1.94	0.00	29.06	30.26	
				9.50					
							0.14		
								4.47	
									3.02
		2.91		0.00	13.61		0.00		6.70
					0.00		0.00	0.00	11.90
							0.00		
								11.55	
									80.21
							0.00		
							0.00		
							0.00		
							0.00		
							0.00		
							0.00		
							0.00		
							60.00		
							0.00		
							0.00		
							0.00		
								64.80	
								1.20	
								15.70	
								70.00	
								0.00	
								0.06	
								0.55	
								5.00	
								0.00	
								0.00	
								0.00	
									18.20
									3.50
									0.00
									42.00
									1.40
									14.00
									0.00
									39.60
8.65	35.90	12.02	23.05	503.69	35.85	3.94	61.88	242.36	277.10

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet Q Sublocation: Table 3A & 3B

CELL(S)	FORMULA	REMARKS
D7	+F7	Refer to note below.
.	.	
D59	+F59	
F7	O:E9	
.	.	
F59	O:E61	Sources costs from Report #3 of Cost Estimation.
D61	+F61	Sums total cost estimate requirements by CAC.
F61	@SUM(F7..F59)	
H9	O:G11	Sources costs and allocates costs by CAC and WC
H13	O:G15	from Report #3 of Cost Estimation. (ADM/PERS)
I8	O:H10	Sources costs and allocates costs by CAC and WC
I9	O:H11	from Report #3 of Cost Estimation.
I12	O:H14	Director of Instruction (D/I)
I15	O:H17	
I19	O:H21	
J14	O:I16	Sources costs and allocates costs by CAC and WC
J19	O:I21	from Report #3 of Cost Estimation. GRAPHICS
J25	O:I27	
K16	O:J18	Sources costs and allocates costs by CAC and WC
K19	O:J21	from Report #3 of Cost Estimation. Director of Support (D/S)
L1	O:K9	Sources costs and allocates costs by CAC and WC
L3	O:K11	from Report #3 of Cost Estimation. SUPPLY
L17	O:K19	
L18	O:K20	
L19	O:K21	
L25	O:K27	
M19	O:L21	Sources costs and allocates costs by CAC and WC
M20	O:L22	from Report #3 of Cost Estimation. MAINT
M25	O:L27	
M26	O:L28	
N11	O:M13	Sources costs and allocates costs by CAC and WC
N19	O:M21	from Report #3 of Cost Estimation. H&S
O3	O:N11	Sources costs and allocates costs by CAC and WC
O14	O:N16	from Report #3 of Cost Estimation. EEIC

O15	O:N17	
O19	O:N21	
O21	O:N23	
O25	O:N27	
O26	O:N28	
O27	O:N29	
O31..O40	O:N32..O:N42	
P3	O:O11	Sources costs and allocates costs by CAC and WC
P14	O:O16	from Report #3 of Cost Estimation. CEIC
P15	O:O17	
P19	O:O21	
P22	O:O24	
P26	O:O28	
P28	O:O30	
P41..P51	O:O43..O:N53	
Q3	O:P11	Sources costs and allocates costs by CAC and WC
Q14	O:P16	from Report #3 of Cost Estimation. UIC
Q15	O:P17	
Q19	O:P21	
Q23	O:P25	
Q25	O:P27	
Q26	O:P28	
Q29	O:P31	
Q52..Q59	O:P54..O:P61	
H61..Q61	@SUM(H7..H61)...@SUM(Q7..Q61)	Sums column totals.

TABLE INFORMATION

1. Table Number: 4

2. Table Title: First Adjustment--Percentage

3. Table Purpose: Makes first budget adjustments to determine the approximate percentage of the annual estimated requirement which will be funded in order to stay within funding available (i.e., TOA).

4. Table Description

a. Elements:

1) Percent of requirement to be funded.

2) Total annual funding requirement by CAC (from Table 3A).

b. Functions and Calculations

1) Column C computes the percentage of the estimated requirement (column D) to be funded for each CAC.

2) To facilitate making adjustments, column H provides a computation to show how close the percentile adjustments are getting the allowable budget amount (cell E61) to the TOA available for the year (from cell B10 in Table 1A).

5. Remarks and Notes

a. Table 4, in conjunction with Table 5, does all the budget adjustments. The remainder of the model does the budget spread across CACs and analyses by quarter.

b. Enter the percentage in Column C as a whole number.

c. The objective of Table 4 is to try to get the value for the "ADJ" cells in column H to within plus or minus $5.000 of the TOA value in column H. The closer to "0.000" the better, but the purpose of Table 5 is to make the fine adjustments.

TABLE 4: FIRST ADJUSTMENT - PERCENTAGE

CAC	DESCRIPTION	PERCENT	TOTAL	FIRST ADJUST			
2H0A	CIV LAB	100	289.446	289.446		TOA:	1073.27
2H0B	TAD	100	15.200	15.200		ADJ	1073.59
2H0C	B REPRO	100	52.624	52.624		DIFF	-0.32
2H1A	H&S	100	2.000	2.000			
2H1B	BB-28	100	6.680	6.680			
2H1C	PERS	100	4.816	4.816			
2H1D	GRAPH	100	27.916	27.916			
2H1E	S REPRO	100	2.800	2.800			
2H1F	BEQ	100	19.178	19.178			
2H1G	CO FUND	100	5.400	5.400			
2H1H	SUPPLY	100	10.779	10.779			
2H2R	INVEST	54.5	287.600	156.742			
2H1I	MNT ADM	100	9.500	9.500		TOA:	1073.27
2H1J	EEIC ADM	100	0.135	0.135		ADJ	1073.59
2H1K	CEIC ADM	100	4.467	4.467		DIFF	-0.32
2H1L	UIC ADM	100	3.015	3.015			
2H2A	CONTRACT	100	23.220	23.220			
2H2B	MAINT	100	11.900	11.900			
2H2C	EEIC MNT	100	0.000	0.000			
2H2D	CEIC MNT	100	11.550	11.550			
2H2E	UIC MNT	100	80.210	80.210			
						TOA:	1073.27
VGB0	EEO	100	0.000	0.000		ADJ	1073.59
VGE0	EEM NCO	100	0.000	0.000		DIFF	-0.32
VGF0	EEO NCO	100	0.000	0.000			
VGG0	BEEM	100	0.000	0.000			
VGH0	EEC	100	0.000	0.000			
VGL0	BMW	100	0.000	0.000			
VGX0	SCM	100	60.000	60.000			
VGY0	BEEO	100	0.000	0.000			
VG20	REES	100	0.000	0.000			
VGXX	M9 ACE OP	100	0.000	0.000			
VGA0	CEO	100	64.800	64.800			
VGC0	CE NCO	100	1.200	1.200		TOA:	1073.27
VGJ0	EOC	100	15.700	15.700		ADJ	1073.59
VGK0	BCE	100	70.000	70.000		DIFF	-0.32
VGM0	RCE NCO	100	0.000	0.000			
VGN0	RCEO	100	0.063	0.063			
VGS0	MMC	100	0.550	0.550			
VGZ0	BLSS	100	5.000	5.000			
VG10	RBCE	100	0.000	0.000			
VG30	LSS	100	0.000	0.000			
VG40	RBLSS	100	0.000	0.000			
VFA0	BE	100	18.200	18.200			
VFB0	BRM	100	3.500	3.500			
VFC0	UC	100	0.000	0.000		TOA:	1073.27
VFD0	EER	100	42.000	42.000		ADJ	1073.59
VFE0	EL NCO	100	1.400	1.400		DIFF	-0.32
VFG0	HEO NCO	100	14.000	14.000			
VFH0	UO	100	0.000	0.000			
VFJ0	BHEO	100	39.600	39.600			

	ESTIMATE	ADJUSTED
TOTAL BUDGET	1204.45	1073.59

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet R Sublocation: Table 4

CELL(S)	FORMULA	REMARKS
C6 . C58	Input percentage as whole number.	Used to calculate percentage adjustment to compute TOA budget from estimated budget.
D6 . D58	Q:F7 . Q:F59	Sources total estimated budget allocation by CAC from Table 3A.
E6 . E58	(C6/100)*D6 . (C58/100)*D58	Computes percentage adjustment (increase or decrease) of estimated budget to approximate as closely as possible the TOA. Finer adjustments will be made in Table 5.
D61	@SUM(D6..D58)	Sums estimated budget in column D.
E61	@SUM(E6..E58)	Sums adjusted budget in column E.
H6, H19, H29, H41, H53	P:B10	Sources annual TOA from Table 1A.
H7, H20, H30, H42, H54	E61	Sum of percentage adjusted budget in column E.
H8, H21, H31 H43, H55	H6-H7	Computes the difference between the estimated budget and the adjusted budget based on TOA. The difference does not have to be exactly "0.00" at this point, finer adjustments will be made in Table 5. The computation is provided more than one time so that the adjusted difference can be seen as the user moves down the spreadsheet page.

TABLE INFORMATION

1. Table Number: 5

2. Table Title: Second Adjustment--Values

3. Table Purpose: Makes the remaining budget adjustments to get the budget in line with the funding available (i.e., TOA).

4. Table Description

a. Elements:

1) Budget adjustments (in $(000)) by addition/subtraction.

2) Results of the First Adjustment from Table 4.

b. Functions and Calculations:

1) Column F computes the net value from columns C through E for each CAC.

2) To facilitate making adjustments, column H provides a computation to show how close the values inputted into either column C or D are getting the budget amount (cell F61) for the year to the TOA available for the year (from cell B10 in Table 1A).

5. Remarks and Notes: Once the "DIFF" values in column H equal "0.000," Table 5 provides the total budget for each CAC for the fiscal year.
p

TABLE 5: SECOND ADJUSTMENT - VALUES

CAC	DESCRIP	PLUS	MINUS	FIRST ADJUST	SECOND ADJUST		
2H0A	CIV LAB	0.000	0.000	289.446	289.446	TOA:	1073.270
2H0B	TAD	0.000	0.000	15.200	15.200	ADJ	1073.270
2H0C	B REPRO	0.000	0.000	52.624	52.624	DIFF	-0.000
2H1A	H&S	0.000	0.000	2.000	2.000		
2H1B	BB-28	0.000	0.000	6.680	6.680		
2H1C	PERS	0.000	0.000	4.816	4.816		
2H1D	GRAPH	0.000	0.000	27.916	27.916		
2H1E	S REPRO	0.000	0.000	2.800	2.800		
2H1F	BEQ	0.000	0.000	19.178	19.178		
2H1G	CO FUND	0.000	0.000	5.400	5.400		
2H1H	SUPPLY	0.000	0.000	10.779	10.779		
2H2R	INVEST	0.000	0.320	156.742	156.422		
2H1I	MNT ADM	0.000	0.000	9.500	9.500	TOA:	1073.270
2H1J	EEIC ADM	0.000	0.000	0.135	0.135	ADJ	1073.270
2H1K	CEIC ADM	0.000	0.000	4.467	4.467	DIFF	-0.000
2H1L	UIC ADM	0.000	0.000	3.015	3.015		
2H2A	CONTRACT	0.000	0.000	23.220	23.220		
2H2B	MAINT	0.000	0.000	11.900	11.900		
2H2C	EEIC MNT	0.000	0.000	0.000	0.000		
2H2D	CEIC MNT	0.000	0.000	11.550	11.550		
2H2E	UIC MNT	0.000	0.000	80.210	80.210		
						TOA:	1073.270
VGB0	EEO	0.000	0.000	0.000	0.000	ADJ	1073.270
VGE0	EEM NCO	0.000	0.000	0.000	0.000	DIFF	-0.000
VGF0	EEO NCO	0.000	0.000	0.000	0.000		
VGG0	BEEM	0.000	0.000	0.000	0.000		
VGH0	EEC	0.000	0.000	0.000	0.000		
VGL0	BMW	0.000	0.000	0.000	0.000		
VGX0	SCM	0.000	0.000	60.000	60.000		
VGY0	BEEO	0.000	0.000	0.000	0.000		
VG20	REES	0.000	0.000	0.000	0.000		
VGXX	M9 ACE OP	0.000	0.000	0.000	0.000		
VGA0	CEO	0.000	0.000	64.800	64.800		
VGC0	CE NCO	0.000	0.000	1.200	1.200	TOA:	1073.270
VGJ0	EOC	0.000	0.000	15.700	15.700	ADJ	1073.270
VGK0	BCE	0.000	0.000	70.000	70.000	DIFF	-0.000
VGM0	RCE NCO	0.000	0.000	0.000	0.000		
VGN0	RCEO	0.000	0.000	0.063	0.063		
VGS0	MMC	0.000	0.000	0.550	0.550		
VGZ0	BLSS	0.000	0.000	5.000	5.000		
VG10	RBCE	0.000	0.000	0.000	0.000		
VG30	LSS	0.000	0.000	0.000	0.000		
VG40	RBLSS	0.000	0.000	0.000	0.000		
VFA0	BE	0.000	0.000	18.200	18.200		
VFB0	BRM	0.000	0.000	3.500	3.500		
VFC0	UC	0.000	0.000	0.000	0.000	TOA:	1073.270
VFD0	EER	0.000	0.000	42.000	42.000	ADJ	1073.270
VFE0	EL NCO	0.000	0.000	1.400	1.400	DIFF	-0.000
VFG0	HEO NCO	0.000	0.000	14.000	14.000		
VFH0	UO	0.000	0.000	0.000	0.000		
VFJ0	BHEO	0.000	0.000	39.600	39.600		
					ADJUSTED		
TOTAL BUDGET					1073.270		

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet S Sublocation: Table 5

CELL(S)	FORMULA	REMARKS
C6 . C58	Input increase to budget as whole number.	Used to calculate positive adjustment to compute TOA budget from adjusted budget in Table 4.
D6 . D58	Input decrease to budget as whole number.	Used to calculate negative adjustment to compute TOA budget from adjusted budget in Table 4.
E6 . E58	R:E7 . R:E58	Sources total adjusted budget allocation by CAC from Table 4.
F6 . F58	(E6+C6)- D6 . (E58+C58)- D58	Computes numerical adjustment (increase or decrease) of adjusted budget to match the authorized TOA. This is the final adjustment.
F61	@SUM(F6..F58)	Sums adjusted budget in column F.
H6, H19, H29, H41, H53	P:B10	Sources annual TOA from Table 1A.
H7, H20, H30, H42, H54	E61	Sums the numerically adjusted budget in column F.
H8, H21, H31 H43, H55	H6-H7	Computes the difference between the adjusted budget and the authorized budget based on TOA. The difference should be exactly "0.00" at this point. The computation is provided more than one time so that the adjusted difference can be seen as the user moves down the spreadsheet page.

MODEL COMPUTATIONS

1. GENERAL INFORMATION. This section describes the inputs/outputs, use, and other information for each computation in Data Set #2.

2. DESCRIPTION. Each subsection furnishes information as follows:

a. Title: Gives the computation field's title and other summary information.

b. Description: Describes the purpose/use of the computation.

c. Functions: Describes the mathematical functions to make data manipulations and/or allocations.

d. Remarks and Notes: Covers items not discussed elsewhere which are essential to model operations.

COMPUTATION INFORMATION

1. Computation Number: 1

2. Title: Student Throughput Factors

3. Purpose: This computation estimates the proportionate amount of fiscal year funding requirement by quarter based on when the obligation of resources should occur.

4. Computation Description

a. Elements:

1) Quarterly obligation rates from Table 1C.

2) Student throughput by quarter from Table 2.

b. Functions and Calculations:

1) F(a) = the proportion of the total TOA to be obligated by quarter based on preference or forecast requirement as indicated in Table 1C.

2) F(b) = the proportion of the TOA to be obligated by quarter based on the expectation that the timing of obligations will be incurred in the quarter the students are scheduled to begin classes.

3) F(c) = the proportion of the TOA to be obligated by quarter based on the expectation that the timing of obligations will be incurred in the quarter before the students are scheduled to begin classes.

5. Remarks and Notes

a. F(a) is applied to each CAC when quarterly obligation rates are not expected to vary greatly as a result of changes to student throughput. Additionally, F (a) is primarily utilized with or applied to overhead CACs, and the factor is derived directly from Table 1C for each quarter.

b. F(b) is applied to each CAC when quarterly obligation rates are expected to vary directly with student throughput for that quarter. It can be applied to either course or overhead CACs, but usually is used with the overhead CACs based on the logic that course CAC costs are incurred in advance of classes convening because of lead times to order and receive direct materials which support the courses. F(b) is computed for each quarter from Table 2 by:

1) Dividing total student throughput for the quarter, by total student throughput for the year, in cases where the function is applied to overhead CACs.

2) Dividing total student throughput in each course per quarter, by the total annual student throughput for the course in cases where applied to course CACs.

c. F(c) is applied to each CAC when quarterly obligations are expected to be incurred in anticipation of student throughput in the next quarter. F(c) can be applied to either overhead or course CACs, but mostly applied to the courses.

1) F(c) is used to estimate the proportion of the current year's student throughput which will begin classes in the next quarter by dividing the total number of students in the next quarter by the total student throughput for the year, from Table 2. This gives factors for first through third quarters for **overhead CACs**.

2) F(c) is used when estimating the proportion of the next year's total student throughput which will begin classes in the first quarter of the next fiscal year by multiplying the obligation rate in cell B39 of Table 1C times the student throughput for the first quarter from Column R of Table 2 which computes the factor in the current year for the fourth quarter budget allocations for **overhead CACs.**

3) F(c) is used when estimating the proportion of the current year's student throughput for each course which will begin classes in the next quarter by dividing the current year's student throughput for the next quarter (contained in columns L, M, or N of Table 2) by the total number of students for the courses for the year (from column K of Table 2). This gives factors for first through third quarter for each **course CAC**.

4) F(c) is used when estimating the proportion of the next year's total student throughput for a course which will begin classes in the first quarter of that next fiscal year by multiplying the obligation rate in cell B39 of Table 1C times the total students in the course in the first quarter from column R of Table 2. This gives a factor relative to the current year for the fourth quarter of the current year for each **course CAC**.

d. The one exception to paragraphs 7.a. through 7.b. is CAC 2HIR. While the computations generally follow the methodology in paragraph 7.a., the factors derived for the third and fourth quarters are summed together in the third quarter to insure that funds are obligated prior to the fourth quarter.

e. Applicable functions for each CAC are shown in the following Budget Function relationships section.

f. The factors from this computation are used to calculate the cash flow computation in Computation #7 for further use in Report #6.

DATASET #2: COMPUTATIONS

COMPUTATION #1: STUDENT THROUGHPUT FACTORS

CAC	DESCRIP	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
2H0A	CIV LAB	0.250	0.250	0.250	0.250	1.00
2H0B	TAD	0.250	0.250	0.250	0.250	1.00
2H0C	B REPRO	0.310	0.335	0.173	0.182	1.00
2H1A	H&S	0.250	0.250	0.250	0.250	1.00
2H1B	BB-28	0.250	0.250	0.250	0.250	1.00
2H1C	PERS	0.255	0.281	0.265	0.199	1.00
2H1D	GRAPH	0.281	0.265	0.199	0.250	1.00
2H1E	S REPRO	0.255	0.281	0.265	0.199	1.00
2H1F	BEQ	0.255	0.281	0.265	0.199	1.00
2H1G	CO FUND	0.250	0.250	0.250	0.250	1.00
2H1H	SUPPLY	0.250	0.250	0.250	0.250	1.00
2H1R	INVEST	0.250	0.250	0.500	0.000	1.00
2H1I	MNT ADM	0.250	0.250	0.250	0.250	1.00
2H1J	EEIC ADM	0.255	0.281	0.265	0.199	1.00
2H1K	CEIC ADM	0.255	0.281	0.265	0.199	1.00
2H1L	UIC ADM	0.255	0.281	0.265	0.199	1.00
2H2A	CONTRACT	0.250	0.250	0.250	0.250	1.00
2H2B	MAINT	0.255	0.281	0.265	0.199	1.00
2H2C	EEIC MNT	0.255	0.281	0.265	0.199	1.00
2H2D	CEIC MNT	0.255	0.281	0.265	0.199	1.00
2H2E	UIC MNT	0.255	0.281	0.265	0.199	1.00
VGB0	EEO	0.000	0.000	0.000	0.000	0.00
VGE0	EEM NCO	0.000	0.000	0.000	0.000	0.00
VGF0	EEO NCO	0.000	0.000	0.000	0.000	0.00
VGG0	BEEM	0.000	0.000	0.000	0.000	0.00
VGH0	EEC	0.000	0.000	0.000	0.000	0.00
VGL0	BMW	0.000	0.000	0.000	0.000	0.00
VGX0	SCM	0.333	0.333	0.000	0.333	1.00
VGY0	BEEO	0.000	0.000	0.000	0.000	0.00
VG20	REES	0.000	0.000	0.000	0.000	0.00
VGXX	M9 ACE OP	0.000	0.000	0.000	0.000	0.00
VGA0	CEO	0.167	0.167	0.333	0.333	1.00
VGC0	CE NCO	0.333	0.333	0.333	0.000	1.00
VGJ0	EOC	0.500	0.000	0.000	0.500	1.00
VGK0	BCE	0.270	0.243	0.243	0.243	1.00
VGM0	RCE NCO	0.000	0.000	1.000	0.000	1.00
VGN0	RCEO	0.000	1.000	0.000	0.000	1.00
VGS0	MMC	0.273	0.273	0.182	0.273	1.00
VGZ0	BLSS	0.273	0.182	0.273	0.273	1.00
VG10	RBCE	0.000	1.000	0.000	0.000	1.00
VG30	LSS	0.000	0.000	0.000	0.000	0.00
VG40	RBLSS	0.000	1.000	0.000	0.000	1.00
VFA0	BE	0.286	0.286	0.286	0.143	1.00
VFB0	BRM	0.400	0.200	0.200	0.000	0.80
VFC0	UC	0.500	0.500	0.000	0.000	1.00
VFD0	EER	0.333	0.333	0.000	0.333	1.00
VFE0	EL NCO	0.000	0.000	0.500	0.500	1.00
VFG0	HEO NCO	0.000	0.500	0.000	0.500	1.00
VFH0	UO	0.000	1.000	0.000	0.000	1.00
VFJ0	BHEO	0.300	0.300	0.100	0.300	1.00

BUDGET FUNCTIONS

Functional Relationships:

CAC	Function	Remarks	CAC	Function	Remarks
2H0 A	F(a)		GX0	F(c)	
2H0 B	F(a)		GY0	F(c)	
2H0 C	F(c)		GZ0	F(c)	
			G20	F(c)	
2H1 A	F(a)		GXX	F(c)	
2H1 B	F(a)				
2H1 C	F(b)		GA0	F(c)	
2H1 D	F(c)		GJ0	F(c)	
2H1 E	F(b)		GC0	F(c)	
2H1 F	F(b)		GS0	F(c)	
2H1 G	F(a)		GK0	F(c)	
2H1 H	F(a)		GM0	F(c)	
2H1 I	F(a)		GN0	F(c)	
2H1 J	F(b)		GZ0	F(c)	
2H1 K	F(b)		G10	F(c)	
2H1 L	F(b)		G30	F(c)	
			G40	F(c)	
2H1 R	*F(a)	See para. 5.d.			
			FA0	F(c)	
2H2 A	F(a)		FB0	F(c)	
2H2 B	F(b)		FC0	F(c)	
2H2 C	F(b)		FD0	F(c)	
2H2 D	F(b)		FE0	F(c)	
2H2 E	F(b)		FG0	F(c)	
			FH0	F(c)	
GB0	F(c)		FJ0	F(c)	
GE0	F(c)				
GF0	F(c)				
GG0	F(c)				
GL0	F(c)				

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet T Sublocation: Computation #1

CELL(S)	FORMULA	REMARKS
C8..F8 C9..F9	P:B39..P:E39	Assigns unscheduled obligation rates to CAC from Table 1C.
C10..F10	P:C14..P:F14	Assigns budget controls to Base Repro from Table 1A.
C12..F12 C13..F13	P:B39..P:E39	Assigns unscheduled obligation rates to CAC from Table 1C.
C14..F14 C15..E15	P:L39/P:K39..P:O39/P:K39 P:M39/P:K39..P:O39/P:K39	Quarterly divided by annual student throughput from Table 2.
F15	(P:B39*P:P39)/P:K39	Unscheduled obligation rate times total students divided by total students.
C16..F16 C17..F17	P:L39/P:K39..P:O39/P:K39 P:L39/P:K39..P:O39/P:K39	Quarterly divided by annual student throughput from Table 2.
C18..F18 C19..F19 C20..F20 C21..F21	P:B39..P:E39 P:B39..P:E39 P:B39..P:E39 P:B39..P:E39	Assigns unscheduled obligation rates to CAC from Table 1C.
C22..F22 C23..F23 C24..F24	P:L39/P:K39..P:O39/P:K39 P:L39/P:K39..P:O39/P:K39 P:L39/P:K39..P:O39/P:K39	Quarterly divided by annual student throughput from Table 2.
C26..F26 C27..F27 C28..F28 C29..F29 C30..F30	P:B39..P:E39 P:L39/P:K39..P:O39/P:K39 P:L39/P:K39..P:O39/P:K39 P:L39/P:K39..P:O39/P:K39 P:L39/P:K39..P:O39/P:K39	Assigns unscheduled obligation rates to CAC from Table 2.
C31..E31 F31	@IF((P:K7=0),0,(P:M7/P:K7)).. @IF((P:K7=0),0,(P:O7/P:K7)) @IF((P:K7=0),0,(P:B39*(P:P7/P:K7))	
. C60..E60 F60	@IF((P:K37=0),0,(P:M37/P:K37)).. @IF((P:K37=0),0,(P:O37/P:K37)) @IF((P:K37=0),0,(P:B39*(P:P37/P:K37))	
		Computes quarterly student throughput per course CAC.
G8 . G60	@SUM(C8..F8) @SUM(C60..F60)	Sums student throughput factors, which should equal "1".

COMPUTATION INFORMATION

1. Computation Number: 2

2. Title: Cost Estimate Factors

3. Purpose: Computation 2 is used to estimate the proportionate amount of fiscal year funding requirements needed by quarter based on the quarterly student throughput.

4. Computation Description

a. Elements:

1) Quarterly obligation rates (Table 1C)

2) Student throughput (Table 2).

b. Functions and Calculations: Functions F(a) and F(b) as detailed in the preceding section for Computation 1, paragraph 5.

5. Remarks and Notes

a. The factors from this computation are used to calculate the quarterly allocation, by CAC, of the cost estimate from Table 3A.

COMPUTATION #2: COST ESTIMATE FACTORS

CAC	DESCRIP	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
2H0A	CIV LAB	0.250	0.250	0.250	0.250	1.00
2H0B	TAD	0.250	0.250	0.250	0.250	1.00
2H0C	B REPRO	0.255	0.281	0.265	0.199	1.00
2H1A	H&S	0.250	0.250	0.250	0.250	1.00
2H1B	BB-28	0.250	0.250	0.250	0.250	1.00
2H1C	PERS	0.255	0.281	0.265	0.199	1.00
2H1D	GRAPH	0.255	0.281	0.265	0.199	1.00
2H1E	S REPRO	0.255	0.281	0.265	0.199	1.00
2H1F	BEQ	0.255	0.281	0.265	0.199	1.00
2H1G	CO FUND	0.250	0.250	0.250	0.250	1.00
2H1H	SUPPLY	0.250	0.250	0.250	0.250	1.00
2H1R	INVEST	0.250	0.250	0.250	0.250	1.00
2H1I	MNT ADM	0.250	0.250	0.250	0.250	1.00
2H1J	EEIC ADM	0.250	0.250	0.250	0.250	1.00
2H1K	CEIC ADM	0.250	0.250	0.250	0.250	1.00
2H1L	UIC ADM	0.250	0.250	0.250	0.250	1.00
2H2A	CONTRACT	0.250	0.250	0.250	0.250	1.00
2H2B	MAINT	0.250	0.250	0.250	0.250	1.00
2H2C	EEIC MNT	0.255	0.281	0.265	0.199	1.00
2H2D	CEIC MNT	0.255	0.281	0.265	0.199	1.00
2H2E	UIC MNT	0.255	0.281	0.265	0.199	1.00
VGB0	EEO	0.000	0.000	0.000	0.000	0.00
VGE0	EEM NCO	0.000	0.000	0.000	0.000	0.00
VGF0	EEO NCO	0.000	0.000	0.000	0.000	0.00
VGG0	BEEM	0.000	0.000	0.000	0.000	0.00
VGH0	EEC	0.000	0.000	0.000	0.000	0.00
VGL0	BMW	0.000	0.000	0.000	0.000	0.00
VGX0	SCM	0.333	0.333	0.333	0.000	1.00
VGY0	BEEO	0.000	0.000	0.000	0.000	0.00
VG20	REES	0.000	0.000	0.000	0.000	0.00
VGXX	M9 ACE OP	0.000	0.000	0.000	0.000	0.00
VGA0	CEO	0.333	0.167	0.167	0.333	1.00
VGC0	CE NCO	0.000	0.333	0.333	0.333	1.00
VGJ0	EOC	0.500	0.500	0.000	0.000	1.00
VGK0	BCE	0.243	0.270	0.243	0.243	1.00
VGM0	RCE NCO	0.000	0.000	0.000	1.000	1.00
VGN0	RCEO	0.000	0.000	1.000	0.000	1.00
VGS0	MMC	0.273	0.273	0.273	0.182	1.00
VGZ0	BLSS	0.273	0.273	0.182	0.273	1.00
VG10	RBCE	0.000	0.000	1.000	0.000	1.00
VG30	LSS	0.000	0.000	0.000	0.000	0.00
VG40	RBLSS	0.000	0.000	1.000	0.000	1.00
VFA0	BE	0.143	0.286	0.286	0.286	1.00
VFB0	BRM	0.200	0.400	0.200	0.200	1.00
VFC0	UC	0.000	0.500	0.500	0.000	1.00
VFD0	EER	0.333	0.333	0.333	0.000	1.00
VFE0	EL NCO	0.500	0.000	0.000	0.500	1.00
VFG0	HEO NCO	0.500	0.000	0.500	0.000	1.00
VFH0	UO	0.000	0.000	1.000	0.000	1.00
VFJ0	BHEO	0.300	0.300	0.300	0.100	1.00

BUDGET FUNCTIONS

Functional Relationships:

CAC	Function	Remarks	CAC	Function	Remarks
2H0 A	F(a)		GX0	F(b)	
2H0 B	F(a)		GY0	F(b)	
2H0 C	F(b)		GZ0	F(b)	
			G20	F(b)	
2H1 A	F(a)		GXX	F(b)	
2H1 B	F(a)				
2H1 C	F(b)		GA0	F(b)	
2H1 D	F(b)		GJ0	F(b)	
2H1 E	F(b)		GC0	F(b)	
2H1 F	F(b)		GS0	F(b)	
2H1 G	F(a)		GK0	F(b)	
2H1 H	F(a)		GM0	F(b)	
2H1 I	F(a)		GN0	F(b)	
2H1 J	F(a)		GZ0	F(b)	
2H1 K	F(a)		G10	F(b)	
2H1 L	F(a)		G30	F(b)	
2H1 R	F(a)		G40	F(b)	
			FA0	F(b)	
2H2 A	F(a)		FB0	F(b)	
2H2 B	F(a)		FC0	F(b)	
2H2 C	F(b)		FD0	F(b)	
2H2 D	F(b)		FE0	F(b)	
2H2 E	F(b)		FG0	F(b)	
			FH0	F(b)	
GB0	F(b)		FJ0	F(b)	
GE0	F(b)				
GF0	F(b)				
GG0	F(b)				
GL0	F(b)				

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet U Sublocation: Computation #2

CELL(S)	FORMULA	REMARKS
C6..F6 C7..F7	P:B39..P:E39	Assigns unscheduled obligation rates to CAC from Table 1C.
C8..F8	P:L39/P:K39..P:O39/P:K39	Quarterly divided by annual student throughput from Table 2.
C10..F10 C11..F11	P:B39..P:E39	Assigns unscheduled obligation rates to CAC from Table 1C.
C12..F12 C15..F15	P:L39/P:K39..P:O39/P:K39 P:M39/P:K39..P:O39/P:K39	Quarterly divided by annual student throughput from Table 2.
C16..F16 . C25..F25	P:B39	Assigns unscheduled obligation rates to CAC from Table 1C.
C26..F26 . C28..F28	P:L39/P:K39..P:O39/P:K39 P:L39/P:K39..P:O39/P:K39	Quarterly divided by annual student throughput from Table 2.
C30..F30	@IF((P:K7=0),0,(P:M7/P:K7)).. @IF((P:K7=0),0,(P:O7/P:K7))	
. C58..E58	@IF((P:K37=0),0,(P:M37/P:K37)).. @IF((P:K37=0),0,(P:O37/P:K37))	
		Computes quarterly cost estimate factor per course CAC.
G6 . G58	@SUM(C6..F6) @SUM(C58..F58)	Sums cost estimate factors, which should equal "1".

COMPUTATION INFORMATION

1. Computation Number: 3

2. Title: Work Center Factors

3. Purpose: Computation 3 is used to calculate each work center's proportional share of the total required annual funding for a CAC from the Cost Estimation Model outputs to Table 3B of the Resource Allocation Model.

4. Computation Description

a. Elements:

1) Annual funding estimate by CAC (column F of Table 3A).

2) Allocation of funds by work center (columns H through Q of Table 3B).

b. Functions and Calculations: F(d) = proportion of a work center's funding for a CAC, divided by the total estimate for the CAC.

5. Remarks and Notes

a. F(d) is applicable to all CACs/WC columns in this computation.

b. The value in column M, which is the sum of work center factors in columns C through L, for a CAC should be either 1.000 or 0.000, because it is the sum of the proportionate or fractional share of the estimated budget that is allocated to each CAC.

COMPUTATION #3: WORK CENTER FACTORS

CAC	DESCRIP	ADM/PERS	D/I	GRAPHICS	D/S	SUPPLY	MAINT	H&S	EEIC	CEIC	UIC	TOTAL
2H0A	CIV LAB					1.000						1.000
2H0B	TAD		1.000									1.000
2H0C	B REPRO	0.073	0.082	0.000	0.000	0.073	0.000	0.000	0.014	0.453	0.306	1.000
2H1A	H&S							1.000				1.000
2H1B	BB-28		1.000									1.000
2H1C	PERSONNEL	1.000										1.000
2H1D	GRAPH			0.118					0.034	0.515	0.333	1.000
2H1E	SCHOOL REPRO		-0.000						0.027	0.634	0.339	1.000
2H1F	BEQ				1.000							1.000
2H1G	CO FUND					1.000						1.000
2H1H	SUPPLY					1.000						1.000
2H1R	INVESTMENT	0.000	0.034	0.020	0.013	0.675	0.044	0.007	0.000	0.101	0.105	1.000
2H1I	MNT ADMIN						1.000					1.000
2H1J	EEIC ADMIN								1.000			1.000
2H1K	CEIC ADMIN									1.000		1.000
2H1L	UIC ADMIN										1.000	1.000
2H2A	CONTRACTS	0.000	0.000	0.125	0.000	0.000	0.586	0.000	0.000	0.000	0.289	1.000
2H2B	MAINT SHOP				0.000		0.000		0.000	0.000	1.000	1.000
2H2C	EEIC MAINT								0.000			0.000
2H2D	CEIC MAINT									1.000		1.000
2H2E	UIC MAINT										1.000	1.000
VGB0	EEO											0.000
VGE0	EEM NCO											0.000
VGF0	EEO NCO											0.000
VGG0	BEEM											0.000
VGH0	EEC											0.000
VGL0	BMW											0.000
VGX0	SCM								1.000			1.000
VGY0	BEEO											0.000
VG20	REES											0.000
VGXX	M9 ACE OP								0.000			0.000
VGA0	CEO									1.000		1.000
VGC0	CE NCO									1.000		1.000
VGJ0	EOC									1.000		1.000
VGK0	BCE									1.000		1.000
VGM0	RCE NCO									0.000		0.000
VGN0	RCEO									1.000		1.000
VGS0	MMC									1.000		1.000
VGZ0	BLSS									1.000		1.000
VG10	RBCE									0.000		0.000
VG30	LSS									0.000		0.000
VG40	RBLSS									0.000		0.000
VFA0	BE										1.000	1.000
VFB0	BRM										1.000	1.000
VFC0	UC										0.000	0.000
VFD0	EER										1.000	1.000
VFE0	EL NCO										1.000	1.000
VFG0	HEO NCO										1.000	1.000
VFH0	UO										0.000	0.000
VFJ0	BHEO										1.000	1.000

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet V Sublocation: Computation #3

CELL(S)	FORMULA	REMARKS
C8	Q:H9/Q:D9	Work Center cost forecast by CAC from Table 3B
C12	Q:H13/Q:D13	divided by total cost estimate from Table 3A. Each WC factor is the percentage of total estimated budget by CAC for each work center.
C18	Q:H19/@SUM(Q:H19..Q:Q19)	
C24	Q:H25/Q:D25	
D7	Q:I8/Q:D8	
D8	Q:I9/Q:D9	
D11	Q:I12/Q:D12	
D14	Q:I15/Q:D15	
D18	Q:I19/@SUM(Q:H19..Q:Q19)	
D24	Q:I13/Q:D13	
E8	Q:J9/Q:D9	
E11	Q:J14/Q:D14	
E18	Q:J19/@SUM(Q:H19..Q:Q19)	
E24	Q:J25/Q:D25	
F8	Q:K9/Q:D9	
F15	Q:K16/Q:D16	
F18	Q:K19/@SUM(Q:H19..Q:Q19)	
F24	Q:K25/Q:D25	
F25	Q:K26/Q:D26	
G6	Q:L7/Q:D7	
G8	Q:L9/Q:D9	
G16	Q:L17/Q:D17	
G17	Q:L18/Q:D18	
G18	Q:L19/@SUM(Q:H19..Q:Q19)	
G24	Q:L25/Q:D25	
H8	Q:M9/Q:D9	
H18	Q:M19/@SUM(Q:H19..Q:Q19)	
H19	Q:M20/Q:D20	
H24	Q:M25/Q:D25	
H25	Q:M26/Q:D26	
I8	Q:N9/Q:D9	
I10	Q:N11/Q:D11	
I18	Q:N19/@SUM(Q:H19..Q:Q19)	
I24	Q:N25/Q:D25	
J8	Q:O9/Q:D9	
J13	Q:O14/Q:D14	
J14	Q:O15/Q:D15	
J18	Q:O19/@SUM(Q:H19..Q:Q19)	
J20	Q:O21/Q:D21	
J24	Q:O25/Q:D25	
J25	Q:O26/Q:D26	
J26	@IF((Q:D27=0),0,(Q:O27/Q:D27)	

J36	@IF((Q:D37=0),0,(Q:O37/Q:D37)	
J39	@IF((Q:D40=0),0,(Q:O40/Q:D40)	
K8	Q:P9/Q:D9	
K13	Q:P14/Q:D14	
K14	Q:P15/Q:D15	
K18	Q:P19/@SUM(Q:H19..Q:Q19)	
K21	Q:P22/Q:D22	
K24	Q:P25/Q:D25	
K25	Q:P26/Q:D26	
K27	@IF((Q:D28=0),0,(Q:P28/Q:D28)	
K40	@IF((Q:D41=0),0,(Q:P41/Q:D41)	
.	.	
K50	@IF((Q:D51=0),0,(Q:P51/Q:D51)	
L8	Q:Q9/Q:D9	
L13	Q:Q14/Q:D14	
L14	Q:Q15/Q:D15	
L18	Q:Q19/@SUM(Q:H19..Q:Q19)	
L22	Q:Q23/Q:D23	
L24	Q:Q25/Q:D25	
L25	Q:Q26/Q;D26	
L28	Q:Q29/Q:D29	
L51	@IF((Q:D52=0),0,(Q:Q52/Q:D52)	
.	.	
L58	@IF((Q:D59=0),0,(Q:Q59/Q:D59)	
M6..M58	@SUM(C6..L6)..@SUM(C58..L58)	Sums WC factors, which should equal "1".

COMPUTATION INFORMATION

1. Computation Number: 4

2. Title: Budget Factors

3. Purpose: Computation 4 is used to calculate the proportional share of the TOA for the fiscal year allocated to each quarter based on the budget controls for the fiscal year.

4. Computation Description

a. Elements: Quarterly TOA percentage from Table 1A.

b. Functions and calculations: F(e) = quarterly TOA percentage

5. Remarks and Notes

a. The factor for civilian labor is currently computed based on function F(a) from Computation 1 because funding allocations must remain relatively constant throughout the fiscal year.

b. All other CAC values are computed using F(e)--that is, the value for each cell, by quarter, is the corresponding value in row 39 of Table 1A.

c. There is one or more formula errors for a CAC, if the CAC's corresponding value in column G of this computation set does not equal "1."

COMPUTATION #4: BUDGET FACTORS

CAC	DESCRIP	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
2H0A	CIV LAB	0.250	0.250	0.250	0.250	1.000
2H0B	TAD	0.310	0.335	0.173	0.182	1.000
2H0C	B REPRO	0.310	0.335	0.173	0.182	1.000
2H1A	H&S	0.310	0.335	0.173	0.182	1.000
2H1B	BB-28	0.310	0.335	0.173	0.182	1.000
2H1C	PERS	0.310	0.335	0.173	0.182	1.000
2H1D	GRAPH	0.310	0.335	0.173	0.182	1.000
2H1E	S REPRO	0.310	0.335	0.173	0.182	1.000
2H1F	BEQ	0.310	0.335	0.173	0.182	1.000
2H1G	CO FUND	0.310	0.335	0.173	0.182	1.000
2H1H	SUPPLY	0.310	0.335	0.173	0.182	1.000
2H1R	INVEST	0.310	0.335	0.173	0.182	1.000
2H1I	MNT ADM	0.310	0.335	0.173	0.182	1.000
2H1J	EEIC ADM	0.310	0.335	0.173	0.182	1.000
2H1K	CEIC ADM	0.310	0.335	0.173	0.182	1.000
2H1L	UIC ADM	0.310	0.335	0.173	0.182	1.000
2H2A	CONTRACT	0.310	0.335	0.173	0.182	1.000
2H2B	MAINT	0.310	0.335	0.173	0.182	1.000
2H2C	EEIC MNT	0.310	0.335	0.173	0.182	1.000
2H2D	CEIC MNT	0.310	0.335	0.173	0.182	1.000
2H2E	UIC MNT	0.310	0.335	0.173	0.182	1.000
VGB0	EEO	0.310	0.335	0.173	0.182	1.000
VGE0	EEM NCO	0.310	0.335	0.173	0.182	1.000
VGF0	EEO NCO	0.310	0.335	0.173	0.182	1.000
VGG0	BEEM	0.310	0.335	0.173	0.182	1.000
VGH0	EEC	0.310	0.335	0.173	0.182	1.000
VGL0	BMW	0.310	0.335	0.173	0.182	1.000
VGX0	SCM	0.310	0.335	0.173	0.182	1.000
VGY0	BEEO	0.310	0.335	0.173	0.182	1.000
VG20	REES	0.310	0.335	0.173	0.182	1.000
VGXX	M9 ACE OP	0.310	0.335	0.173	0.182	1.000
VGA0	CEO	0.310	0.335	0.173	0.182	1.000
VGC0	CE NCO	0.310	0.335	0.173	0.182	1.000
VGJ0	EOC	0.310	0.335	0.173	0.182	1.000
VGK0	BCE	0.310	0.335	0.173	0.182	1.000
VGM0	RCE NCO	0.310	0.335	0.173	0.182	1.000
VGN0	RCEO	0.310	0.335	0.173	0.182	1.000
VGS0	MMC	0.310	0.335	0.173	0.182	1.000
VGZ0	BLSS	0.310	0.335	0.173	0.182	1.000
VG10	RBCE	0.310	0.335	0.173	0.182	1.000
VG30	LSS	0.310	0.335	0.173	0.182	1.000
VG40	RBLSS	0.310	0.335	0.173	0.182	1.000
VFA0	BE	0.310	0.335	0.173	0.182	1.000
VFB0	BRM	0.310	0.335	0.173	0.182	1.000
VFC0	UC	0.310	0.335	0.173	0.182	1.000
VFD0	EER	0.310	0.335	0.173	0.182	1.000
VFE0	EL NCO	0.310	0.335	0.173	0.182	1.000
VFG0	HEO NCO	0.310	0.335	0.173	0.182	1.000
VFH0	UO	0.310	0.335	0.173	0.182	1.000
VFJ0	BHEO	0.310	0.335	0.173	0.182	1.000

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet W Sublocation: Computation #4

CELL(S)	FORMULA	REMARKS
C6..F6	P:B39..P:E39	Assigns unscheduled obligation rates to CAC from Table 1C.
C7..F7	P:C14..P:F14	Sources Comptroller imposed quarterly budget constraints from Table 1A.
.		
C58..F58	P:C58..P:F58	
G6	@SUM(C6..F6)	Sums budget factors, which should equal "1.00".
.		
G58	@SUM(C58..F58)	

COMPUTATION INFORMATION

1. Computation Number: 5

2. Title: Cost Estimate by Quarter

3. Purpose: Computation 5 is used to compute the allocation of required funding (i.e., the actual cost estimate for the fiscal year) for each CAC, by quarter, based on scheduled obligations and distribution of remaining TOA (unscheduled TOA from Table 1B, cell E31) by using the cost estimation factors from Computation 2.

4. Computation Description

a. Elements:

1) Scheduled obligations by quarter (Table 1B).

2) Cost estimation factors (Computation #2).

3) Cost estimates (Table 3A).

b. Functions and Calculations:

1) F(f) = sum of scheduled obligations, from Table 1B, for each quarter for a specific CAC plus the quarterly allocation of the available funding for the CAC after covering scheduled obligations.

2) F(g) = quarterly allocation for a CAC times the total funding requirement for the CAC.

5. Remarks and Notes

a. This estimate is unconstrained by budget controls.

b. F(f) is calculated by taking the difference between the total CAC funding estimate for the year from Table 3A minus the total scheduled obligations for the year. This difference is multiplied by the quarterly allocation factor in Computation 2 for that CAC. This value is then added to the value for the applicable quarter's scheduled obligations from Table 1B.

c. F(f) is used only for CACs having scheduled obligations.

d. The allocation factor for F(g) is the corresponding factor for the quarterly CAC allocation in Computation 2, times the annual CAC funding estimate in Table 3A.

e. This computation determines, by quarter, a proposed quarterly allocation of funds under the ideal situation where the TOA would equal the total funding required based on the Cost Estimation Model output for the year.

X	A	B	C	D	E	F	G
1	COMPUTATION #5: COST ESTIMATE BY QUARTER						
2							
3			1ST	2ND	3RD	4TH	
4	CAC	DESCRIP	QTR	QTR	QTR	QTR	TOTAL
5							
6	2H0A	CIV LAB	72.362	72.362	72.362	72.362	289.446
7	2H0B	TAD	3.800	3.800	3.800	3.800	15.200
8	2H0C	B REPRO	13.400	14.784	13.956	10.484	52.624
9							
10	2H1A	H&S	0.500	0.500	0.500	0.500	2.000
11	2H1B	BB-28	1.670	1.670	1.670	1.670	6.680
12	2H1C	PERS	1.226	1.353	1.277	0.959	4.816
13	2H1D	GRAPH	7.108	7.843	7.404	5.561	27.916
14	2H1E	S REPRO	0.713	0.787	0.743	0.558	2.800
15	2H1F	BEQ	4.883	5.388	5.086	3.821	19.178
16	2H1G	CO FUND	1.350	1.350	1.350	1.350	5.400
17	2H1H	SUPPLY	2.695	2.695	2.695	2.695	10.779
18	2H1R	INVEST	71.900	71.900	71.900	71.900	287.600
19	2H1I	MNT ADM	2.375	2.375	2.375	2.375	9.500
20	2H1J	EEIC ADM	0.034	0.034	0.034	0.034	0.135
21	2H1K	CEIC ADM	1.117	1.117	1.117	1.117	4.467
22	2H1L	UIC ADM	0.754	0.754	0.754	0.754	3.015
23							
24	2H2A	CONTRACT	16.659	-2.145	5.854	2.852	23.220
25	2H2B	MAINT	2.975	2.975	2.975	2.975	11.900
26	2H2C	EEIC MNT	0.000	0.000	0.000	0.000	0.000
27	2H2D	CEIC MNT	2.941	3.245	3.063	2.301	11.550
28	2H2E	UIC MNT	20.424	22.534	21.272	15.979	80.210
29							
30	VGB0	EEO	0.000	0.000	0.000	0.000	0.000
31	VGE0	EEM NCO	0.000	0.000	0.000	0.000	0.000
32	VGF0	EEO NCO	0.000	0.000	0.000	0.000	0.000
33	VGG0	BEEM	0.000	0.000	0.000	0.000	0.000
34	VGH0	EEC	0.000	0.000	0.000	0.000	0.000
35	VGL0	BMW	0.000	0.000	0.000	0.000	0.000
36	VGX0	SCM	20.000	20.000	20.000	0.000	60.000
37	VGY0	BEEO	0.000	0.000	0.000	0.000	0.000
38	VG20	REES	0.000	0.000	0.000	0.000	0.000
39	VGXX	M9 ACE OP	0.000	0.000	0.000	0.000	0.000
40	VGA0	CEO	21.600	10.800	10.800	21.600	64.800
41	VGC0	CE NCO	0.000	0.400	0.400	0.400	1.200
42	VGJ0	EOC	7.850	7.850	0.000	0.000	15.700
43	VGK0	BCE	17.027	18.919	17.027	17.027	70.000
44	VGM0	RCE NCO	0.000	0.000	0.000	0.000	0.000
45	VGN0	RCEO	0.000	0.000	0.063	0.000	0.063
46	VGS0	MMC	0.150	0.150	0.150	0.100	0.550
47	VGZ0	BLSS	1.364	1.364	0.909	1.364	5.000
48	VG10	RBCE	0.000	0.000	0.000	0.000	0.000
49	VG30	LSS	0.000	0.000	0.000	0.000	0.000
50	VG40	RBLSS	0.000	0.000	0.000	0.000	0.000
51	VFA0	BE	2.600	5.200	5.200	5.200	18.200
52	VFB0	BRM	0.700	1.400	0.700	0.700	3.500
53	VFC0	UC	0.000	0.000	0.000	0.000	0.000
54	VFD0	EER	14.000	14.000	14.000	0.000	42.000
55	VFE0	EL NCO	0.700	0.000	0.000	0.700	1.400
56	VFG0	HEO NCO	7.000	0.000	7.000	0.000	14.000
57	VFH0	UO	0.000	0.000	0.000	0.000	0.000
58	VFJ0	BHEO	11.880	11.880	11.880	3.960	39.600
59							
60	**TOTAL**		**333.757**	**307.281**	**308.314**	**255.096**	**1204.448**
61			**27.71%**	**25.51%**	**25.60%**	**21.18%**	**100%**

BUDGET FUNCTIONS

Functional Relationships:

CAC	Function	Remarks	CAC	Function	Remarks
2H0 A	F(f)		GX0	F(g)	
2H0 B	F(g)		GY0	F(g)	
2H0 C	F(f)		GZ0	F(g)	
			G20	F(g)	
2H1 A	F(g)		GXX	F(g)	
2H1 B	F(g)				
2H1 C	F(g)		GA0	F(g)	
2H1 D	F(g)		GJ0	F(g)	
2H1 E	F(g)		GC0	F(g)	
2H1 F	F(g)		GS0	F(g)	
2H1 G	F(g)		GK0	F(g)	
2H1 H	F(g)		GM0	F(g)	
2H1 I	F(g)		GN0	F(g)	
2H1 J	F(g)		GZ0	F(g)	
2H1 K	F(g)		G10	F(g)	
2H1 L	F(g)		G30	F(g)	
2H1 R	F(g)		G40	F(g)	
			FA0	F(g)	
2H2 A	F(f)		FB0	F(g)	
2H2 B	F(g)		FC0	F(g)	
2H2 C	F(g)		FD0	F(g)	
2H2 D	F(g)		FE0	F(g)	
2H2 E	F(g)		FG0	F(g)	
			FH0	F(g)	
GB0	F(g)		FJ0	F(g)	
GE0	F(g)				
GF0	F(g)				
GG0	F(g)				
GL0	F(g)				

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet X Sublocation: Computation #5

CELL(S)	FORMULA	REMARKS
C6	P:D23+(U:C6*(Q:D7-P:C23))	Computes cost estimate for quarterly CIV LAB from
D6	P:E23+(U:D6*(Q:D7-P:C23))	scheduled obligations (Table 1B) plus quarterly cost
E6	P:F23+(U:E6*(Q:D7-P:C23))	estimate factor from Computation #2, times the
F6	P:G23+(U:F6*(Q:D7-P:C23))	cost estimate from Table 3A, minus the total scheduled obligation for CIV LAB.
C7	Q:D8*U:C7	Computes cost estimate (Table 3A) times cost
D7	Q:D8*U:D7	estimate factor from Computation #2.
E7	Q:D8*U:E7	
F7	Q:D8*U:F7	
C8	P:D25+(U:C8*(Q:D9-P:C25))	Computes cost estimate for quarterly B REPRO from
D8	P:E25+(U:D8*(Q:D9-P:C25))	scheduled obligations (Table 1B) plus quarterly cost
E8	P:F25+(U:E8*(Q:D9-P:C25))	estimate factor from Computation #2, times the
F8	P:G25+(U:F8*(Q:D9-P:C25))	cost estimate from Table 3A, minus the total scheduled obligation for B REPRO.
C10..F10	Q:D11*U:C10.. Q:D11*U:F10	Computes cost estimate (Table 3A) times cost
.	.	estimate factor from Computation #2.
C22..F22	Q:D23*U:C22.. Q:D23*U:F22	
C24	P:D24+(U:C24*(Q:D25-P:C24))	Computes cost estimate for quarterly CONTRACT
D24	P:E24+(U:D24*(Q:D25-P:C24))	from scheduled obligations (Table 1B) plus
E24	P:F24+(U:E24*(Q:D25-P:C24))	quarterly cost estimate factor from Computation
F24	P:G24+(U:F24*(Q:D25-P:C24))	#2, times the cost estimate from Table 3A, minus the total scheduled obligation for CONTRACT.
C25..F25	Q:D26*U:C25.. Q:D26*U:F25	Computes cost estimate (Table 3A) times cost
.	.	estimate factor from Computation #2.
C58..F58	Q:D59*U:C58.. Q:D59*U:F58	
C60..F60	@SUM(C6..C58)..@SUM(F6..F58)	Sums quarterly cost estimates.
G6	@SUM(C6..F6)	Sums quarterly CAC cost estimates.
.		
G58	@SUM(C58..F58)	
G60	@SUM(G6..G58)	Sums total quarterly cost estimates.
C61..F61	C60/G60..F60/G60	Computes percentage of quarterly cost estimates.
G61	@SUM(C61..F61)	Sums quarterly percentages, which should equal "100%".

COMPUTATION INFORMATION

1. Computation Number: 6

2. Title: Report #1

3. Purpose: Report #1 computes and displays the quarterly allocation of the TOA based on the comptroller imposed budget controls.

COMPUTATION INFORMATION

1. Computation Number: 7

2. Title: Obligations (Cash Flow) by Quarter

3. Purpose: Computation 7 is used to compute the quarterly allocation of funding required to support obligations in the quarter that those obligations are forecasted to actually occur.

4. Computation Description

a. Elements:

1) Scheduled obligations by quarter (Table 1B).

2) Student throughput factors (Computation #1).

3) Cost estimates (Table 3A).

b. Functions and Calculations: Functions F(f) and F(g) as described in paragraph 4.b. of the Computation 5 section are used in this calculation. The computation factors used are from Computation 2.

5. Remarks and Notes

a. Because the fourth quarter estimate is based on a forecast of obligations needed to support the first quarter of the next fiscal year (see Computation 1 description), the value in cell Z:G60 will probably not equal the current year cost estimate in cell X:G60 of Computation 5. This computation is used as a planning estimate for end of the fiscal year obligations in support of the first quarter of the following year.

b. This estimate is unconstrained by budget controls.

c. This computation determines, by quarter, a proposed obligation schedule (i.e. cash flow) under the ideal situation where the TOA would equal the total funding required based on the cost estimate for the year.

COMPUTATION #7: OBLIGATIONS (CASH FLOW) BY QUARTER

CAC	DESCRIP	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
2H0A	CIV LAB	72.362	72.362	72.362	72.362	289.446
2H0B	TAD	3.800	3.800	3.800	3.800	15.200
2H0C	B REPRO	13.400	14.784	13.956	10.484	52.624
2H1A	H&S	0.500	0.500	0.500	0.500	2.000
2H1B	BB-28	1.670	1.670	1.670	1.670	6.680
2H1C	PERS	1.226	1.353	1.277	0.959	4.816
2H1D	GRAPH	7.843	7.404	5.561	6.979	27.787
2H1E	S REPRO	0.713	0.787	0.743	0.558	2.800
2H1F	BEQ	4.883	5.388	5.086	3.821	19.178
2H1G	CO FUND	1.350	1.350	1.350	1.350	5.400
2H1H	SUPPLY	2.695	2.695	2.695	2.695	10.779
2H1R	INVEST	71.900	71.900	143.800	0.000	287.600
2H1I	MNT ADM	2.375	2.375	2.375	2.375	9.500
2H1J	EEIC ADM	0.034	0.038	0.036	0.027	0.135
2H1K	CEIC ADM	1.137	1.255	1.185	0.890	4.467
2H1L	UIC ADM	0.768	0.847	0.800	0.601	3.015
2H2A	CONTRACT	16.659	-2.145	5.854	2.852	23.220
2H2B	MAINT	3.030	3.343	3.156	2.371	11.900
2H2C	EEIC MNT	0.000	0.000	0.000	0.000	0.000
2H2D	CEIC MNT	2.941	3.245	3.063	2.301	11.550
2H2E	UIC MNT	20.424	22.534	21.272	15.979	80.210
VGB0	EEO	0.000	0.000	0.000	0.000	0.000
VGE0	EEM NCO	0.000	0.000	0.000	0.000	0.000
VGF0	EEO NCO	0.000	0.000	0.000	0.000	0.000
VGG0	BEEM	0.000	0.000	0.000	0.000	0.000
VGH0	EEC	0.000	0.000	0.000	0.000	0.000
VGL0	BMW	0.000	0.000	0.000	0.000	0.000
VGX0	SCM	20.000	20.000	0.000	20.000	60.000
VGY0	BEEO	0.000	0.000	0.000	0.000	0.000
VG20	REES	0.000	0.000	0.000	0.000	0.000
VGXX	M9 ACE OP	0.000	0.000	0.000	0.000	0.000
VGA0	CEO	10.800	10.800	21.600	21.600	64.800
VGC0	CE NCO	0.400	0.400	0.400	0.000	1.200
VGJ0	EOC	7.850	0.000	0.000	7.850	15.700
VGK0	BCE	18.919	17.027	17.027	17.027	70.000
VGM0	RCE NCO	0.000	0.000	0.000	0.000	0.000
VGN0	RCEO	0.000	0.063	0.000	0.000	0.063
VGS0	MMC	0.150	0.150	0.100	0.150	0.550
VGZ0	BLSS	1.364	0.909	1.364	1.364	5.000
VG10	RBCE	0.000	0.000	0.000	0.000	0.000
VG30	LSS	0.000	0.000	0.000	0.000	0.000
VG40	RBLSS	0.000	0.000	0.000	0.000	0.000
VFA0	BE	5.200	5.200	5.200	2.600	18.200
VFB0	BRM	1.400	0.700	0.700	0.000	2.800
VFC0	UC	0.000	0.000	0.000	0.000	0.000
VFD0	EER	14.000	14.000	0.000	14.000	42.000
VFE0	EL NCO	0.000	0.000	0.700	0.700	1.400
VFG0	HEO NCO	0.000	7.000	0.000	7.000	14.000
VFH0	UO	0.000	0.000	0.000	0.000	0.000
VFJ0	BHEO	11.880	11.880	3.960	11.880	39.600
TOTAL		321.674	303.611	341.591	236.743	1203.619

BUDGET FUNCTIONS

Functional Relationships:

CAC	Function	Remarks
2H0 A	F(f)	See para. 5 regarding the source of the allocation factors for all functions used in this computation set.
2H0 B	F(g)	
2H0 C	F(f)	
2H1 A	F(g)	
2H1 B	F(g)	
2H1 C	F(g)	
2H1 D	F(g)	
2H1 E	F(g)	
2H1 F	F(g)	
2H1 G	F(g)	
2H1 H	F(g)	
2H1 I	F(g)	
2H1 J	F(g)	
2H1 K	F(g)	
2H1 L	F(g)	
2H1 R	F(g)	
2H2 A	F(f)	
2H2 B	F(g)	
2H2 C	F(g)	
2H2 D	F(g)	
2H2 E	F(g)	
GB0	F(g)	
GE0	F(g)	
GF0	F(g)	
GG0	F(g)	
GL0	F(g)	
GX0	F(g)	
GY0	F(g)	
GZ0	F(g)	
G20	F(g)	
GXX	F(g)	
GA0	F(g)	
GJ0	F(g)	
GC0	F(g)	
GS0	F(g)	
GK0	F(g)	
GM0	F(g)	
GN0	F(g)	
GZ0	F(g)	
G10	F(g)	
G30	F(g)	
G40	F(g)	
FA0	F(g)	
FB0	F(g)	
FC0	F(g)	
FD0	F(g)	
FE0	F(g)	
FG0	F(g)	
FH0	F(g)	
FJ0	F(g)	

FORMULAS

1. Location: Data Set #1 Sublocation: Sheet Z Sublocation: Computation #7

CELL(S)	FORMULA	REMARKS
C6	P:D23+(T:C8*(Q:D7-P:C23))	Computes obligations for quarterly CIV LAB from
D6	P:E23+(T:D8*(Q:D7-P:C23))	scheduled obligations (Table 1B) plus quarterly
E6	P:F23+(T:E8*(Q:D7-P:C23))	student factor from Computation #1, times the
F6	P:G23+(T:F8*(Q:D7-P:C23))	cost estimate from Table 3A, minus the total scheduled obligation for CIV LAB.
C7	Q:D8*T:C9	Computes cost estimate (Table 3A) times student
D7	Q:D8*T:D9	throughput factor from Computation #1.
E7	Q:D8*T:E9	
F7	Q:D8*T:F9	
C8	P:D25+(T:C10*(Q:D9-P:C25))	Computes obligations for quarterly B REPRO
D8	P:E25+(T:D10*(Q:D9-P:C25))	from scheduled obligations (Table 1B) plus
E8	P:F25+(T:E10*(Q:D9-P:C25))	quarterly student factor from Computation
F8	P:G25+(T:F10*(Q:D9-P:C25))	#1, times the cost estimate from Table 3A, minus the total scheduled obligation for B REPRO.
C10..F10	Q:D11*T:C12.. Q:D11*T:F12	Computes cost estimate (Table 3A) times student
.	.	throughput factor from Computation #1.
C22..F22	Q:D23*T:C24.. Q:D23*T:F24	
C24	P:D24+(T:C26*(Q:D25-P:C24))	Computes obligations for quarterly CONTRACT
D24	P:E24+(T:D26*(Q:D25-P:C24))	from scheduled obligations (Table 1B) plus
E24	P:F24+(T:E26*(Q:D25-P:C24))	quarterly student factor from Computation
F24	P:G24+(T:F26*(Q:D25-P:C24))	#1, times the cost estimate from Table 3A, minus the total scheduled obligation for CONTRACT.
C25..F25	Q:D26*T:C27.. Q:D26*T:F27	Computes cost estimate (Table 3A) times student
.	.	throughput factor from Computation #1.
C58..F58	Q:D59*T:C60.. Q:D59*T:F60	
C60..F60	@SUM(C6..C58)..@SUM(F6..F58)	Sums quarterly obligations.
G6	@SUM(C6..F6)	Sums quarterly CAC obligations.
.		
G58	@SUM(C58..F58)	
G60	@SUM(G6..G58)	Sums total quarterly obligations.

REPORTS

1. GENERAL INFORMATION. This section describes the inputs/outputs, use, and other information for each report in Data Set #2 or #3.

2. DESCRIPTION. Each subsection furnishes information as follows:

a. Report Title: Gives title and other summary information.

b. Report Description: Describes the purpose/use of the report.

c. Functions: Describes the mathematical functions to make data manipulations and/or allocations.

d. Remarks and Notes: Covers items not discussed elsewhere which are essential to model operations.

REPORTS

1. Report Number: 1

2. Report Title: Budget Allocation by Quarter

3. Purpose: Computes the quarterly allocation of TOA for the fiscal year.

4. Description

a. Elements:

1) Scheduled obligations by quarter (Table 1B).

2) Budget factors (Computation #4).

3) Annual budget after adjustments (Table 5).

b. Functions and Calculations: Functions F(f) and F(g) as described in paragraph 4.b. of the Computation 5 section are used in this calculation. There are two differences:

1) The factors used are from Computation 4 instead of Computation 2.

2) The funding available for each for allocation is from Table 5 (Second Budget Adjustment) instead of Table 3A.

5. Remark and Notes

a. This is the final budget for the fiscal year after all adjustments and factor computations are effected.

b. The final budget is constrained by both actual TOA and budget controls.

c. In order to assure that all of the calculations are without error, the value in Report #1, cell Y:G60, should be the same as the value for TOA in Table 1A, cell P:B10, and the total in Table 5, cell S:F61.

REPORT #1: BUDGET ALLOCATION BY QUARTER FOR FY: 1996

CAC	DESCRIP	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL		FORECAST TOTAL	DIFF
2H0A	CIV LAB	72.362	72.362	72.362	72.362	289.446		289.446	0.000
2H0B	TAD	4.712	5.086	2.628	2.767	15.194		15.200	0.006
2H0C	B REPRO	13.400	14.784	13.956	10.484	52.624		52.624	0.000
2H1A	H&S	0.620	0.669	0.346	0.364	1.999		2.000	0.001
2H1B	BB-28	2.071	2.235	1.155	1.216	6.677		6.680	0.003
2H1C	PERS	1.493	1.612	0.833	0.877	4.814		4.816	0.002
2H1D	GRAPH	8.654	9.341	4.827	5.083	27.905		27.916	0.011
2H1E	S REPRO	0.868	0.937	0.484	0.510	2.799		2.800	0.001
2H1F	BEQ	5.945	6.417	3.316	3.492	19.170		19.178	0.007
2H1G	CO FUND	1.674	1.807	0.934	0.983	5.398		5.400	0.002
2H1H	SUPPLY	3.342	3.607	1.864	1.963	10.775		10.779	0.004
2H1R	INVEST	48.492	52.341	27.049	28.480	156.362		287.600	131.238
2H1I	MNT ADM	2.945	3.179	1.643	1.730	9.496		9.500	0.004
2H1J	EEIC ADM	0.042	0.045	0.023	0.025	0.135		0.135	0.000
2H1K	CEIC ADM	1.385	1.495	0.772	0.813	4.465		4.467	0.002
2H1L	UIC ADM	0.935	1.009	0.521	0.549	3.014		3.015	0.001
2H2A	CONTRACT	16.659	-2.145	5.854	2.852	23.220		23.220	0.000
2H2B	MAINT	3.689	3.982	2.058	2.167	11.895		11.900	0.005
2H2C	EEIC MNT	0.000	0.000	0.000	0.000	0.000		0.000	0.000
2H2D	CEIC MNT	3.581	3.865	1.997	2.103	11.546		11.550	0.004
2H2E	UIC MNT	24.866	26.839	13.870	14.604	80.179		80.210	0.031
VGB0	EEO	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGE0	EEM NCO	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGF0	EEO NCO	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGG0	BEEM	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGH0	EEC	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGL0	BMW	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGX0	SCM	18.600	20.077	10.376	10.924	59.977		60.000	0.023
VGY0	BEEO	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VG20	REES	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGXX	M9 ACE OP	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGA0	CEO	20.089	21.683	11.206	11.798	64.775		64.800	0.025
VGC0	CE NCO	0.372	0.402	0.208	0.218	1.200		1.200	0.000
VGJ0	EOC	4.867	5.253	2.715	2.859	15.694		15.700	0.006
VGK0	BCE	21.701	23.423	12.105	12.745	69.973		70.000	0.027
VGM0	RCE NCO	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VGN0	RCEO	0.019	0.021	0.011	0.011	0.062		0.063	0.000
VGS0	MMC	0.171	0.184	0.095	0.100	0.550		0.550	0.000
VGZ0	BLSS	1.550	1.673	0.865	0.910	4.998		5.000	0.002
VG10	RBCE	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VG30	LSS	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VG40	RBLSS	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VFA0	BE	5.642	6.090	3.147	3.314	18.193		18.200	0.007
VFB0	BRM	1.085	1.171	0.605	0.637	3.499		3.500	0.001
VFC0	UC	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VFD0	EER	13.020	14.054	7.263	7.647	41.984		42.000	0.016
VFE0	EL NCO	0.434	0.468	0.242	0.255	1.399		1.400	0.001
VFG0	HEO NCO	4.340	4.685	2.421	2.549	13.995		14.000	0.005
VFH0	UO	0.000	0.000	0.000	0.000	0.000		0.000	0.000
VFJ0	BHEO	12.276	13.251	6.848	7.210	39.585		39.600	0.015
TOTAL		321.90	321.90	214.60	214.60	1073.00		1204.45	131.45

BUDGET FUNCTIONS

Functional Relationships:

CAC	Function	Remarks	CAC	Function	Remarks
2H0 A	F(f)	See para. 4	GX0	F(g)	
2H0 B	F(g)	regarding the	GY0	F(g)	
2H0 C	F(f)	sources for the	GZ0	F(g)	
		allocation	G20	F(g)	
2H1 A	F(g)	factors and	GXX	F(g)	
2H1 B	F(g)	annual funding			
2H1 C	F(g)	amounts for all	GA0	F(g)	
2H1 D	F(g)	functions used	GJ0	F(g)	
2H1 E	F(g)	in this computa-	GC0	F(g)	
2H1 F	F(g)	tion set/report	GS0	F(g)	
2H1 G	F(g)		GK0	F(g)	
2H1 H	F(g)		GM0	F(g)	
2H1 I	F(g)		GN0	F(g)	
2H1 J	F(g)		GZ0	F(g)	
2H1 K	F(g)		G10	F(g)	
2H1 L	F(g)		G30	F(g)	
			G40	F(g)	
2H1 R	F(g)				
			FA0	F(g)	
2H2 A	F(f)		FB0	F(g)	
2H2 B	F(g)		FC0	F(g)	
2H2 C	F(g)		FD0	F(g)	
2H2 D	F(g)		FE0	F(g)	
2H2 E	F(g)		FG0	F(g)	
			FH0	F(g)	
GB0			FJ0	F(g)	
GE0					
GF0					
GG0					
GL0					

FORMULAS

1. Location: Data Set #2 Sublocation: Sheet Y Sublocation: Report #1

CELL(S)	FORMULA	REMARKS
C6 D6 E6 F6	P:D23+(W:C6*(Q:D7-P:C23)) P:E23+(W:D6*(Q:D7-P:C23)) P:F23+(W:E6*(Q:D7-P:C23)) P:G23+(W:F6*(Q:D7-P:C23))	Computes allocations for quarterly CIV LAB from scheduled obligations (Table 1B) plus the quarterly budget factor from Computation #4, times the cost estimate from Table 3A, minus the total scheduled obligation for CIV LAB.
C7 D7 E7 F7	S:F7*W:C7 S:F7*W:D7 S:F7*W:E7 S:F7*W:F7	Computes cost estimate (Table 5) times the budget factor from Computation #4.
C8 D8 E8 F8	P:D25+(W:C8*(S:F8-P:C25)) P:E25+(W:D10*(S:F8-P:C25)) P:F25+(W:E10*(S:F8-P:C25)) P:G25+(W:F10*(S:F8-P:C25))	Computes obligations for quarterly B REPRO from scheduled obligations (Table 1B) plus the quarterly budget factor from Computation #4, times the cost estimate from Table 3A, minus the total scheduled obligation for B REPRO.
C10..F10 . C22..F22	S:F10*W:C10..S:F10*W:F10 . S:F22*W:C22..S:F22*W:F22	Computes cost estimate (Table 5) times the budget factor from Computation #4.
C24 D24 E24 F24	P:D24+(W:C24*(S:F24-P:C24)) P:E24+(W:D24*(S:F24-P:C24)) P:F24+(W:E24*(S:F24P:C24)) P:G24+(W:F24*(S:F24-P:C24))	Computes obligations for quarterly CONTRACT from scheduled obligations (Table 1B) plus the quarterly budget factor from Computation #4, times the cost estimate from Table 3A, minus the total scheduled obligation for CONTRACT.
C25..F25 . C58..F58	S:F25*W:C25..S:F25*W:F25 . S:F58*W:C58..S:F58*W:F58	Computes cost estimate (Table 5) times the budget factor from Computation #4.
C60..F60	@SUM(C6..C58)..@SUM(F6..F58)	Sums quarterly budget allocations.
G6 . G58	@SUM(C6..F6) @SUM(C58..F58)	Sums quarterly CAC budget allocations.
G60	@SUM(G6..G58)	Sums total quarterly budget allocations.
I6 . I58	Q:D7 . Q:D59	Sources cost estimates from Table 3A.
J6 . J58	I6-G6 . I58-G58	Computes the difference between the cost estimation and the budget allocation by CAC.

REPORTS

1. Report Numbers: 2, 3, 4, and 5

2. Report Title: Quarterly Budget by CAC and WC

3. Purpose: These reports summarize quarterly budget information.

4. Description

    a. Elements:

        1) Funding requirement based on cost estimates (Computation 5).

        2) Funding available (Report #1).

        3) Surplus/shortage of funds needed.

        4) Work center allocation factors (Computation 3).

    b. Functions and Calculations:

        1) The amount budgeted for each CAC is subtracted from the requirement to calculate any overage/shortage of funds and the percentage to which the requirement is funded for the quarter.

        2) The amount budgeted in the quarter for each CAC is multiplied by each WC factor for that respective CAC to calculate the allocation by work center.

DATA SET #3: REPORTS

REPORT #2: 1ST QUARTER OF FY: 1996

2A: BUDGET BY CAC

CAC	SUBCAC	DESCRIP	RQMNT	BUDGET	DIFF	PERCENT FUNDED
V2H0	2H0A	CIV LAB	72.362	72.362	0.000	100%
	2H0B	TAD	3.800	4.712	0.912	124%
	2H0C	B REPRO	13.400	13.400	0.000	100%
V2H1	2H1A	H&S	0.500	0.620	0.120	124%
	2H1B	BB-28	1.670	2.071	0.401	124%
	2H1C	PERS	1.226	1.493	0.267	122%
	2H1D	GRAPH	7.108	8.654	1.546	122%
	2H1E	S REPRO	0.713	0.868	0.155	122%
	2H1F	BEQ	4.883	5.945	1.062	122%
	2H1G	CO FUND	1.350	1.674	0.324	124%
	2H1H	SUPPLY	2.695	3.342	0.647	124%
	2H1R	INVEST	71.900	48.492	-23.408	67%
	2H1I	MNT ADM	2.375	2.945	0.570	124%
	2H1J	EEIC ADM	0.034	0.042	0.008	124%
	2H1K	CEIC ADM	1.117	1.385	0.268	124%
	2H1L	UIC ADM	0.754	0.935	0.181	124%
V2H2	2H2A	CONTRACT	16.659	16.659	0.000	100%
	2H2B	MAINT	2.975	3.689	0.714	124%
	2H2C	EEIC MNT	0.000	0.000	0.000	0%
	2H2D	CEIC MNT	2.941	3.581	0.640	122%
	2H2E	UIC MNT	20.424	24.866	4.441	122%
VGB0		EEO	0.000	0.000	0.000	0%
VGE0		EEM NCO	0.000	0.000	0.000	0%
VGF0		EEO NCO	0.000	0.000	0.000	0%
VGG0		BEEM	0.000	0.000	0.000	0%
VGH0		EEC	0.000	0.000	0.000	0%
VGL0		BMW	0.000	0.000	0.000	0%
VGX0		SCM	20.000	18.600	-1.400	93%
VGY0		BEEO	0.000	0.000	0.000	0%
VG20		REES	0.000	0.000	0.000	0%
VGXX		M9 ACE OP	0.000	0.000	0.000	0%
VGA0		CEO	21.600	20.089	-1.511	93%
VGC0		CE NCO	0.000	0.372	0.372	0%
VGJ0		EOC	7.850	4.867	-2.983	62%
VGK0		BCE	17.027	21.701	4.674	127%
VGM0		RCE NCO	0.000	0.000	0.000	0%
VGN0		RCEO	0.000	0.019	0.019	0%
VGS0		MMC	0.150	0.171	0.021	114%
VGZ0		BLSS	1.364	1.550	0.186	114%
VG10		RBCE	0.000	0.000	0.000	0%
VG30		LSS	0.000	0.000	0.000	0%
VG40		RBLSS	0.000	0.000	0.000	0%
VFA0		BE	2.600	5.642	3.042	217%
VFB0		BRM	0.700	1.085	0.385	155%
VFC0		UC	0.000	0.000	0.000	0%
VFD0		EER	14.000	13.020	-0.980	93%
VFE0		EL NCO	0.700	0.434	-0.266	62%
VFG0		HEO NCO	7.000	4.340	-2.660	62%
VFH0		UO	0.000	0.000	0.000	0%
VFJ0		BHEO	11.880	12.276	0.396	103%
TOTAL			333.757	321.900	-11.857	

FORMULAS

1. Location: Data Set #3 Sublocation: Sheet AA Sublocation: Report #2A

CELL(S)	FORMULA	REMARKS
D8	X:C6	Sources cost estimate by quarter from Computation 5
.	.	
D60	X:C58	
E8	Y:C6	Sources budget allocation by quarter from Report #1
.	.	
E60	Y:C58	
F8	E8-D8	Computes the difference between the RQMNT and the BUDGET.
.	.	
F60	E60-D60	
G8	@IF((D8=0),0,(E6/D6)	Computes the percentage of the RQMNT that is funded.
.	.	
G60	@IF((D60=0),0,(E60/D60)	

AB	A	B	C	D	E	F	G
3	REPORT #3: 2ND QUARTER OF FY:				1996		
4	3A: BUDGET BY CAC						
5							PERCENT
6	CAC	SUBCAC	DESCRIP	RQMNT	BUDGET	DIFF	FUNDED
7							
8	V2H0	2H0A	CIV LAB	72.362	72.362	0.000	100%
9		2H0B	TAD	3.800	5.086	1.286	134%
10		2H0C	B REPRO	14.784	14.784	0.000	100%
11						0.000	
12	V2H1	2H1A	H&S	0.500	0.669	0.169	134%
13		2H1B	BB-28	1.670	2.235	0.565	134%
14		2H1C	PERS	1.353	1.612	0.259	119%
15		2H1D	GRAPH	7.843	9.341	1.498	119%
16		2H1E	S REPRO	0.787	0.937	0.150	119%
17		2H1F	BEQ	5.388	6.417	1.029	119%
18		2H1G	CO FUND	1.350	1.807	0.457	134%
19		2H1H	SUPPLY	2.695	3.607	0.912	134%
20		2H1R	INVEST	71.900	52.341	-19.559	73%
21		2H1I	MNT ADM	2.375	3.179	0.804	134%
22		2H1J	EEIC ADM	0.034	0.045	0.011	134%
23		2H1K	CEIC ADM	1.117	1.495	0.378	134%
24		2H1L	UIC ADM	0.754	1.009	0.255	134%
25							
26	V2H2	2H2A	CONTRACT	-2.145	-2.145	0.000	100%
27		2H2B	MAINT	2.975	3.982	1.007	134%
28		2H2C	EEIC MNT	0.000	0.000	0.000	0%
29		2H2D	CEIC MNT	3.245	3.865	0.620	119%
30		2H2E	UIC MNT	22.534	26.839	4.306	119%
31							
32	VGB0		EEO	0.000	0.000	0.000	0%
33	VGE0		EEM NCO	0.000	0.000	0.000	0%
34	VGF0		EEO NCO	0.000	0.000	0.000	0%
35	VGG0		BEEM	0.000	0.000	0.000	0%
36	VGH0		EEC	0.000	0.000	0.000	0%
37	VGL0		BMW	0.000	0.000	0.000	0%
38	VGX0		SCM	20.000	20.077	0.077	100%
39	VGY0		BEEO	0.000	0.000	0.000	0%
40	VG20		REES	0.000	0.000	0.000	0%
41	VGXX		M9 ACE OP	0.000	0.000	0.000	0%
42	VGA0		CEO	10.800	21.683	10.883	201%
43	VGC0		CE NCO	0.400	0.402	0.002	100%
44	VGJ0		EOC	7.850	5.253	-2.597	67%
45	VGK0		BCE	18.919	23.423	4.504	124%
46	VGM0		RCE NCO	0.000	0.000	0.000	0%
47	VGN0		RCEO	0.000	0.021	0.021	0%
48	VGS0		MMC	0.150	0.184	0.034	123%
49	VGZ0		BLSS	1.364	1.673	0.309	123%
50	VG10		RBCE	0.000	0.000	0.000	0%
51	VG30		LSS	0.000	0.000	0.000	0%
52	VG40		RBLSS	0.000	0.000	0.000	0%
53	VFA0		BE	5.200	6.090	0.890	117%
54	VFB0		BRM	1.400	1.171	-0.229	84%
55	VFC0		UC	0.000	0.000	0.000	0%
56	VFD0		EER	14.000	14.054	0.054	100%
57	VFE0		EL NCO	0.000	0.468	0.468	0%
58	VFG0		HEO NCO	0.000	4.685	4.685	0%
59	VFH0		UO	0.000	0.000	0.000	0%
60	VFJ0		BHEO	11.880	13.251	1.371	112%
61							
62	TOTAL			307.281	321.900	14.620	

FORMULAS

1. Location: Data Set #3 Sublocation: Sheet AB Sublocation: Report #3A

CELL(S)	FORMULA	REMARKS
D8	X:D6	Sources cost estimate by quarter from Computation 5
.	.	
D60	X:D58	
E8	Y:D6	Sources budget allocation by quarter from Report #1
.	.	
E60	Y:D58	
F8	E8-D8	Computes the difference between the RQMNT and the BUDGET.
.	.	
F60	E60-D60	
G8	@IF((D8=0),0,(E6/D6)	Computes the percentage of the RQMNT that is funded.
.	.	
G60	@IF((D60=0),0,(E60/D60)	

AC	A	B	C	D	E	F	G
3	REPORT #4: 3RD QUARTER OF FY:				1996		
4	4A: BUDGET BY CAC						
5							
6	CAC	SUBCAC	DESCRIP	RQMNT	BUDGET	DIFF	PERCENT FUNDED
7							
8	V2H0	2H0A	CIV LAB	72.362	72.362	0.000	100%
9		2H0B	TAD	3.800	2.628	-1.172	69%
10		2H0C	B REPRO	13.956	13.956	0.000	100%
11							
12	V2H1	2H1A	H&S	0.500	0.346	-0.154	69%
13		2H1B	BB-28	1.670	1.155	-0.515	69%
14		2H1C	PERS	1.277	0.833	-0.444	65%
15		2H1D	GRAPH	7.404	4.827	-2.576	65%
16		2H1E	S REPRO	0.743	0.484	-0.258	65%
17		2H1F	BEQ	5.086	3.316	-1.770	65%
18		2H1G	CO FUND	1.350	0.934	-0.416	69%
19		2H1H	SUPPLY	2.695	1.864	-0.831	69%
20		2H1R	INVEST	71.900	27.049	-44.851	38%
21		2H1I	MNT ADM	2.375	1.643	-0.732	69%
22		2H1J	EEIC ADM	0.034	0.023	-0.010	69%
23		2H1K	CEIC ADM	1.117	0.772	-0.344	69%
24		2H1L	UIC ADM	0.754	0.521	-0.232	69%
25							
26	V2H2	2H2A	CONTRACT	5.854	5.854	0.000	100%
27		2H2B	MAINT	2.975	2.058	-0.917	69%
28		2H2C	EEIC MNT	0.000	0.000	0.000	0%
29		2H2D	CEIC MNT	3.063	1.997	-1.066	65%
30		2H2E	UIC MNT	21.272	13.870	-7.402	65%
31							
32	VGB0		EEO	0.000	0.000	0.000	0%
33	VGE0		EEM NCO	0.000	0.000	0.000	0%
34	VGF0		EEO NCO	0.000	0.000	0.000	0%
35	VGG0		BEEM	0.000	0.000	0.000	0%
36	VGH0		EEC	0.000	0.000	0.000	0%
37	VGL0		BMW	0.000	0.000	0.000	0%
38	VGX0		SCM	20.000	10.376	-9.624	52%
39	VGY0		BEEO	0.000	0.000	0.000	0%
40	VG20		REES	0.000	0.000	0.000	0%
41	VGXX		M9 ACE OP	0.000	0.000	0.000	0%
42	VGA0		CEO	10.800	11.206	0.406	104%
43	VGC0		CE NCO	0.400	0.208	-0.192	52%
44	VGJ0		EOC	0.000	2.715	2.715	0%
45	VGK0		BCE	17.027	12.105	-4.922	71%
46	VGM0		RCE NCO	0.000	0.000	0.000	0%
47	VGN0		RCEO	0.063	0.011	-0.052	17%
48	VGS0		MMC	0.150	0.095	-0.055	63%
49	VGZ0		BLSS	0.909	0.865	-0.044	95%
50	VG10		RBCE	0.000	0.000	0.000	0%
51	VG30		LSS	0.000	0.000	0.000	0%
52	VG40		RBLSS	0.000	0.000	0.000	0%
53	VFA0		BE	5.200	3.147	-2.053	61%
54	VFB0		BRM	0.700	0.605	-0.095	86%
55	VFC0		UC	0.000	0.000	0.000	0%
56	VFD0		EER	14.000	7.263	-6.737	52%
57	VFE0		EL NCO	0.000	0.242	0.242	0%
58	VFG0		HEO NCO	7.000	2.421	-4.579	35%
59	VFH0		UO	0.000	0.000	0.000	0%
60	VFJ0		BHEO	11.880	6.848	-5.032	58%
61							
62	TOTAL			308.314	214.600	-93.714	

FORMULAS

1. Location: Data Set #3 Sublocation: Sheet AC Sublocation: Report #4A

CELL(S)	FORMULA	REMARKS
D8	X:E6	Sources cost estimate by quarter from Computation 5
.	.	
D60	X:E58	
E8	Y:E6	Sources budget allocation by quarter from Report #1
.	.	
E60	Y:E58	
F8	E8-D8	Computes the difference between the RQMNT and the BUDGET.
.	.	
F60	E60-D60	
G8	@IF((D8=0),0,(E6/D6)	Computes the percentage of the RQMNT that is funded.
.	.	
G60	@IF((D60=0),0,(E60/D60)	

AD	A	B	C	D	E	F	G
3	REPORT #5: 4TH QUARTER OF FY:				1996		
4	5A: BUDGET BY CAC						
5							
6	CAC	SUBCAC	DESCRIP	RQMNT	BUDGET	DIFF	PERCENT FUNDED
7							
8	V2H0	2H0A	CIV LAB	72.362	72.362	0.000	100%
9		2H0B	TAD	3.800	2.767	-1.033	73%
10		2H0C	B REPRO	10.484	10.484	0.000	100%
11							
12	V2H1	2H1A	H&S	0.500	0.364	-0.136	73%
13		2H1B	BB-28	1.670	1.216	-0.454	73%
14		2H1C	PERS	0.959	0.877	-0.083	91%
15		2H1D	GRAPH	5.561	5.083	-0.479	91%
16		2H1E	S REPRO	0.558	0.510	-0.048	91%
17		2H1F	BEQ	3.821	3.492	-0.329	91%
18		2H1G	CO FUND	1.350	0.983	-0.367	73%
19		2H1H	SUPPLY	2.695	1.963	-0.732	73%
20		2H1R	INVEST	71.900	28.480	-43.420	40%
21		2H1I	MNT ADM	2.375	1.730	-0.645	73%
22		2H1J	EEIC ADM	0.034	0.025	-0.009	73%
23		2H1K	CEIC ADM	1.117	0.813	-0.303	73%
24		2H1L	UIC ADM	0.754	0.549	-0.205	73%
25							
26	V2H2	2H2A	CONTRACT	2.852	2.852	0.000	100%
27		2H2B	MAINT	2.975	2.167	-0.808	73%
28		2H2C	EEIC MNT	0.000	0.000	0.000	0%
29		2H2D	CEIC MNT	2.301	2.103	-0.198	91%
30		2H2E	UIC MNT	15.979	14.604	-1.375	91%
31							
32	VGB0		EEO	0.000	0.000	0.000	0%
33	VGE0		EEM NCO	0.000	0.000	0.000	0%
34	VGF0		EEO NCO	0.000	0.000	0.000	0%
35	VGG0		BEEM	0.000	0.000	0.000	0%
36	VGH0		EEC	0.000	0.000	0.000	0%
37	VGL0		BMW	0.000	0.000	0.000	0%
38	VGX0		SCM	0.000	10.924	10.924	0%
39	VGY0		BEEO	0.000	0.000	0.000	0%
40	VG20		REES	0.000	0.000	0.000	0%
41	VGXX		M9 ACE OP	0.000	0.000	0.000	0%
42	VGA0		CEO	21.600	11.798	-9.802	55%
43	VGC0		CE NCO	0.400	0.218	-0.182	55%
44	VGJ0		EOC	0.000	2.859	2.859	0%
45	VGK0		BCE	17.027	12.745	-4.282	75%
46	VGM0		RCE NCO	0.000	0.000	0.000	0%
47	VGN0		RCEO	0.000	0.011	0.011	0%
48	VGS0		MMC	0.100	0.100	0.000	100%
49	VGZ0		BLSS	1.364	0.910	-0.453	67%
50	VG10		RBCE	0.000	0.000	0.000	0%
51	VG30		LSS	0.000	0.000	0.000	0%
52	VG40		RBLSS	0.000	0.000	0.000	0%
53	VFA0		BE	5.200	3.314	-1.886	64%
54	VFB0		BRM	0.700	0.637	-0.063	91%
55	VFC0		UC	0.000	0.000	0.000	0%
56	VFD0		EER	0.000	7.647	7.647	0%
57	VFE0		EL NCO	0.700	0.255	-0.445	36%
58	VFG0		HEO NCO	0.000	2.549	2.549	0%
59	VFH0		UO	0.000	0.000	0.000	0%
60	VFJ0		BHEO	3.960	7.210	3.250	182%
61							
62	TOTAL			255.096	214.600	-40.496	

FORMULAS

1. Location: Data Set #3 Sublocation: Sheet AD Sublocation: Report #5A

CELL(S)	FORMULA	REMARKS
D8	X:F6	Sources cost estimate by quarter from Computation 5
.	.	
D60	X:F58	
E8	Y:F6	Sources budget allocation by quarter from Report #1
.	.	
E60	Y:F58	
F8	E8-D8	Computes the difference between the RQMNT and the BUDGET.
.	.	
F60	E60-D60	
G8	@IF((D8=0),0,(E6/D6)	Computes the percentage of the RQMNT that is funded.
.	.	
G60	@IF((D60=0),0,(E60/D60)	

REPORT 2B: BUDGET ALLOCATION BY WORK CENTER

CAC	DESCRIP	ADM/PERS	D/I	GRAPHICS	D/S	SUPPLY	MAINT	H&S	EEIC	CEIC	UIC	TOTAL
2H0A	CIV LAB					72.362						72.362
2H0B	TAD		4.712									4.712
2H0C	B REPRO	0.976	1.103	0.000	0.000	0.976	0.000	0.000	0.183	6.066	4.095	13.400
2H1A	H&S							0.620				0.620
2H1B	BB-28		2.071									2.071
2H1C	PERS	1.493										1.493
2H1D	GRAPH			1.023					0.296	4.457	2.878	8.654
2H1E	S REPRO		-0.000						0.023	0.550	0.295	0.868
2H1F	BEQ				5.945							5.945
2H1G	CO FUND					1.674						1.674
2H1H	SUPPLY					3.342						3.342
2H1R	INVEST	0.000	1.633	0.980	0.653	32.750	2.149	0.327	0.000	4.899	5.101	48.492
2H1I	MNT ADM						2.945					2.945
2H1J	EEIC ADM								0.042			0.042
2H1K	CEIC ADM									1.385		1.385
2H1L	UIC ADM										0.935	0.935
2H2A	CONTRACT	0.000	0.000	2.090	0.000	0.000	9.761	0.000	0.000	0.000	4.808	16.659
2H2B	MAINT				0.000		0.000		0.000	0.000	3.689	3.689
2H2C	EEIC MNT								0.000			0.000
2H2D	CEIC MNT									3.581		3.581
2H2E	UIC MNT										24.866	24.866
VGB0	EEO											0.000
VGE0	EEM NCO											0.000
VGF0	EEO NCO											0.000
VGG0	BEEM											0.000
VGH0	EEC											0.000
VGL0	BMW											0.000
VGX0	SCM								18.600			18.600
VGY0	BEEO											0.000
VG20	REES											0.000
VGXX	M9 ACE OP								0.000			0.000
VGA0	CEO									20.089		20.089
VGC0	CE NCO									0.372		0.372
VGJ0	EOC									4.867		4.867
VGK0	BCE									21.701		21.701
VGM0	RCE NCO									0.000		0.000
VGN0	RCEO									0.019		0.019
VGS0	MMC									0.171		0.171
VGZ0	BLSS									1.550		1.550
VG10	RBCE									0.000		0.000
VG30	LSS									0.000		0.000
VG40	RBLSS									0.000		0.000
VFA0	BE										5.642	5.642
VFB0	BRM										1.085	1.085
VFC0	UC										0.000	0.000
VFD0	EER										13.020	13.020
VFE0	EL NCO										0.434	0.434
VFG0	HEO NCO										4.340	4.340
VFH0	UO										0.000	0.000
VFJ0	BHEO										12.276	12.276
TOTALS		2.469	9.519	4.093	6.598	111.103	14.856	0.947	19.145	69.707	83.464	321.900

REPORT 3B: BUDGET ALLOCATION BY WORK CENTER

CAC	DESCRIP	ADM/PERS	D/I	GRAPHICS	D/S	SUPPLY	MAINT	H&S	EEIC	CEIC	UIC	TOTAL
2H0A	CIV LAB					72.362						72.362
2H0B	TAD		5.086									5.086
2H0C	B REPRO	1.077	1.217	0.000	0.000	1.077	0.000	0.000	0.202	6.693	4.517	14.784
2H1A	H&S							0.669				0.669
2H1B	BB-28		2.235									2.235
2H1C	PERS	1.612										1.612
2H1D	GRAPH			1.104					0.319	4.811	3.107	9.341
2H1E	S REPRO		-0.000						0.025	0.594	0.318	0.937
2H1F	BEQ				6.417							6.417
2H1G	CO FUND					1.807						1.807
2H1H	SUPPLY					3.607						3.607
2H1R	INVEST	0.000	1.763	1.058	0.705	35.349	2.320	0.353	0.000	5.288	5.506	52.341
2H1I	MNT ADM						3.179					3.179
2H1J	EEIC ADM								0.045			0.045
2H1K	CEIC ADM									1.495		1.495
2H1L	UIC ADM										1.009	1.009
2H2A	CONTRACT	0.000	0.000	-0.269	0.000	-0.000	-1.257	0.000	0.000	0.000	-0.619	-2.145
2H2B	MAINT				0.000		0.000		0.000	0.000	3.982	3.982
2H2C	EEIC MNT								0.000			0.000
2H2D	CEIC MNT									3.865		3.865
2H2E	UIC MNT										26.839	26.839
VGB0	EEO											0.000
VGE0	EEM NCO											0.000
VGF0	EEO NCO											0.000
VGG0	BEEM											0.000
VGH0	EEC											0.000
VGL0	BMW											0.000
VGX0	SCM								20.077			20.077
VGY0	BEEO											0.000
VG20	REES											0.000
VGXX	M9 ACE OP								0.000			0.000
VGA0	CEO									21.683		21.683
VGC0	CE NCO									0.402		0.402
VGJ0	EOC									5.253		5.253
VGK0	BCE									23.423		23.423
VGM0	RCE NCO									0.000		0.000
VGN0	RCEO									0.021		0.021
VGS0	MMC									0.184		0.184
VGZ0	BLSS									1.673		1.673
VG10	RBCE									0.000		0.000
VG30	LSS									0.000		0.000
VG40	RBLSS									0.000		0.000
VFA0	BE										6.090	6.090
VFB0	BRM										1.171	1.171
VFC0	UC										0.000	0.000
VFD0	EER										14.054	14.054
VFE0	EL NCO										0.468	0.468
VFG0	HEO NCO										4.685	4.685
VFH0	UO										0.000	0.000
VFJ0	BHEO										13.251	13.251
TOTALS:		2.689	10.301	1.893	7.122	114.201	4.242	1.022	20.669	75.384	84.378	321.900

AC	A	B	C	D	E	F	G	H	I	J	K	L	M
64	REPORT 4B: BUDGET ALLOCATION BY WORK CENTER												
65													
66	CAC	DESCRIP	ADM/PERS	D/I	GRAPHICS	D/S	SUPPLY	MAINT	H&S	EEIC	CEIC	UIC	TOTAL
67													
68	2H0A	CIV LAB					72.362						72.362
69	2H0B	TAD		2.628									2.628
70	2H0C	B REPRO	1.017	1.149	0.000	0.000	1.017	0.000	0.000	0.191	6.318	4.265	13.956
71													
72	2H1A	H&S							0.346				0.346
73	2H1B	BB-28		1.155									1.155
74	2H1C	PERS	0.833										0.833
75	2H1D	GRAPH			0.571					0.165	2.486	1.605	4.827
76	2H1E	S REPRO		-0.000						0.013	0.307	0.164	0.484
77	2H1F	BEQ				3.316							3.316
78	2H1G	CO FUND					0.934						0.934
79	2H1H	SUPPLY					1.864						1.864
80	2H1R	INVEST	0.000	0.911	0.547	0.364	18.268	1.199	0.182	0.000	2.733	2.846	27.049
81	2H1I	MNT ADM						1.643					1.643
82	2H1J	EEIC ADM								0.023			0.023
83	2H1K	CEIC ADM									0.772		0.772
84	2H1L	UIC ADM										0.521	0.521
85													
86	2H2A	CONTRACT	0.000	0.000	0.734	0.000	0.000	3.430	0.000	0.000	0.000	1.689	5.854
87	2H2B	MAINT				0.000		0.000		0.000	0.000	2.058	2.058
88	2H2C	EEIC MNT								0.000			0.000
89	2H2D	CEIC MNT									1.997		1.997
90	2H2E	UIC MNT										13.870	13.870
91													
92	VGB0	EEO								0.000			0.000
93	VGE0	EEM NCO								0.000			0.000
94	VGF0	EEO NCO								0.000			0.000
95	VGG0	BEEM								0.000			0.000
96	VGH0	EEC								0.000			0.000
97	VGL0	BMW								0.000			0.000
98	VGX0	SCM								10.376			10.376
99	VGY0	BEEO								0.000			0.000
100	VG20	REES								0.000			0.000
101	VGXX	M9 ACE OP								0.000			0.000
102	VGA0	CEO									11.206		11.206
103	VGC0	CE NCO									0.208		0.208
104	VGJ0	EOC									2.715		2.715
105	VGK0	BCE									12.105		12.105
106	VGM0	RCE NCO									0.000		0.000
107	VGN0	RCEO									0.011		0.011
108	VGS0	MMC									0.095		0.095
109	VGZ0	BLSS									0.865		0.865
110	VG10	RBCE									0.000		0.000
111	VG30	LSS									0.000		0.000
112	VG40	RBLSS									0.000		0.000
113	VFA0	BE										3.147	3.147
114	VFB0	BRM										0.605	0.605
115	VFC0	UC										0.000	0.000
116	VFD0	EER										7.263	7.263
117	VFE0	EL NCO										0.242	0.242
118	VFG0	HEO NCO										2.421	2.421
119	VFH0	UO										0.000	0.000
120	VFJ0	BHEO										6.848	6.848
121													
122	TOTALS:		1.850	5.844	1.852	3.681	94.444	6.272	0.528	10.768	41.818	47.545	214.600

AD	A	B	C	D	E	F	G	H	I	J	K	L	M
64	REPORT 5B: BUDGET ALLOCATION BY WORK CENTER												
65													
66	CAC	DESCRIP	ADM/PERS	D/I	GRAPHICS	D/S	SUPPLY	MAINT	H&S	EEIC	CEIC	UIC	TOTAL
67													
68	2H0A	CIV LAB					72.362						72.362
69	2H0B	TAD		2.767									2.767
70	2H0C	B REPRO	0.764	0.863	0.000	0.000	0.764	0.000	0.000	0.143	4.746	3.203	10.484
71													
72	2H1A	H&S							0.364				0.364
73	2H1B	BB-28		1.216									1.216
74	2H1C	PERS	0.877										0.877
75	2H1D	GRAPH			0.601					0.174	2.618	1.690	5.083
76	2H1E	S REPRO		-0.000						0.014	0.323	0.173	0.510
77	2H1F	BEQ				3.492							3.492
78	2H1G	CO FUND					0.983						0.983
79	2H1H	SUPPLY					1.963						1.963
80	2H1R	INVEST	0.000	0.959	0.575	0.384	19.234	1.262	0.192	0.000	2.877	2.996	28.480
81	2H1I	MNT ADM						1.730					1.730
82	2H1J	EEIC ADM								0.025			0.025
83	2H1K	CEIC ADM									0.813		0.813
84	2H1L	UIC ADM										0.549	0.549
85													
86	2H2A	CONTRACT	0.000	0.000	0.358	0.000	0.000	1.671	0.000	0.000	0.000	0.823	2.852
87	2H2B	MAINT				0.000		0.000		0.000	0.000	2.167	2.167
88	2H2C	EEIC MNT								0.000			0.000
89	2H2D	CEIC MNT									2.103		2.103
90	2H2E	UIC MNT										14.604	14.604
91													0.000
92	VGB0	EEO								0.000			0.000
93	VGE0	EEM NCO								0.000			0.000
94	VGF0	EEO NCO								0.000			0.000
95	VGG0	BEEM								0.000			0.000
96	VGH0	EEC								0.000			0.000
97	VGL0	BMW								0.000			0.000
98	VGX0	SCM								10.924			10.924
99	VGY0	BEEO								0.000			0.000
100	VG20	REES								0.000			0.000
101	VGXX	M9 ACE OP								0.000			0.000
102	VGA0	CEO									11.798		11.798
103	VGC0	CE NCO									0.218		0.218
104	VGJ0	EOC									2.859		2.859
105	VGK0	BCE									12.745		12.745
106	VGM0	RCE NCO									0.000		0.000
107	VGN0	RCEO									0.011		0.011
108	VGS0	MMC									0.100		0.100
109	VGZ0	BLSS									0.910		0.910
110	VG10	RBCE									0.000		0.000
111	VG30	LSS									0.000		0.000
112	VG40	RBLSS									0.000		0.000
113	VFA0	BE										3.314	3.314
114	VFB0	BRM										0.637	0.637
115	VFC0	UC										0.000	0.000
116	VFD0	EER										7.647	7.647
117	VFE0	EL NCO										0.255	0.255
118	VFG0	HEO NCO										2.549	2.549
119	VFH0	UO										0.000	0.000
120	VFJ0	BHEO										7.210	7.210
121													
122	TOTALS:		1.641	5.806	1.534	3.875	95.305	4.663	0.556	11.280	42.123	47.817	214.600

FORMULAS

1. Location: Data Set #3 Sublocation: Sheet AA, AB, AC, AD
Sublocation: Report #2B, 3B, 4B, 5B

CELL(S)	FORMULA	REMARKS
C70	E10*V:C8	Computes work center budget allocation by multiplying the budget by CAC from column E from Report 2A, by the Work Center factor from Computation #3.
C74	E14*V:C12	
C80	E20*V:C18	
C86	E26*V:C24	
D69	E9*V:D7	
D70	E10*V:D8	
D73	E13*V:D11	
D76	E16*V:D14	
D80	E20*V:D18	
D86	E26*V:D24	
E70	E10*V:E8	
E75	E15*V:E13	
E80	E20*V:E18	
E86	E26*V:E24	
F70	E10*V:F8	
F77	E17*V:F15	
F80	E20*V:F18	
F86	E26*V:F24	
F87	E27*V:F25	
G68	E8*V:G6	
G70	E10*V:G8	
G78	E18*V:G16	
G79	E19*V:G17	
G80	E20*V:G18	
G86	E26*V:G24	
H70	E10*V:H8	
H80	E20*V:H18	
H81	E21*V:H19	
H86	E26*V:H24	
H87	E27*V:H25	
I70	E10*V:I8	
I72	E12*V:I10	
I80	E20*V:I18	
I86	E26*V:I24	
J70	E10*V:J8	
J75	E15*V:J13	
J76	E16*V:J14	

J80	E20*V:J18	
J82	E22*V:J20	
J86	E26*V:J24	
J87	E27*V:J25	
J88	E28*V:J26	
J98	E38*V:J36	
J101	E41*V:J39	
K70	E10*V:K8	
K75	E15*V:K13	
K76	E16*V:K14	
K80	E20*V:K18	
K83	E23*V:K21	
K86	E26*V:K24	
K87	E27*V:K25	
K89	E29*V:K27	
K102	E42*V:K40	
.	.	
K112	E52*V:K50	
L70	E10*V:L8	
L75	E15*V:L13	
L76	E16*V:L14	
L80	E20*V:L18	
L84	E24*V:L22	
L86	E26*V:L24	
L87	E27*V:L25	
L90	E30*V:L28	
L113	E52*V:L50	
.	.	
L120	E60*V:L58	
C122..L122	@SUM(C68..C120)..@SUM(L68..L120)	Sums column totals for WCs.
M68	@SUM(C68..L68)	Sums row totals for CACs.
.	.	
M120	@SUM(C120..L120)	

REPORTS

1. Report Number: 6

2. Report Title: Obligation (Cash Flow) Requirements Analysis

3. Purpose: This report displays the obligation schedule relative to the budget, by quarter and CAC, to identify funding shortages and surpluses.

4. Description

a. Elements:

1) Obligation schedule (Computation #7).

2) Quarterly budget allocations (Report #1).

b. Functions and Calculations: Subtracts the budgeted funding amount for a CAC from the recommended obligation schedule for that quarter to determine cash flow problems.

5. Remarks and Notes

a. For any CAC listed in the scheduled obligation table (Table 1B) which has a value in column F or J of this report that is less than zero, the user should check the budget column (E or I as applicable) to ensure that there is sufficient funding to cover at least the scheduled costs for that quarter per Table 1B. If not, adjustments to Table 4 and/or 5 must be made in order to cover the scheduled obligations.

b. Significant funding shortfalls for a particular CAC can be a function for several variables including:

1) Tight (i.e. relatively small) funding available in a specific quarter which allows little flexibility in providing an equitable distribution of TOA.

2) Too many scheduled obligations in a quarter relative to funding availability in the quarter.

3) Artificial constraints imposed by the choice of unscheduled obligation rates set in Table 1C.

4) Reductions made in Tables 4 or 5 for the first and second adjustments are too severe.

5) Choice of functions applicable to a CAC in Computations 1, 2, or 4 may need to be reconsidered to ensure "reasonableness."

c. The items noted in paragraph 5.b., can provide a useful guide to working the budget model to best fit the funding available relative to the requirement. The bottom line is, if TOA is less than the amount required, there are going to be deficiencies somewhere, but they can be identified in this report.

d. Finally, the report can serve as a valuable aid to determine where increases of TOA can be applied in the quarter when funding is received, as well as assist in defining what adjustments may be needed in the Comptroller imposed budget controls.

AE A B C D E F G H I J

REPORT #6: OBLIGATION (CASH FLOW) REQUIREMENTS ANALYSIS

			1ST QUARTER			2ND QUARTER		
CAC	SUBCAC	DESCRIP	OBLIG	BUDGET	DIFF	OBLIG	BUDGET	DIFF
V2H0	2H0A	CIV LAB	72.362	72.362	0.000	72.362	72.362	0.000
	2H0B	TAD	3.800	4.712	0.912	3.800	5.086	1.286
	2H0C	B REPRO	13.400	13.400	0.000	14.784	14.784	0.000
V2H1	2H1A	H&S	0.500	0.620	0.120	0.500	0.669	0.169
	2H1B	BB-28	1.670	2.071	0.401	1.670	2.235	0.565
	2H1C	PERS	1.226	1.493	0.267	1.353	1.612	0.259
	2H1D	GRAPH	7.843	8.654	0.812	7.404	9.341	1.937
	2H1E	S REPRO	0.713	0.868	0.155	0.787	0.937	0.150
	2H1F	BEQ	4.883	5.945	1.062	5.388	6.417	1.029
	2H1G	CO FUND	1.350	1.674	0.324	1.350	1.807	0.457
	2H1H	SUPPLY	2.695	3.342	0.647	2.695	3.607	0.912
	2H1R	INVEST	71.900	48.492	-23.408	71.900	52.341	-19.559
	2H1I	MNT ADM	2.375	2.945	0.570	2.375	3.179	0.804
	2H1J	EEIC ADM	0.034	0.042	0.007	0.038	0.045	0.007
	2H1K	CEIC ADM	1.137	1.385	0.247	1.255	1.495	0.240
	2H1L	UIC ADM	0.768	0.935	0.167	0.847	1.009	0.162
V2H2	2H2A	CONTRACT	16.659	16.659	0.000	-2.145	-2.145	0.000
	2H2B	MAINT	3.030	3.689	0.659	3.343	3.982	0.639
	2H2C	EEIC MNT	0.000	0.000	0.000	0.000	0.000	0.000
	2H2D	CEIC MNT	2.941	3.581	0.640	3.245	3.865	0.620
	2H2E	UIC MNT	20.424	24.866	4.441	22.534	26.839	4.306
VGB0		EEO	0.000	0.000	0.000	0.000	0.000	0.000
VGE0		EEM NCO	0.000	0.000	0.000	0.000	0.000	0.000
VGF0		EEO NCO	0.000	0.000	0.000	0.000	0.000	0.000
VGG0		BEEM	0.000	0.000	0.000	0.000	0.000	0.000
VGH0		EEC	0.000	0.000	0.000	0.000	0.000	0.000
VGL0		BMW	0.000	0.000	0.000	0.000	0.000	0.000
VGX0		SCM	20.000	18.600	-1.400	20.000	20.077	0.077
VGY0		BEEO	0.000	0.000	0.000	0.000	0.000	0.000
VG20		REES	0.000	0.000	0.000	0.000	0.000	0.000
VGXX		M9 ACE OP	0.000	0.000	0.000	0.000	0.000	0.000
VGA0		CEO	10.800	20.089	9.289	10.800	21.683	10.883
VGC0		CE NCO	0.400	0.372	-0.028	0.400	0.402	0.002
VGJ0		EOC	7.850	4.867	-2.983	0.000	5.253	5.253
VGK0		BCE	18.919	21.701	2.782	17.027	23.423	6.396
VGM0		RCE NCO	0.000	0.000	0.000	0.000	0.000	0.000
VGN0		RCEO	0.000	0.019	0.019	0.063	0.021	-0.042
VGS0		MMC	0.150	0.171	0.021	0.150	0.184	0.034
VGZ0		BLSS	1.364	1.550	0.186	0.909	1.673	0.764
VG10		RBCE	0.000	0.000	0.000	0.000	0.000	0.000
VG30		LSS	0.000	0.000	0.000	0.000	0.000	0.000
VG40		RBLSS	0.000	0.000	0.000	0.000	0.000	0.000
VFA0		BE	5.200	5.642	0.442	5.200	6.090	0.890
VFB0		BRM	1.400	1.085	-0.315	0.700	1.171	0.471
VFC0		UC	0.000	0.000	0.000	0.000	0.000	0.000
VFD0		EER	14.000	13.020	-0.980	14.000	14.054	0.054
VFE0		EL NCO	0.000	0.434	0.434	0.000	0.468	0.468
VFG0		HEO NCO	0.000	4.340	4.340	7.000	4.685	-2.315
VFH0		UO	0.000	0.000	0.000	0.000	0.000	0.000
VFJ0		BHEO	11.880	12.276	0.396	11.880	13.251	1.371
TOTALS:			321.674	321.900	0.227	303.611	321.900	18.289

FORMULAS

1. Location: Data Set #3 Sublocation: Sheet AE Sublocation: Report #6

CELL(S)	FORMULA	REMARKS
D6 . D58	Z:C6 . X:C58	Sources cost estimate by quarter from Computation 7 (Obligations by Quarter.)
E6 . E58	Y:C6 . Y:C58	Sources budget allocation by quarter from Report #1 (Budget Allocation by Quarter.)
F6 . F58	E6-D6 . E58-D58	Computes the difference between the OBLIG and the BUDGET.

REPORT #6: OBLIGATION (CASH FLOW) REQUIREMENTS ANALYSIS

			3RD QUARTER			4TH QUARTER		
CAC	SUBCAC	DESCRIP	OBLIG	BUDGET	DIFF	OBLIG	BUDGET	DIFF
V2H0	2H0A	CIV LAB	72.362	72.362	0.000	72.362	72.362	0.000
	2H0B	TAD	3.800	2.628	-1.172	3.800	2.767	-1.033
	2H0C	B REPRO	13.956	13.956	0.000	10.484	10.484	0.000
V2H1	2H1A	H&S	0.500	0.346	-0.154	0.500	0.364	-0.136
	2H1B	BB-28	1.670	1.155	-0.515	1.670	1.216	-0.454
	2H1C	PERS	1.277	0.833	-0.444	0.959	0.877	-0.083
	2H1D	GRAPH	5.561	4.827	-0.734	6.979	5.083	-1.896
	2H1E	S REPRO	0.743	0.484	-0.258	0.558	0.510	-0.048
	2H1F	BEQ	5.086	3.316	-1.770	3.821	3.492	-0.329
	2H1G	CO FUND	1.350	0.934	-0.416	1.350	0.983	-0.367
	2H1H	SUPPLY	2.695	1.864	-0.831	2.695	1.963	-0.732
	2H1R	INVEST	143.800	27.049	-116.751	0.000	28.480	28.480
	2H1I	MNT ADM	2.375	1.643	-0.732	2.375	1.730	-0.645
	2H1J	EEIC ADM	0.036	0.023	-0.012	0.027	0.025	-0.002
	2H1K	CEIC ADM	1.185	0.772	-0.412	0.890	0.813	-0.077
	2H1L	UIC ADM	0.800	0.521	-0.278	0.601	0.549	-0.052
V2H2	2H2A	CONTRACT	5.854	5.854	0.000	2.852	2.852	0.000
	2H2B	MAINT	3.156	2.058	-1.098	2.371	2.167	-0.204
	2H2C	EEIC MNT	0.000	0.000	0.000	0.000	0.000	0.000
	2H2D	CEIC MNT	3.063	1.997	-1.066	2.301	2.103	-0.198
	2H2E	UIC MNT	21.272	13.870	-7.402	15.979	14.604	-1.375
VGB0		EEO	0.000	0.000	0.000	0.000	0.000	0.000
VGE0		EEM NCO	0.000	0.000	0.000	0.000	0.000	0.000
VGF0		EEO NCO	0.000	0.000	0.000	0.000	0.000	0.000
VGG0		BEEM	0.000	0.000	0.000	0.000	0.000	0.000
VGH0		EEC	0.000	0.000	0.000	0.000	0.000	0.000
VGL0		BMW	0.000	0.000	0.000	0.000	0.000	0.000
VGX0		SCM	0.000	10.376	10.376	20.000	10.924	-9.076
VGY0		BEEO	0.000	0.000	0.000	0.000	0.000	0.000
VG20		REES	0.000	0.000	0.000	0.000	0.000	0.000
VGXX		M9 ACE OP	0.000	0.000	0.000	0.000	0.000	0.000
VGA0		CEO	21.600	11.206	-10.394	21.600	11.798	-9.802
VGC0		CE NCO	0.400	0.208	-0.192	0.000	0.218	0.218
VGJ0		EOC	0.000	2.715	2.715	7.850	2.859	-4.991
VGK0		BCE	17.027	12.105	-4.922	17.027	12.745	-4.282
VGM0		RCE NCO	0.000	0.000	0.000	0.000	0.000	0.000
VGN0		RCEO	0.000	0.011	0.011	0.000	0.011	0.011
VGS0		MMC	0.100	0.095	-0.005	0.150	0.100	-0.050
VGZ0		BLSS	1.364	0.865	-0.499	1.364	0.910	-0.453
VG10		RBCE	0.000	0.000	0.000	0.000	0.000	0.000
VG30		LSS	0.000	0.000	0.000	0.000	0.000	0.000
VG40		RBLSS	0.000	0.000	0.000	0.000	0.000	0.000
VFA0		BE	5.200	3.147	-2.053	2.600	3.314	0.714
VFB0		BRM	0.700	0.605	-0.095	0.000	0.637	0.637
VFC0		UC	0.000	0.000	0.000	0.000	0.000	0.000
VFD0		EER	0.000	7.263	7.263	14.000	7.647	-6.353
VFE0		EL NCO	0.700	0.242	-0.458	0.700	0.255	-0.445
VFG0		HEO NCO	0.000	2.421	2.421	7.000	2.549	-4.451
VFH0		UO	0.000	0.000	0.000	0.000	0.000	0.000
VFJ0		BHEO	3.960	6.848	2.888	11.880	7.210	-4.670
TOTALS:			341.591	214.600	-126.991	236.743	214.600	-22.143

FORMULAS

1. Location: Data Set #3 Sublocation: Sheet AF Sublocation: Report #6

D6 . D58	Z:D6 . X:D58	Sources cost estimate by quarter from Computation 7 (Obligations by Quarter.)
I6 . I58	Y:D6 . Y:D58	Sources budget allocation by quarter from Report #1 (Budget Allocation by Quarter.)
J6 . J58	I6-H6 . I58-H58	Computes the difference between the OBLIG and the BUDGET.
D60..J60	@SUM(D6..D58)..@SUM(J6..J58)	Sums columns D through J.
D6 . D58	Z:E6 . X:E58	Sources cost estimate by quarter from Computation 7 (Obligations by Quarter.)
E6 . E58	Y:E6 . Y:E58	Sources budget allocation by quarter from Report #1 (Budget Allocation by Quarter.)
F6 . F58	E6-D6 . E58-D58	Computes the difference between the OBLIG and the BUDGET.
H6 . H58	Z:F6 . X:F58	Sources cost estimate by quarter from Computation 7 (Obligations by Quarter.)
I6 . I58	Y:F6 . Y:F58	Sources budget allocation by quarter from Report #1 (Budget Allocation by Quarter.)
J6 . J58	I6-H6 . I58-H58	Computes the difference between the OBLIG and the BUDGET.
D60..J60	@SUM(D6..D58)..@SUM(J6..J58)	Sums columns D through J.

LIST OF REFERENCES

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5. General C. C. Krulak, Commandant of the Marine Corps' Five Pillars.

6. Department of the Navy, Headquarters United States Marine Corps, Marine Corps Order 1553.1B, The Marine Corps Training and Education System, 24 May 91.

7. United States Marine Corps, Marine Corps Combat Development Command, The Systems Approach to Training Guide, PP. ii-viii, 19 October 93.

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