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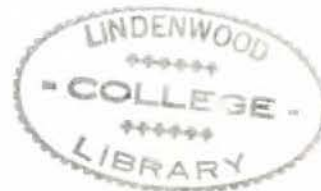
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Development of Effective Computer Tutorial Documentation

Sheryl L. Fields

DEVELOPMENT OF EFFECTIVE
COMPUTER TUTORIAL DOCUMENTATION

Sheryl L. Fields, B.A.

An Abstract Presented to the Faculty of the Graduate
School of Lindenwood College in Partial
Fulfillment of the Requirements for the
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ABSTRACT

This thesis will focus on the study of developing effective tutorial documentation.

In the past, computer documentation was written almost exclusively by engineers and programmers (or other highly trained personnel). Because of this, it was referential rather than tutorial, and it tended to assume the audience had a high level of technical knowledge and expertise. People using computers today come from a wide variety of backgrounds, many of them not technical. These users need tutorial manuals that are written in every day language and that emphasize what the user does, not what the machine or the program does.

The instructions for use that accompany a computer product can play a major role in helping to provide the success that is necessary to overcome the fears and reservations of the new user. Tutorial manuals should stand alone to teach the naive reader how to use a computer product. However, tutorials that do this are very rare. Even tutorials that are well written often fail as instructional tools.

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Tutorial documentation can be contrasted with other types of computer documentation by its educational intent; unlike reference, installation, or maintenance manuals, the main purpose of tutorial documentation is to teach. The underlying assumption of tutorial documentation is that it will teach the learner (user) the basic skills needed to use a computer-related product.

Before beginning to write the tutorial documentation, the intended audience needs to be investigated and described. A task analysis also needs to be conducted, identifying the tasks to be taught. Once these preliminary steps have been completed the writer begins building the tutorial document.

The purpose of the present study is to examine the strengths and weaknesses of current tutorial documentation. This research has culminated in the creation of an effective tutorial manual for the Project Accounting System at the Olin Corporation.

Seven co-workers served as evaluators of the documentation developed. The evaluators completed a preliminary questionnaire regarding their background and expertise. Each evaluator received a copy of the tutorial manual and an introduction letter giving general instructions. The evaluators were then given a questionnaire to record their perceptions of the tutorial. This questionnaire was followed by an interview with each evaluator.

The results of the evaluation concluded that the tutorial documentation produced is an effective training tool.

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Chapter I

INTRODUCTION

<u>Overview</u>

Millions of dollars are spent each year on computer programs by industries and by individuals. Many of these programs are so poorly documented that users never get around to using some or most of the functions. Management and individuals, therefore, are paying for dozens of capabilities that no one can use.

Aside from the disasters that can occur as a result of poor documentation, the business economics side must be considered. From the marketing viewpoint, it is in the seller's best interest to produce first-class user manuals. Customers judge the goods and services they buy by their experiences with these manuals. If the documentation is unclear and the customer is unable to use the program, it is the product that is condemned.

The need for more effective documentation began to become apparent as a marketing tool when personal computers were introduced. Without good documentation customers became angry and demanded refunds or other restitution. This can be disastrous for a company. For example, in the June 18, 1984 issue of *Time* magazine they state:

> Bad instructions are bad business as well as a torture
> to read. A maddening manual can cripple sales of
> products that might have been successful. Coleco lost
> $35 million in the fourth quarter last year partly
> because people flocked to return the initial version of
> its Adam computer, which the company offered for
> $600. In a statement to its shareholders, Coleco
> blamed much of the consumer dissatisfaction on
> "manuals which did not offer the first-time user
> adequate assistance."

At the same time, the data processing groups in companies started getting a lot of calls from confused users. Up to 30% of programmer's time was spent answering questions - most of which could have been answered by a good manual (Price 7).

Manufacturers of computer programs need to support their software adequately. They need to supply help to users experiencing difficulty using the software because they do not understand written explanation and instructions. According to J. Baird, Olin Program Analyst, many software publishers maintain toll-free telephone lines that tie up their technical experts answering distress calls and writing letters. This is an expensive remedy for a common problem of inadequate documentation.

The fact that many computer publications now not only review computer hardware and software, but also give ratings to documentation, indicates that the problem is considered to be a serious one. *InfoWorld*, a weekly computer magazine, rates such things as setup, ease of use, performance, serviceability, and

documentation for new products. As a result of negative feedback and potential loss of sales, computer companies have begun to look at alternative approaches to writing documentation (Crandall, xiv).

Historical Trend

Getting the users themselves to put intelligibility into computer systems via their own trial and error was the standard approach during the early years of computers in the 1950's. In fact, Lundstrom describes a jargon word used to explain how to learn about computers called *Mickey Mousing* a system. Early users of computers would try one procedure after another in order to realize what was the right approach and what was the wrong approach. By observing smoke billowing out from the machine or observing the number of vacuum tubes blown because of different actions, the right or wrong approach would be determined. If that represents the early days of computers, defensive programming represents the future of computers. The use of improved defensive programming seen in such techniques as windows, icons, mouses, and pointers has vastly improved the penetration of computers into the general populace (Brockmann 21).

Inadequate user documentation can greatly increase human errors occurring during the trial and error process. The major factors for human error can be classified into three categories: environmental problems, personnel

problems, and organizational accuracy. These three account for fifty percent of all human errors. The other fifty percent of all human errors are within the control of the software or computer designers. Of these, sixty percent are directly affected by the quality of the documentation efforts: training, written instructions, and the human-computer interface. These are all affected by the quality of the documentation (Bailey 433).

In the early eighties, a new idea began to inspire the computer world. The phrase *user friendly* began to take shape. A few companies began producing friendly documentation. These companies found that friendly documentation helps to sell the product, expand user's understanding of the features, and save everyone's time.

Ineffective Documentation

Computer documentation must adhere to certain criteria in order to be effective. Availability is an important aspect of documentation in that it needs to be present when needed by the user. There are still developers who provide no user documentation. Such organizations simply are not attuned to users - what they do, what they know, or how they work. Suitability, or alignment with the audiences intended tasks and interests, is also an important consideration. Accessibility is important in order for the user to be able to follow the

documentation. Accessibility contends that the documentation is comfortably organized, or designed in a manner that increases the user's chance of success. Readability, how easily and accurately documentation can be understood by its intended audience, is also an important element of effective documentation (Weiss 18-19). These criteria should all be considered when developing computer documentation.

One obstacle impeding the development of better user manuals is that they are referred to as being *written,* as though the ability to use the language well in writing is the key necessity in producing good user documentation. Writing per se is only a portion of the task (Holtz 2). One classic problem is that writing skills and technical knowledge are required. Often times the writer is lacking in one of these areas. Analysts and technical experts cannot, working alone, produce usable user documentation. Not because they write badly; they do not write any worse than people in other learned professions. Rather, because they know too much and, with few exceptions, assume so much in their documents that they cannot make themselves clear to less knowledgeable readers (Weiss, 7).

Trainers also suffer when the documentation is of poor quality. One of Integral's Project Accounting trainers, D. Smith, describes some reasons for ineffective documentation. She concludes that ineffective documentation is derived from a variety of sources. Often times the documentation is the last item

to be considered. The writer is given almost no time to document a complex system, then is deprived of contact with the designers because "they have important work to do." To speed up the schedule, the writer is told to stop working on the manual before the product has reached its final stage (Price, 6). Another contributor to poor documentation is lack of audience definition. Until recently, most documentation was prepared by technical or engineering personnel and written for technical or engineering personnel. The team designing the program takes the attitude that the user is a nuisance. The writer, who has never seen a real user, writes to please the team (6). Poor design is also a factor of ineffective documentation. Documentation which can not be followed easily is a deterrent to learning. Failing to think about how users are going to use the product and what tasks or jobs they want to do also creates ineffective documentation. It should also be noted that effective, well written documentation cannot improve upon system inadequacies (6).

Errors in documentation can be classified into three types. Errors can be either strategic, structural, or tactical. Strategic errors include failures of planning and analysis. Structural errors include failures of design and modeling. Tactical errors include failures of editing and revision (Weiss 20).

Strategic errors occur when there is a failure to define exactly what documents are needed, failure to define exactly what the audience needs, and

failure to define exactly what set of tasks the audience wishes to accomplish. Specific examples of these types of errors include: overlooking the need to plan and analyze the documentation requirements; allowing the product/program to shape the documentation, instead of the user's interests and tasks; assuming that only one encyclopedic manual is needed; and refusing to adapt to the vocabulary and reading skills of the intended audience (20).

Structural errors occur when there is insufficient outlining, lack of rigorous review of outlines, and failure to test the plan of the publication before writing a detailed draft. More specifically, these types of errors occur when the writer uses little or no outlining or other document specifications; relies on superficial "grade school" outlining methods; fails to submit outlines and specifications to harsh reviews; and omits the intended users and readers from the design process (20).

Tactical errors occur when there is inconsistency in nomenclature, mechanical errors of grammar and spelling, and/or ambiguous sentences (20).

Types of Documentation

Documentation comes in a variety of forms and is written for various reasons These different types of documentation are inspired by user's needs and range from installation, operation, maintenance, training, and description. These

are the most basic and general needs. They vary widely, depending upon a variety of circumstances and conditions. Some circumstances are the complexity of the product itself, the environment in which it is to be used, and the nature or characteristics of the user (Holtz, 23).

Tutorial documentation is a technical manual that provides carefully written, step-by-step instruction and is particularly helpful in teaching the necessary skills for using the program. Tutorial documentation's main purpose is to teach. Reference documentation, which is more general, offers procedures that users can apply in many different circumstances, giving exceptions, and extra data. Technical documentation is generally written for programmers and explains the process of the program rather than certain tasks that the program performs (Crandall, xiii).

Documentation can also be classified by the environment in which it is used; namely, external or internal. External documentation is meant for audiences outside of the corporate or organizational environment in which the documentation is being developed. Internal documentation is developed by an organization to be used by readers within that same organization (Brockmann 16).

External documentation is usually a more expensive, professional product. It is a marketing tool as well as an operations tool. As a result, it usually receives

the necessary time, money and attention. It is usually attractively packaged and filled with graphics (16).

Internal documentation makes up the bulk of all documentation. It frequently fails to receive the necessary time, money, and attention. The reason is simple - it is read only inside of the company and is not a part of the company's product. Additionally, internal documentation may not be as well designed because the writers may not receive much feedback on their work (17).

The focus of this study will be on internal tutorial documentation. Tutorial documentation introduces the user to a sampling of the basic functions. Effective tutorial documentation gets people used to the program, gives them confidence, shows them how things work, and makes them ready to go forward on their own. Tutorial documentation should not try to cover everything (Price, 54).

One important design consideration in a tutorial is whether teaching information or performance will be emphasized. Teaching information enables the learner to do such things as describe how new information and skills relate to those which are familiar, or to discuss and answer questions about a topic. Teaching performance enables the reader to develop skills necessary to accomplish some task. Typically a tutorial should emphasize teaching the acquisition of new performance skills (Crandall xvi).

Documentation Design

A very disturbing fact of life that documenters have to face is that "adults resist explicitly addressing themselves to new learning" (Carroll, 101). How does one explain the fact that adults are constantly guessing about what should and should not happen with a new system as soon as they begin learning (83)? How does one make sense of the fact that "learners at every level of experience try to avoid reading" (83). For example, how does one explain the fact that when given even well written and well designed documentation, adult readers constantly skip ahead and begin to try to use the system without reading the whole manual (Carroll, 83) Rather than spend time searching for answers, typical users of computer programs prefer to ask their coworkers for information that enables them to use the computer or program. They simply expect that the documentation is difficult to use.

In designing documentation it should be kept in mind that the readers want to find the information they need as quickly as possible. Good design is transparent. It should be invisible to the reader. The reader should be able to move comfortably through the documentation, basically unaware of the design elements. If good design is used, the reader can focus on the content and on the

task at hand - learning, using, understanding, or retrieving information (Denton,

5).

Documentation should be easy for the intended audience to understand,

whether the customers are novices or experts. The writing should be at a level

appropriate to the audience and should include enough clear explanations,

examples, and illustrations to enable customers to understand the information.

Documentation is easy to use only if customers can find what they are looking for

and then act upon what they have found (8).

The following universal tasks associated with software products can

accommodate even conceptual and descriptive information:

- *Evaluation* - Deciding whether to purchase and install the product.
- *Planning* - Deciding on the type, number, and location of the products to install as well as the relationships among the products.
- *Installing* - Setting up the product for use.
- *Administration* - Managing the resources of the product, including its users.
- *Operation* - Starting, stopping, and maintaining the product.
- *Programming* - Designing, coding, compiling, running, debugging, and testing programs written for use with the product.
- *Diagnosis* - Recovering from error conditions.
- *End Use* - Performing end-user tasks with the product.

Using these tasks can help in grouping similar information into one book or, for a one-book library, into the same section of the book (Denton 2).

In addition to being well designed, documentation should be technically accurate. To this end, the correctness of each of the following should be checked:

- Text and artwork representing the user interface.
- The functions, commands, and routines of the program.
- Parameters, input and output values, and defaults.
- Error messages and recovery procedures.
- Navigation paths through the program panels.
- User actions and their results.

The product should work the way the documentation says it does, as based on actual experience rather than theory (7).

The document should also be technically complete. This means that the documentation covers everything the reader might want to do with the program or might need to know about it. A technically complete document might also include some or all of the following:

- Information on the fastest, safest, least expensive, or easiest way to accomplish a task
- Information on how often and when to perform certain tasks.
- Reference information.
- Information on preventing and recovering from unexpected results.

In order to be technically complete, the writer must make assumptions about what tasks the reader will want to perform (8).

Statement of Purpose

The purpose of the present study is to examine the strengths and weaknesses of current tutorial documentation. Hopefully, this research will culminate in the creation of an effective tutorial manual for the Project Accounting System at the Olin Corporation.

Chapter II

LITERATURE REVIEW

A successful manual provides information that people want - in a form

they are able to use. In contrast, some unsuccessful manuals contain too little

useful information; others might contain useful information but confuse readers

by presenting the information unsatisfactorily. That is, the information might be

difficult to find, wordy, vague, or poorly organized.

Most people read computer manuals only because they have a task to

perform. Being unable to find information about that task creates frustration and

stress for the reader. A frustrated reader may never purchase another software or

hardware product from the same organization.

John Maynard reported on a fifteen year survey of users carried out by

Xerox, Control Data, and Scientific Data Systems. The major complaints were

that manuals were software oriented rather than function oriented, manuals did not

have enough examples, and that manuals did not have enough reference aids.

Additional studies at AT&T and Microsoft had similar findings. These results are

summarized in Table 1.

Table 1

Reoccurring Findings in User Surveys of Paper Documentation

Major Consistent Findings for Paper Documentation	Xerox, Control Data , Scientific (Maynard, 1982)	AT&T (1986)	Microsoft (Borland, 1984	PC-User Group (Wilton, 1985)
More task-orientation	X	X	X	
More tutorials		X	X	X
Improved reference aids	X	X	X	X
More accuracy		X		X
More illustrations		X	X	X

SOURCE: Maynard, John. "A User-Driven Approach to Better User Manuals." <u>IEEE Transactions on Professional Communication</u>. PC-25(41) March, 1982: 218.

Table 2

Contrast Between What Users Want and What Users Get

Do You Agree or Disagree?	Agree	Disagree
Manuals should accommodate all users	86	7
Manuals do accommodate all users	16	58
Many manuals omit tutorials	65	8
Some manuals are too wordy	70	15
Illustrations are adequate in number	18	54
Information is easy to find	11	67
Manuals bury important information	89	4

SOURCE: Wilton, Judith A. "What PC Owners Say About Documentation." In *Proceedings of the International Technical Communications Conference*, May 1985: Washington, DC: Society for Technical Communication, 1985: RET-10.

A similar survey was conducted by Judith Wilton of 241 microcomputer owners contrasting what users want and what users get. The results of this survey are found in Table 2.

Lynn Denton advises that in order to make certain that the reader has a successful experience with the manual, their needs must be anticipated and the information must be presented in a way that minimizes their frustration and maximizes their success in performing their tasks (18).

Appropriate Cycle (or Process) for Developing Documentation

Like a system, user documentation has a life cycle. Documentation is never really finished. As the application or product changes - as its "bugs" manifest themselves - there is a need for more explanation. Thus, the development of documentation is cyclical (Weiss 54).

Edmond Weiss describes seven main tasks for developing documentation. The first step is to *analyze* where the product descriptions and specs are converted into a user support plan and its associated list of information products and services. The next step is to develop a series of increasingly refined *outlines* for each information product. Once this step has been completed, for each entry in the modular outline a *storyboard* is prepared where specs for each module specification are mounted in a "gallery." The storyboard is then reviewed and

adjusted by all people affected. Next, the material is *assembled* into a draft of the document. The first drafts are then corrected and improved in the *editing* step to eliminate technical errors and also to improve their readability and clarity. Next, the drafts are *tested* where formal, controlled tests are conducted with representative users and the documentation is adjusted as needed. Finally, the last step in developing documentation is *maintenance*. This is an on going step where the documentation is under surveillance for strategic misalignments of books and audiences, structural or organizational problems, missing explanations, lapses of style, and any technical errors (54-55).

Weiss contends that all seven phases are logically necessary. He implies that organizations that skip some, especially the first two or three, may produce documents with all the expensive flaws of under analyzed computer applications and carelessly engineered machines (54).

Brockmann describes a process for developing documentation called the Standard Documentation Process (Figure 1). In the first step, *developing document specifications*, planning the document occurs in two passes. The first pass is the development of a Library Specification that contains a brief description of all the documents involved with a particular software program. The second pass is the development of the individual document specification. Eleven activities are involved in the creation of the individual document specification:

breaking down the documentation in the library by tasks, using minimalist design principles, planning for an audience, analyzing the purpose of the documentation, organizing the material, developing a product visualization, picking the appropriate media, deciding on page format and layout, planning for updating, considering the competition, and estimating cost and time requirements. The next step, *prototype the specifications*, should produce results of increased depth of coverage, vocabulary, readability, and organization. Once the specifications have been created, approved, and tested, it is time to *draft the document*. Seven activities make up this step: overcoming internal and external writing blocks, using a writing style that is designed to match adult reading behaviors, using reader-based writing techniques, developing effective graphics, creating reference aids, developing the documentation packaging, and planning for updates. The document then goes through the *editing* step to ensure that it effectively and efficiently gets its message across. Once the document is drafted and edited, it is sent out for *review*. A part of every document's review should be a *field-test* of a draft of the whole document. Accessibility, navigational problems, and consistency are primary areas of concern here. Once the document is drafted, revised, and reviewed, it is time to get it *produced* in a form suitable for distribution. Once a document is complete, *review* is necessary of what went right and what went wrong during the process of development so that improvements to

the documentation process can be implemented during the next project, and

mistakes and problems thereby alleviated. Even when the document is

distributed, the task is still not completed because the document must be

maintained (77-80).

Figure 1

The Standard Documentation Process
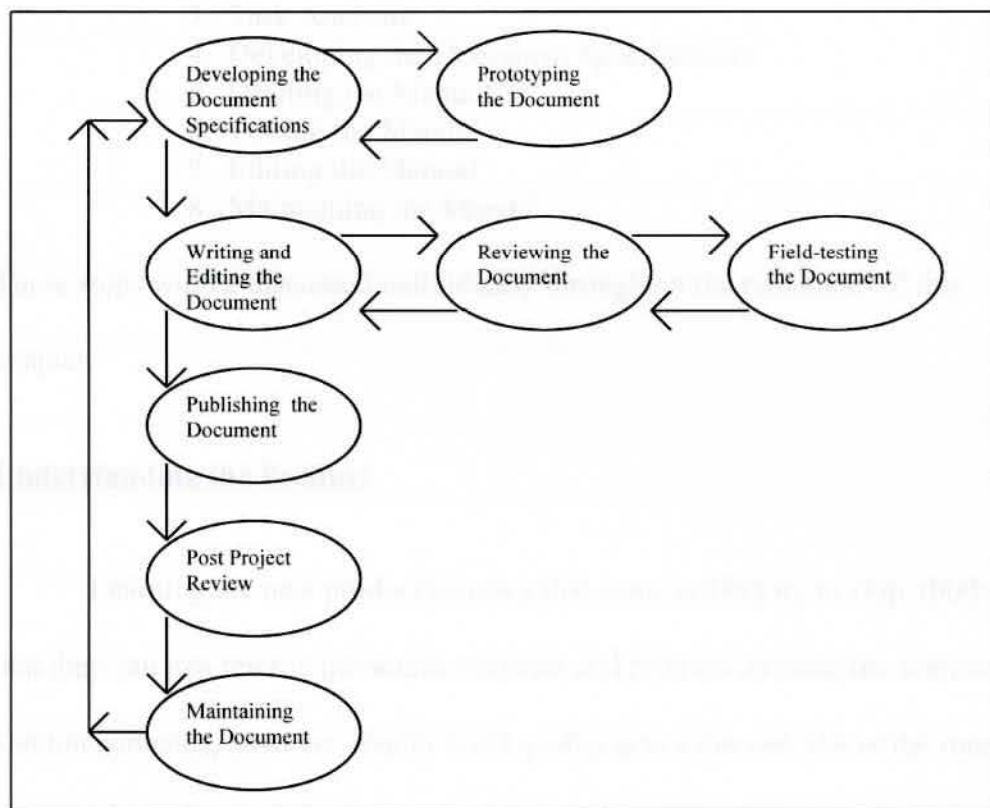
SOURCE: Brockmann, R. John. <u>Writing Better Computer User</u>
<u>Documentation</u>. New York: John Wiley & Sons, 1990: 78.

Price simplifies the process stating that a programming project goes through these phases: request, design, implementation, maintenance, update, and migrate (15-18).

Through analyzing the experts processes, the following steps have been culminated for use in this project:

1. Understanding the product
2. Audience Analysis
3. Task Analysis
4. Developing the Document Specifications
5. Drafting the Manual
6. Testing the Manual
7. Editing the Manual
8. Maintaining the Manual

These steps will be discussed individually throughout the remainder of this chapter.

Understanding the Product

Learning the new product is a step that some writers try to skip, thinking that they can just rewrite the source material and produce an adequate manual. Denton contends, however, that to build quality into a manual, the writer must thoroughly understand the functions of the product (33). Although the writer will probably not have time to become an expert in the use of the program for which

the tutorial documentation is being written, they should gain at least a working knowledge of how to use the program (Crandall 6).

Denton suggests reviewing existing documentation and other written material as a good starting point for familiarizing the writer with the program. She concludes that these books and articles can sometimes provide background information for the writer's general education (33). This review may also save the writer time, as it is sometimes possible to use the materials that have already been written, thus avoiding a waste of time and energy (Crandall 6).

Reading the technical specification (the *spec*) is indispensable, even if initially little of what is read is understood (Denton 34). The spec describes the product in high-level terms and shows how various components are supposed to work together. The spec may be the document that is initially relied upon for the accuracy and completeness of the documentation. Denton warns, however, that even approved specs can contain inaccuracies and omissions since they are seldom updated as is necessary (29-30).

As an additional means of acquiring information regarding the product, Crandall suggests interviews with technical people. She warns that, when interviewing content experts, it is important to remember that a person who is already thoroughly familiar with the program and its uses is often inclined to take certain things for granted. She suggests trying to conduct the interview from the

point of view of the intended audience and encourage content experts to emphasize the behavior of the user instead of the behavior of the program. Crandall advises, "When interviewing content experts guide them through a step-by-step description of the program's use, prompting them to be more specific, asking questions, posing hypothetical problems and solutions, and clarifying information" (7).

Another means of obtaining information suggested by Crandall is to observe content experts using the program themselves. Valuable information may be obtained through this observation. She suggests asking them to "think out loud" in order to clarify why they are doing something. Finally, Crandall proposes that by learning to use the program themselves, the writer is better able to understand the steps in writing the tutorial (7).

Price believes that the process of writing - rough outlines, notes, drafts of chapters - will also indicate what areas of knowledge about the program may be lacking (46).

Audience Analysis

Because matching the contents and presentation of a manual is so important, most computer manuals identify the target reading audience very early, usually in the preface. In reality, most manuals are used by a variety of audiences,

so that it may be difficult to compartmentalize the audience. Denton advises, one must try to accommodate readers with differing backgrounds and skills (18).

An important step in building quality into a tutorial manual involves analyzing the intended audience so that the manual can be designed specifically for that audience. Intended audience refers to a hypothetical group composed of the most likely readers for the tutorial (Crandall 3). Analyzing the audience is the best way to determine the reader's needs. Brockmann indicates that the audience should be considered in four dimensions: relative level of computer sophistication; general background, training, or education; possible attitude toward the message; and multicultural backgrounds (101). A complete audience analysis contains a statement of the manual and its objectives, a complete description of the audience, and a summary of how the manual relates to the projected audience (Denton 19).

An audience analysis helps to determine the scope, tone, vocabulary, and organization of the manual. It also helps in deciding the appropriate style for writing and artwork. In addition, a thorough audience analysis that has been scrupulously integrated into the planning and execution of a manual is an invaluable tool for marketing the product (19).

Denton contends that the audience description is the core of the audience analysis. The success and usability of the manual hinge upon the writer's ability

to identify and satisfy the audience's needs and expectations. All the decisions made about design, scope, and language of the manual must be based on the needs of the audience, as identified in the audience description (19).

The audience description includes demographic data, occupational data, technical background and expertise, reading grade level, and physical limitations. A profile of the audience by age, sex, and educational level helps form the audience description. The description may include information about marital status, number of children, years employed, income, and similar data. At first glance, such information might seem useless in the overall scheme of things; however, the information becomes meaningful for the examples to be used, the amount spent on design and production of the manual, and the artwork included (20-21).

Who the manual is being written for, whether it is engineers, secretaries, or accountants, has an impact on the manual. Certainly each person has different information needs, depending upon his or her profession. The reader's profession often affects how they process information. Programmers look for repeatable patterns, specific descriptions of operating system or programming functions, ideas for applications, and ways to solve problems, while medical technicians look for specific instructions for performing technical procedures, using medical equipment, and conducting tests (21).

The reader's position within the organization is also important. Their position matters because their objectives can be quickly assessed. Executives are interested in long-range planning, personnel-related matters, and profit and loss. Accountants, in contrast, are interested in learning more about accounting processes and techniques and how they fit into the organization's financial picture. Knowing the types of positions of the readers helps in designing the examples that relate to their tasks (21).

Assessing readers based on their technical background and expertise is also an important step in developing the audience description. The audiences familiarity with the program or system is an important consideration. For example, if 80% of the audience has worked with programs similar to the one being documented the manual needs to be very different in design and scope than if only 10% of the audience has ever worked on this or a similar program. Denton classifies readers into three major categories, depending upon their expertise and knowledge: novice, technician, and expert (21-22). These terms, or the other many varieties of terms used to categorize users, are simply descriptions of various points along the user's learning curve shown in Figure 2.

Brockmann describes a novice as someone with little or no training or experience in a specific field. Typically, he states, a novice is heavily dependent

upon the documentation if they are to master the set of tasks for which the

program was acquired (102).

Figure 2

The User Learning Curve and the
Location of Five User Categories
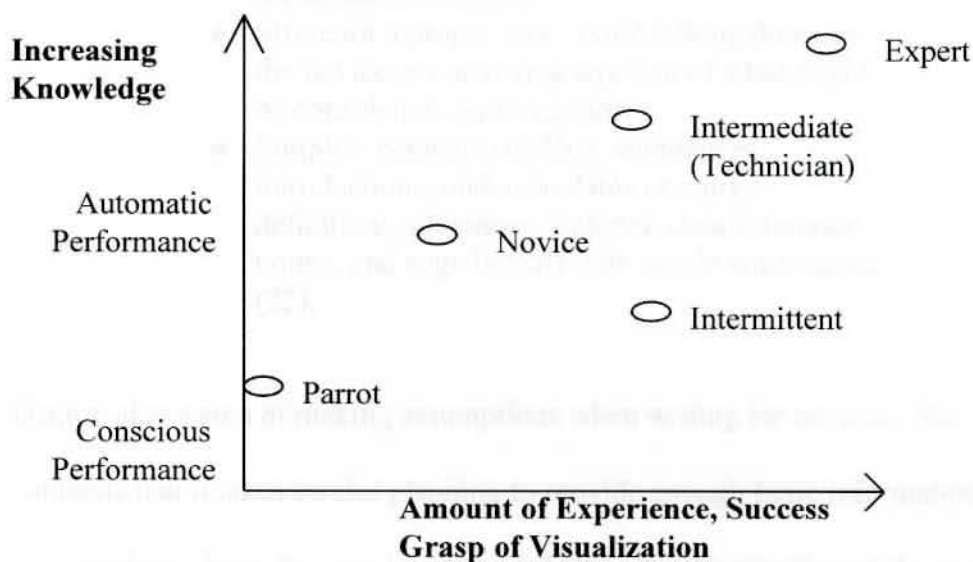
SOURCE: Brockmann, R. John. <u>Writing Better Computer User Documentation</u>.
New York: John Wiley & Sons, 1990: 104.

Denton contends that in order to enhance the novice's opportunities for learning,

the tone, content, level of detail, illustrations, and reading level must be adjusted

to better meet the novice's needs (22). She recommends the writer pay particular

attention to the following elements when writing for the novice:

◆ Define technical terms carefully.

- Present concepts in simple language, using everyday illustrations with which the novice is likely to be familiar.
- Use simple artwork, such as simple tables and charts.
- Structure content so that the novice clearly understands what is the most and least important information.
- Do not overload the novice with too much technical information.
- Strive for a proper tone; avoid talking down to the novice or conveying any hint of what might be considered condescension.
- Simplify content with lists, summaries, introductions, understandable artwork, definitions, glossaries, indexes, clear reference points, and page layouts with ample white space (22).

Denton also warns of making assumptions when writing for novices. She contends that it takes careful planning to provide enough basic information (or at least explain where they can learn it) while keeping the attention of the more sophisticated readers (22).

Brockmann describes readers at the technician level as having a basic understanding of the subject matter. That is, they are proficient with some computers and computer programs; they are familiar with terminology, many concepts, and the rationale behind many actions and decisions (102). Denton further explains that they might not have a thorough grasp of some finer points,

but they usually can learn easily because they already have a foundation of learning (23).

Because readers at the technician level have at least some familiarity with the principles (if not details) found in the manual, concepts may be presented to them a little differently than if they were novices. Denton suggests the following:

- Define only unique or specialized technical terms.
- Present concepts with less need to relate them to everyday situations in the technician's workday.
- Use more sophisticated artwork-the technician has some experience in reading schematic diagrams and in interpreting different kinds of information from tables and charts.
- Structure content with more complexity-the technician can probably follow another layer of thought, or can understand the process of analyzing several alternatives and then selecting the most workable one, based on differing sets of circumstances.
- Feel free to use more technical information, assuming the technician has the knowledge and experience skills to understand.
- Strive for a proper tone; show the technician respect for his or her skills, and include appropriate examples and illustrations (23).

Denton describes most experts in the computer industry as those who thrive on information, therefore making them voracious but critical readers. She implies that they look for new information or variations on standard fare.

Typically, experts scan information for new ideas, new viewpoints, interesting applications, and intriguing twists on established procedures. Denton concludes that if they find those things lacking in the first few pages they scan, they probably will not continue to read (23).

Denton states, "When writing for experts, the writer need not be too concerned about defining terms, carefully gearing the examples or applications to situations the readers can understand, or using visuals that are too sophisticated" (23). By definition, she explains, an expert is one with enough experience and education to move beyond adequate familiarity with processes and techniques to a broad grasp of a technology. She further goes on to suggest that an expert knows the literature, knows the key people on the leading edge of the technology, and probably knows the direction the technology or industry is headed over the next several years (23-24).

In Table 3, Brockmann further distinguishes users by classifying them as either parrots, novices, intermediates, experts, intermittents, or transfers. The classifications of parrots through experts are similar to Denton's descriptions of users. Brockmann observes that intermittent users work with the program so infrequently that they do not go through the learning stages. Therefore, he suggests, documentation for intermittent users needs to be very brief.

Table 3

User Requirements by Level of User Sophistication

Level of User Computer Sophistication	Requires
Parrot	Ten-minute task-oriented guide; sense of success quickly; practice on immediately practical projects
Novice	Task-oriented tutorial; visualization of whole system or product; practice
Intermediate	Product capability reference manual; visualization; practice
Expert	Quick Reference Card
Intermittent	Visualization; strictly focused; limited; immediately applicable coverage of information; system intelligibility via robust system Help
Transfer	How new system or product differs from what they are used to

SOURCE: Brockmann, R. John. Writing Better Computer User Documentation. New York: John Wiley & Sons, 1990: 103.

Documentation alone will not take care of the needs of intermittent users (103).

Schneider states, "The menus, messages, and commands of a system should be designed to provide a safety net by guiding the intermittent user along their chosen path, always letting them know what to do next, and helping them to get out of problems" (137).

Another type of user described by Brockmann is the transfer user. He describes this user as having a lot of experience with a predecessor or similar

product, and wants to quickly know how and where the new product differs from

what they had used previously (103).

Denton suggests the following as methods to obtain information regarding

the audience:

- Reading trade press articles and research studies about the makeup of the market-who buys and uses certain computers and software.
- Talking with experts who keep up with trends and developments in the industry.
- Talking with planners and developers in the organization to understand their definitions of the audience.
- Drawing on the writer's own experience-what is known about the people who are likely to be the target audience, their background, the work they need to accomplish, and how they like to see information presented.
- Interviewing potential members of the audience to learn as much as possible.
- Distributing questionnaires and then tabulating and analyzing data received (25).

According to Integral Trainer, D. Smith, one of the best ways to get

information for an audience analysis is to interview members of the audience.

Then specific questions can be asked about technical background, related

experience, job requirements, and particular needs the documentation must

satisfy.

Crandall suggests that before interviewing the audience, the interviewer should prepare by deciding what questions to ask. She proposes questions such as, "What would they use the program for?" "How much experience do they have with it?", and "What training and assistance do they think they need in order to get the most out of the program?" (4). She suggests that these questions be used during the interview to keep things on track. However, Crandall emphasizes that the interviewer should be flexible enough to take advantage of any new information that the interviewee might provide. Crandall advises interviewing a variety of people (and as many as possible) to get as much information as possible. She suggests, as the audience is being interviewed, make notes about their attitudes. This is an important observation to make because, as Denton reasons, attitudes about the organization, the job, coworkers and supervisors, and other computers and programs influence the way the audience perceives and responds to the documentation (26). Table 4 lists questions to consider in defining the audience.

Brockmann states, "Knowing the audience's attitude or feelings about the information the manual imparts allows the writer to know what tone to take in a particular manual" (107). To accomodate these attitudes, he hints, the tone could range from reassuring parrot-level users that there is nothing they could do to harm the machine and that they should not be afraid of it, to a tone of no-nonsense

Table 4

Questions to Consider in Defining the Audience

Demographic data

- What age range are most readers likely to be?
- Are most readers likely to be male or female?
- What can be learned about the reader's education (degrees, fields, institutions attended, years studied)?

Occupational data

- What can be learned about the reader's position, role, and power in the organization for which they work?
- How will this manual affect the reader's positions, roles, or power in the organization?
- What attitude towards the organization and their position in the organization does the reader have?
- What past occupational experience is typical of the readers?
- What size is the organization in which the reader works?
- Does the audience include nonprofit organizations as well as for-profit ones?

Technical background

- How many years of experience with this system or program does the reader have?
- How many years of experience with similar systems or programs does the reader have?
- How much technical expertise do they have?
- What is their technical vocabulary level (novice, technician, or expert)?
- What particular technical interests do they have?
- Has the reader used a manual similar to the one being written?

Wants and needs

- What does the reader want to learn from the manual?
- Is the reader most interested in being able to perform steps to accomplish a task? In learning how to use a program to do their own applications? In finding answers to technical questions?
- What are the needs in terms of finding information easily? Will the reader use this manual frequently, or only when they encounter a serious problem?
- What kinds of graphics and examples do the readers want?

Personal characteristics

- At what reading grade level are the readers most comfortable?
- What are the reader's attitudes toward previously used manuals?
- Why do they have these attitudes?

SOURCE: Denton, Lynn, and Jody Kelly. Designing, Writing & Producing Computer Documentation. New York: McGraw-Hill, 1993: 26-28.

directness for expert users (107).

Crandall proposes another technique used to obtain information about the audience: observing people who are trying out the program. She suggests giving them some basic instructions for getting started and then asking them to think out loud while they are trying it out. Crandall concludes that this technique can yield valuable information about the average user's skills and about aspects of the product that might be difficult to learn (4).

From the general description of the audience, the prerequisite skills for the manual can now be stated. These are skills necessary for the completion of the manual, ones that can be assumed that the audience already has. Crandall concludes that it is important to make a clear statement of prerequisite skills for two reasons. First, listing the prerequisite skills in the preface of the document helps people buying the product to determine if it is written at the appropriate level of difficulty for them. In addition, it gives the writer a starting point for instruction (4).

Task Analysis

High quality computer documentation is designed, first and foremost, to support the tasks that buyers of the product want to perform (Denton 1). A task

analysis is a procedure used to identify the critical steps (tasks) that must be learned to use the computer product with acceptable competence (Crandall 6).

Holtz states, "Task analysis should be done or critically reviewed by an individual who has actually carried out or performed the tasks and functions to be described" (108). His reasoning is that this is a case where there is the apparent anomaly that being too expert in the subject is often a crippling disadvantage. He continues that the analysis must be carried out or reviewed by someone who is able to understand, or empathize with, the user for whom the manual is intended. Holtz concludes that too often the writer takes for granted certain knowledge and abilities the user does not possess (108).

In developing task-oriented documentation, Simpson suggests asking these five key questions:

- Who performs the task?
- What action begins each task?
- What are the specific steps involved in performing the task?
- What action ends each task?
- Are there any variations in hardware or in the general environment in which the task takes place that would alter it (447)?

In asking these questions, the focus is placed on the users of the system rather than on the system itself (447).

A sample application of this task orientation can be seen in the IBM System 36 planning information. All the documents are packaged in a binder labeled *What to do Before Your Computer Arrives*. Inside are eight booklets. The first is *Your Guide to Planning* which overviews the major planning task. The other booklets are titled *General Planning Activities, Preparing a Place for Your Computer, Planning to Get Your Computer Up, Planning for Data Communications, Planning for System Configuration, Planning for System Security*, and *Planning to Receive Your Computer* (Waite WE-38).

Crandall indicates that the first step in conducting a task analysis is to identify the goal performance of the manual. She states, "The goal performance is a statement of what the user should be able to do with the computer product under optimal circumstances" (6-7). The goal performance is the largest or broadest objective of the manual. She indicates that when readers finish the entire document, they should be able to do the goal performance. The goal performance is synonymous with the purpose of the document and should be stated in the preface (11-12). Table 5 gives a synopsis of the steps to conduct a task analysis.

Crandall describes the next step in establishing the goals of instruction as identifying the objectives of the manual. She defines the objectives as those tasks and subtasks that must be taught because the assumption can not be made that the intended audience will know them (6-7). After identifying the objectives,

Table 5

Checklist to Conduct a Task Analysis

1. Familiarize yourself with the use of the product.
   a. Review existing documentation and other written materials describing its use.
   b. Interview content experts.
   c. Observe content experts using it.
   d. Use it yourself until you are relatively competent
2. State the goal performance.
3. List the tasks of the goal performance in the order in which they occur.
4. List the subtasks of the tasks in the order in which they occur.
5. Review the task analysis with several content experts.
6. Make necessary revisions.

SOURCE: Crandall, Judith A. How To Write Tutorial Documentation. Englewood Cliffs: Prentice-Hall, 1987: 8.

Crandall indicates that it is necessary to develop a list of tasks and subtasks that are critical components of the goal performance (11-12).

Next, she suggests that the writer go through the list of tasks and delete those it is reasonable to assume the intended audience will know. The remaining tasks are the objectives of the manual. Each chapter of the document teaches an objective (12).

Continuing on with Crandall's checklist, it is necessary to go through the subtasks for each task remaining on the list and to delete any subtask it is assumed the intended audience will know. The remaining subtasks are the subobjectives (12).

The final step in Crandall's process is to arrange the objectives and their subobjectives in order of their serial dependency. By serial dependency Crandall means learning certain objectives may require previous learning of others; that is, some are prerequisites of others (12). Figure 3 displays the steps in deriving objectives and subobjectives.

Crandall states, "When objectives have been identified and arranged, the basic organization of the document will be laid out: each chapter teaches an objective and every chapter is divided into sections that teach its subobjectives" (12). Holtz indicates that task analysis is based on early or preliminary research, and it is obviously rarely possible to anticipate everything and to plan to the last detail. However, he states, "The more effectively the task analysis is carried out, the more rapidly the writing will be completed and the less rewriting that will be required" (109).

Developing the Document Specifications

Denton describes the importance of organizing information to meet the needs of the intended audience, even if it is not expected that the reader will read the whole manual or will not read it sequentially. She states, "Effective design of page layout is very important in at least two ways: as an aid to marketing the product, and to increase the usefulness of the information written" (103). She

Figure 3

Steps in Deriving Objectives and Subobjectives
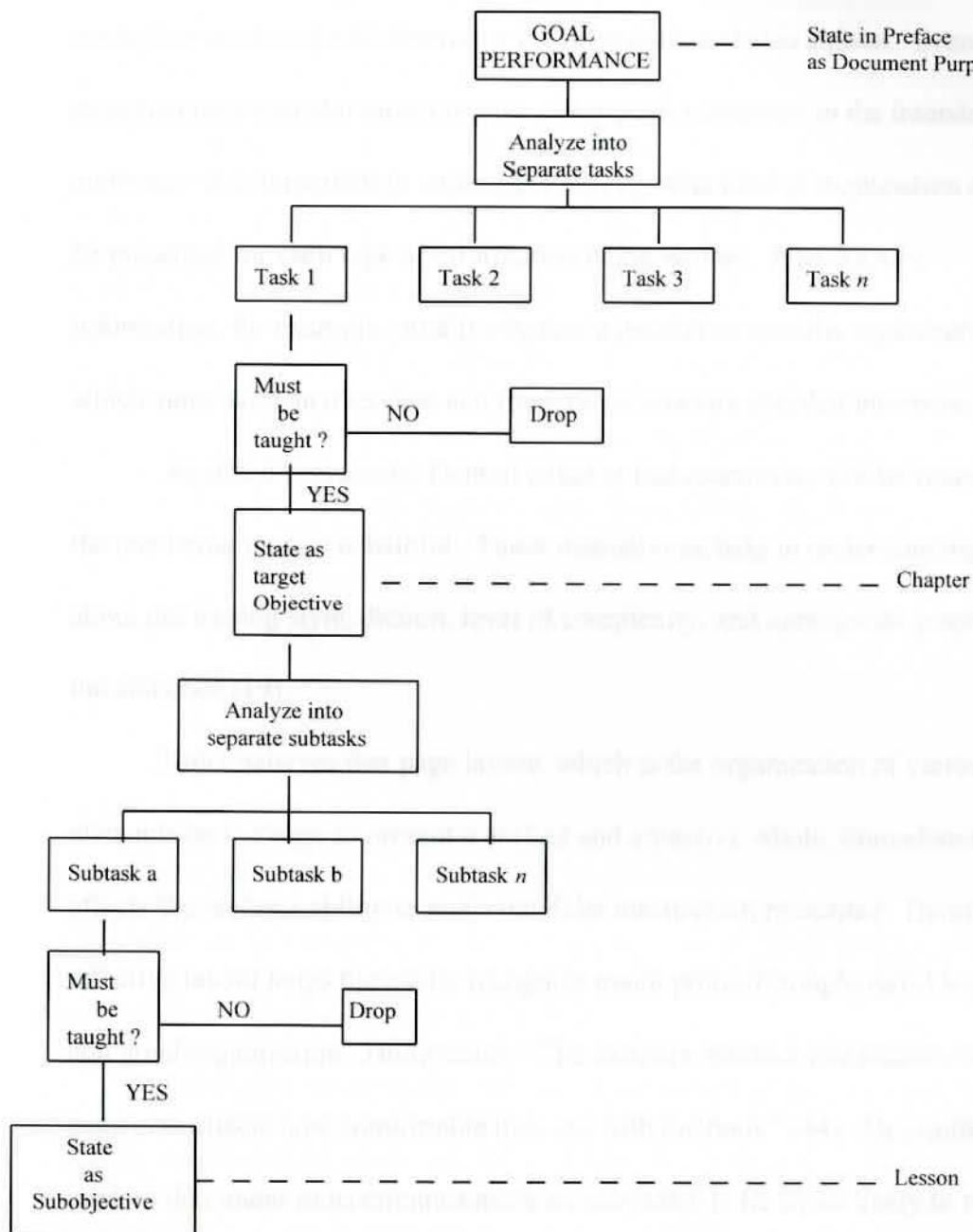
SOURCE: Crandall, Judith A. How To Write Tutorial Documentation. Englewood Cliffs: Prentice Hall. 1987: 13.

goes on to explain that for any manual or any section of a manual, the following general organizational strategies should be kept in mind. First, the purpose of the manual or section should determine the organization that is chosen. Even though most manuals have the same purpose - to explain a program to the intended audience - it is important to understand exactly what kind of explanation should be presented for each type of information being written. Introductory information, for example, usually requires a general-to-specific organization which starts with an overview and then moves to more detailed information (104).

As stated previously, Denton believes that examining similar manuals to the one being written is helpful. These manuals can help in understanding more about the writing style, diction, level of complexity, and appropriate graphics for the audience (19).

Holtz believes that page layout, which is the organization of various elements on the page to present a unified and attractive whole, immediately affects the reader's ability to understand the information presented. He infers that effective layout helps the reader recognize major points through useful headings and good organization. Holtz states, "The aesthetic balance that readers see on a page also affects how comfortable they are with the book" (44). He continues to explain that under most circumstances an individual is far more likely to read text that *appears* to be easy to read as compared with the formidable appearance of

lengthy blocks of solid text in small type (44). Weiss contends that even when a

book is suitable and accessible, its ultimate quality resides in its readability - how

easily and accurately it can be understood by its intended audience of users (19).

The appearance of being easy to read is a result of the physical layout of the

instructions as presented. According to Holtz, the most basic favorable influences

result from these practices and characteristics:

- ◆ An "open" appearance: Not more than six lines to the inch, generous paragraph indents, extra space between paragraphs, and generous use of white space generally.
- ◆ Free and frequent use of free-standing headlines and blurbs or glosses, set in distinctive typefaces, such as bold or italic, using common and easily understood words.
- ◆ Body-type size not more than 10 point.
- ◆ Generous uses of illustrations, preferably simple line drawings, but uncomplicated photographs, if photographs are used.
- ◆ "Callouts" on illustrations (45).

The most common advice offered by Holtz for writing easy-to-read material is

that of confining the writing to short words, short or simple sentences, and

uncomplicated grammatical structures (45).

Holtz goes on to explain that readability, as a measure, has little or no

relation to the quality of the writing - to its validity, accuracy, appropriateness,

fluency, smoothness of expression, or any other factor normally considered as an

element contributing to "good" or "poor" writing. The common standard of measure is grade level. Writing that is judged or measured to be at junior or senior high school levels - 7th to 10th grade - is generally considered to be highly readable and a good target level for almost all materials (154).

Price believes that while the writer should strive to achieve maximum readability through simple and straightforward sentences, short words, and other such methods, he/she should also employ all the other means available to help the reader follow the meaning with minimum effort (145). Price suggests checking for the following stylistic pitfalls once the draft has been completed:

- Break up all the strings of nouns to avoid confusing the reader.
- Organize material in time sequence.
- Allow the introduction to set the tone for the whole manual. Make it easy for the reader to figure out what is to come.
- Define unfamiliar terms.
- Replace passive sentences with a name and an action.
- Replace anonymous *it* with a person - and an active verb.
- Omit long words when you do not need them.
- Do not use clichés.
- Revise sentences so they do not trail off.
- Keep each item in a series parallel.
- Complete any contrast with its second half.
- Do not get too mechanical, rigid, and repetitive (145-146).

Most manuals look unpleasant. Crowded and complicated, their layout makes them hard to read. Creating a strong layout is an important task in developing an effective manual. The main point of the manual lies in the running text. Every other element must help readers get through this material - not draw attention away from it (Price 167). Price states that writers need to remember that verbal and visual languages work differently. He offers this comparison:

Verbal Language	**Visual Language**
Presents things in temporal order.	Presents things in space.
Moves forward one item at a time.	Presents different things simultaneously- all at once.
Uses names to point to things.	Represents the thing itself.
Constructs meaning out of discreet units and categories.	Constructsmeaning out of continuous lines and textures.

Format is a crucial element in the creation of simple, effective, printed materials. Price states, "In designing a look for the manual the writer needs to pay attention to many elements, including: reproduction method, paper, page size and shape, typeface, white space, color, and covers" (167). In Table 6, Brockmann describes the eleven typographic design elements to consider when developing documentation.

Drafting the Manual

The task of writing an entire manual might seem so intimidating or time-

consuming that the writer may feel that he/she can never complete it. Denton suggests that for most writers it is much easier to break the manual down into manageable sections and worry about writing just one of those and then another and another until he/she has something that is long enough to be a section, a chapter, or a manual. Once this is done the writer can concentrate on joining the sections together properly (57). Denton describes the advantages of developing components (or nodes) to aid in the development of writing:

- It allows the writer to schedule the right amount of time to complete the book, based not on industry standards, hunches, or proposed product schedules, but on the number and complexity of nodes.
- It takes the panic out of the writing process. The writer will always know where they are and what they need to do next.
- It makes the writing process into an ordinary, step-by-step procedure instead of something difficult or magical.
- It can give the writer a sense of accomplishment to check off the nodes as they are finished.
- It reveals omissions, redundancies, and other design flaws (58-59).

The preliminary material in a document provides readers with their first exposure to the writing and the topics covered. Crandall claims that it sets the tone for the rest of the manual, so it should be carefully developed and written (19). Preliminary material consists of the preface and the introduction.

Table 6

Typographic Recommendations

Element	Definition	Recommendations
Typeface	The look of the letters presentation on the paper or the screen	Use serifed type for extended reading purposes; chose an appropriately toned typeface; use typefaces with a large x-height, keep the number of typefaces used to a minimum
Type size	The vertical size of the letters (their point size)	Use 10 or 12 point, but be aware of typeface size variations
Family branch	Within the letters typeface family, letters can be bolded, condensed, outlined, shadowed, etc.	Minimize typeface shape variations
Letter posture	Within the letter's typeface family, letters can be roman (straight up and down) or *italic*	Use roman for extended reading; use italic for rare occasions for contrast
Letter composition	Within the letter's typeface family, letters can be ALL UPPERCASE or a mix of upper and lower case	Use a mixture of upper and lower case
Leading	What we used to call double space or single space between lines	Use 1 point lead on paper; 15% of character stroke width on-line
Line measure	What we used to call the width of lines on a page	Keep line length between 4.5 inches and 1.67 inches
Appointment	Decisions on column justification or raggedness come within this element	Use ragged right
Word spacing	Distance between words	Use less space between words than between lines
Letter spacing	Distance between letters	Use proportional spacing
Rulers, leaders, punctuation marks, and paragraph indentation		Leave behind typewriter practices and use proper typesetting marks

SOURCE: Brockmann, R. John. <u>Writing Better Computer User Documentation</u>. New York: John Wiley & Sons, 1990: 140-1.

Price describes the **preface** as the window to the document. It provides a "peek" at what is to come and what can be expected. It emphasizes the characteristics of the document and sets the tone (147).

The preface should give readers an idea of what is covered in the document, how it should be used, and what they can expect to learn from it. Crandall depicts four categories of information which the preface covers: the motivation for completing the tutorial, the purpose of the document, the prerequisite skills needed, and how to use the document (19).

Crandall asserts that the **introduction** is the foundation upon which the content of the document rests. An introduction gives supportive information about the topic of the document. Within the introduction the foundation of conceptual and theoretical information needed to use and understand the product should be established. It should also include a definition of the product, a statement of the product's benefits, and a description of how it can be used (22-23).

The supportive sections of the document are written after it has been completed. They provide aids to the reader for finding specific information contained within the document. The supportive sections include the abstract, the table of contents, the glossary, the index, and the desk-top reference (51).

Crandall suggests that the **abstract** should describe in a few brief paragraphs exactly what is contained in the document. It should provide enough information so

that the reader does not have to refer to another source to find out which topics are covered and, in the case of a tutorial document, should explain exactly what skills the reader can expect to learn (51).

The **table of contents** should list the page number for every major heading that is used consistently throughout the book. Price explains, "No matter how short or how long the manual is, readers count on the table of contents as an outline of the material, as an indication of what are considered the major and minor topics, and as a map leading them to the information they need" (65). He suggests that at a minimum, then, the table of contents should include chapter titles and the first level of headings from each chapter, along with page numbers. When writing the table of contents, Price advises keeping these suggestions in mind: use verbs when possible, be consistent, avoid headings which consist solely of key words, and keep titles short enough to scan (65-67).

Price depicts the **glossary** as the part of the manual which defines words that might be unfamiliar to some readers - bits of jargon, acronyms, commands, and phrases that apply only to this subject (124). Crandall explains that these terms are listed alphabetically at the back of the manual (53). She continues to explain that the definitions should be a repetition or summary of information already presented in the text of the book at the time the term is introduced - the glossary is not intended to take the place of this initial instruction. The definitions include no new information about

the terms. Crandall states, "It is helpful to set all new terms apart from the rest of the text by italicizing or putting them in boldface while writing. This makes it very easy to identify them after the document has been written" (54).

Crandall describes the **index** as the section which lists commonly used terms, concepts, and subjects, including all terms from the document, in alphabetical order and gives the page numbers for every page on which they occur. She suggests that it is used as an aid for referring to information in the text (55). Like a table of contents, the index helps readers skip to the material they really want to read. Ramey contends that the index is used twice as often as the table of contents to search for information (153). According to Price, a good index can accomplish this:

♦ Help readers find a particular topic, even if it is not a chapter or section heading.
♦ Make up for the fact that a manual is not an electronic data base with fast and random access.
♦ Reveal what is connected with what.
♦ Show what has been left out.
♦ Give browsers a general idea of the subject matter of the manual.
♦ Indicate which terms are considered standard, or nonstandard (135).

With these purposes in mind, the index should be complete, accurate, easy to search through, and helpful to both novices and experts (135).

The **desk-top reference** is a compilation of all of the checklists used in the tutorial. Crandall describes it as a tool which can be used by people who do not feel they need to complete the tutorial but like to have the steps in front of them as a reminder. Further, it can also be used by those who have completed the tutorial but can not remember the exact steps to follow. Crandall suggests that it is probably most useful to put the desk-top reference in an appendix that can be taken from the main body of the tutorial (55-56).

Testing the Manual

Reviewing and testing are reliable methods of ensuring quality. In testing the manual, users of the documentation try using it to see if it is effective and can stand alone. Price suggests, before bringing in the people who will be testing the manual, try it out on resident experts. The purpose, he explains, is to fix every bug possible before putting the manual in front of people who represent the users (210). Weiss describes a usability test as any systematic, formal project whose aim is to gather reliable, generalizable data about the uses and usefulness of a product (160). If the objectives are well-thought and the methods are sensible, a usability test adds information that is helpful to the developers (161). However, if done carelessly, the results of a usability test can be manipulated to give apparent approval to mediocre or unusable material. Weiss states, "Any compromise in the plan of a usability test, no

matter how worthy the economic motive, has the potential to undermine the integrity

of the test" (162). With the wrong subjects or protocol, the results of the test may be

meaningless (162).

Weiss suggests the following elements to ensure a rigorous test:

- ◆ Unambiguous test objectives - stated so that it is clear whether the materials worked as intended.
- ◆ A test protocol - a research design identifying the subjects to be used, the data to be collected before, during, and after the test, the information products to be tested, and the criteria for acceptance.
- ◆ Test materials - including printed instructions for subjects and any other "handout" material needed for the study.
- ◆ A subject sampling plan - a scheme to ensure that the subjects used in the study are representative of the intended users of the documents.
- ◆ An unobtrusive test setting - in which the subjects are free from the influence of the testers (161).

Type of Subjects - Price suggests to keep in mind that the audience probably

includes several types of users (211). The subjects in a usability test should be

representative users, not people involved in the development of the product or

publications. But, as Weiss explains, for reasons of cost or confidentiality, some

firms use employees or members of the group as subjects. He suggests that they try,

of course, to pick people who are appropriately naive, not possessing outside

knowledge that would corrupt the test results. Weiss deduces that often this selection is too casual (162).

Number of Subjects - Measurement specialists want to be sure that the successes or failures in a usability test are not attributable to mere chance. In practice, many firms wanting to save time and money try the material with only two or three subjects. Small samples and case studies, though they sometimes reveal startling truths, are usually unreliable. They give anecdotal insights, but not unambiguous results. Their greatest benefit is that they suggest research questions that need to be addressed more formally (162).

It must be decided how many subjects will be tested at once. Price suggests that close attention can be given to only two or three people at once. He also suggests watching them personally, because just watching people as they read - or stop reading - can give the writer ideas. Additionally, Price explains, asking questions at the time of testing, rather than sending them home and asking for comments yields better responses (211).

Design - A maxim of testing is that one item at a time be tested. For example, if testing the manual, the application should be stable, "constant." But many firms, feeling the pressure of time, elect to test their publications as part of the "beta test" of the new product or system. The problem of course, is that it is often difficult to know where a problem lies (Weiss 162).

Editing the Manual

Editing involves more than a hunt for grammar, spelling, usage, and punctuation errors. Editing is a collection of multidimensional tasks. Brockmann states, "Any attempt to perform all the tasks simultaneously is doomed to failure" (238).

Denton describes three sets of edits to complete. First, the **organizational edit**, looks at the table of contents to make sure the topic arrangement is logical. The writer should check to make sure that topics of equal importance have headings of equal weight, and that the reader can see from the table of contents and headings in the text, the relationships among topics (82).

Next, the **content edit** verifies whether the manual accomplishes the purpose stated in the preface. The text should flow logically from one topic to the next, and each paragraph and sentence should support a topic or subtopic that contributes to the reader's understanding. During this edit the writer should focus on logical divisions, transitions, development of examples, completeness of information, and coherence (82).

The **copy edit** examines the writing quality throughout the book. Tables and figures are also examined to make certain that they are appropriate and executed properly. During the copy edit, grammatical correctness, conciseness, appropriate diction, and point of view should be checked (82).

One system for the editing process can be found in the "levels of edit" concept developed at the Jet Propulsion Labs in Pasadena, California (Buehler 80). This concept breaks the activity of editing into a number of discrete steps that are listed and explained below. These steps not only illustrate that editing involves more than sentence level concerns, but they also demonstrate one way in which the overall editing activity can be broken into its components (Elbow 4-7).

The eight steps in editing are as follows:

- **Coordination Edit**. In this step people, budgets, schedules, etc. are coordinated to bring a document to press.
- **Copy Clarification Edit**. In this step the writer ensures that the instructions to the compositors for typesetting or to the graphic artists for graphics are clear. (Desktop publishing largely does away with the need for this coordination between different roles in an organization since these roles are now combined.)
- **Policy Edit**. In this step the writer examines the manual to be sure that the specific rules of the company's style guide are followed.
- **Integrity edit**. In this step the writer makes sure that all cross references are clear and accurate.
- **Format Edit**. In this step the layout of material on the page is inspected to see if it is effective.
- **Mechanical Style Edit**. In this step the writer makes sure that similar units of meaning are treated consistently in spelling, graphic, and typographic terms.
- **Substantive Edit**. In this step look at the content in the manual to ensure that the organization of the manual is appropriate, that

any contradictions are resolved, and that the
presentation is complete and coherent.

♦ **Language Edit**. The language edit ensures that
the paragraph and sentence level concerns of
parallelism, usage, clarity, and coherence are
addressed (Buehler 80-81).

There is no necessary order to the steps in editing. They can be done in any order
that seems to be most effective to the writer or organization. However, Brockmann
emphasizes, they must all be done (240).

In Table 7, Denton further identifies a way of systematically examining the
manual by following a detailed list of questions or checkpoints. Using this suggested
list may help in catching many mistakes the writer overlooks.

Maintaining the Manual

Brockmann emphasizes that the most important step in handling updating and
maintaining the manual is to assign this responsibility. He suggests that during
system acceptance, someone should be given the responsibility for updating the
document and for distributing the updates (278).

In order to assure that this updating is not forgotten Brockmann advises that
during the life of the document a master copy should be maintained. This master
should note all corrections and updated information. He suggests dating each

Table 7

Editing Points To Verify

- Verify that all appropriate components are in place.

Title page	Body/chapters
Legal/warranty statements	Appendices
Copyright notice	Bibliography
Preface	Glossary
Table of contents	Index
Table of illustrations	

- Make sure that headings are appropriate and parallel.

  Chapter titles and titles of other components such as the preface, table of contents, and appendices should all be of the same level.

  The table of contents should list only enough headings to show general organization of the book. That is, list only first-, second-, and perhaps third-level headings. A chapter table of contents should list every heading in the chapter.

- Check all graphics in the book.

  All graphics should support or enhance surrounding content, with the purpose of helping readers understand the discussion.

  All figures and tables should be constructed properly, numbered correctly, and positioned appropriately in relation to the text.

  All figures and tables should be introduced before they appear.

  Graphics should be appropriate in degree of difficulty for the target audience of the manual.

- Examine the text throughout the book.

  Content should be appropriate for the targeted reading audience.

  Content should relate to performing tasks and should provide enough information to enable readers to do those tasks.

  Each chapter and each section within a chapter should logically develop from previous ones.

  No contradictory statements should appear within the text.

  Terms that might be unfamiliar to readers should be defined when they first appear in the book and also included in a glossary.

  Tone should be appropriate for the readers and for the content presented.

- Problems such as the following should be identified and resolved.

Inconsistent point of view	Faulty parallelism
Shifts of attention	Dangling modifiers
Passive voice	Ending a sentence with a preposition
Wordiness	Provincial and sexist language
Inconsistent terminology	

- Page breaks should be appropriate.

- Highlighting should be appropriate and used only when necessary.

SOURCE: Denton, Lynn, and Jody Kelly. Designing, Writing, & Producing Computer Documentation. New York: McGraw-Hill, 1993: 82-84.

correction and change and the reason for the change. This master copy can then act as an audit trail for documentation changes. An additional suggestion is that a document distribution list also be maintained. This list should identify all document holders (278).

Weiss presumes that all manuals will need to be changed. As Figure 4 shows, no matter how carefully they are reviewed, manuals will respond to such stimuli as:

- **technical errors** - incorrect or incomplete technical information about the system or product.

- **technical changes** - minor modifications in the system.
- **communication (language) errors** - ambiguous, unclear, or misleading text and diagrams in the manual; errors of grammar or mechanics.
- **system enhancements** - major changes and new features added to the product.
- **policy changes** - new rules on what must or may be done, by whom (Weiss 168).

As seen in Figure 4, Weiss illustrates four main ways to respond to a stimulus. Internal update is a correction in the master version of the document. Immediate update (flash bulletin) refers to sending a bulletin to every user or document owner. Batch update is the collection of several changes in one set, published by the calendar or when the quantity of the material exceeds a certain threshold. A new edition (version) occurs when the documentor incorporates all the modifications since the last

edition into a new edition, removing what is obsolete and replacing what has been modified (168).

Figure 4

The Mediating Role of Maintenance Policies
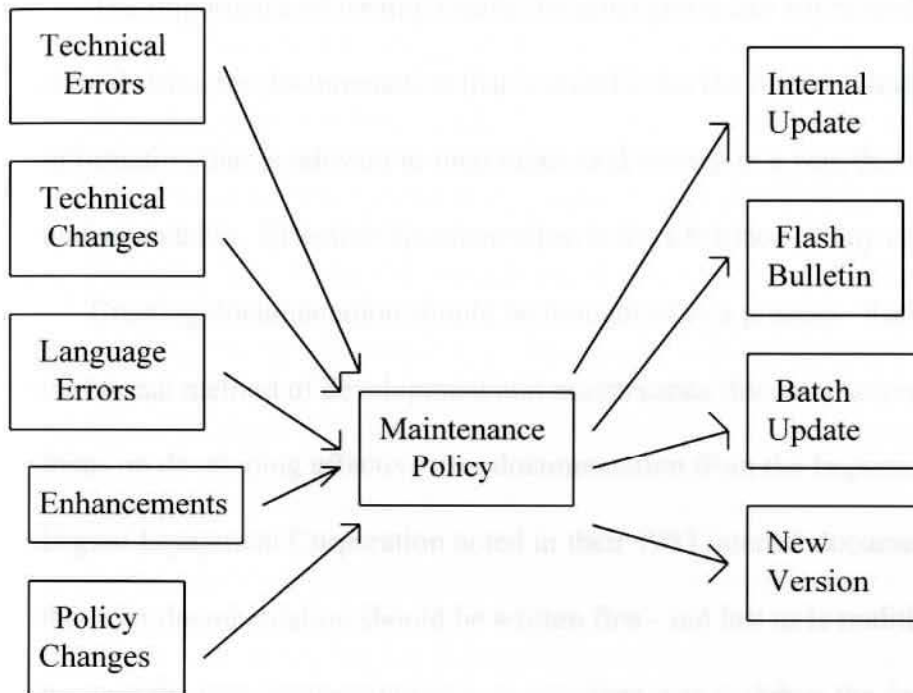
SOURCE: Weiss, Edmond H. _How To Write a Usable User Manual_. Philadelphia, PA: ISI Press, 1985:168-169.

There are, then, several different ways to respond and several different levels of urgency. The fact remains, though, that many zealous documentors are too eager and often create more confusion than clarity with their incessant updates. Digital suggests the following guidelines: when the pages that are updated do not exceed 30%, updates

may be released by single pages. When, however, the updated pages exceed 30%, it is time to rerelease the entire document (II-5).

Summary

The importance of writing usable documentation can not be understated. A writer should strive for documentation that is suitable for the intended audience, containing information that is relevant to their tasks, and written in a way that it is easily understandable. Effective documentation is the life blood of any computer program.

Creating documentation should be thought of as a process. Rather than the traditional method of development and maintenance documentation, writers should focus on developing effective user documentation from the beginning of the process. Digital Equipment Corporation noted in their 1983 internal documentation guidelines that user documentation should be written first - not last as is traditionally done - because the user documentaiton is an excellent way to debug the design of a system or program. They state, "If a writer finds it difficult to document a system, the problem is probably the system not the writer. Holes in design, obscure constructions, and apparent contradictions become starkly visible in the documentation" (I-3-2).

Following appropriate steps and guidelines as those described in this chapter increases the likelihood of writing effective documentation.

Chapter III

METHODS AND EVALUATION

Materials

Through examining the strengths and weaknesses of current tutorial

documentation, an effective tutorial manual (Appendix D) was developed for the

Project Accounting System at the Olin Corporation. This manual is a technical

manual that provides step-by-step instruction and introduces the user to a

sampling of the basic functions. The tutorial consists of examples demonstrating

use of the Project Accounting System to manage capital spending projects. The

intent of this manual is not to cover everything about the system, but to introduce

the user to a selection of topics. This tutorial documentation will get the reader

used to the program, give them confidence in using the program, show the reader

how things work, and make them ready to go forward on their own. This tutorial

emphasizes teaching the acquisition of new performance skills.

This manual was written with the main purpose of teaching basic skills to

the beginning Project Accounting user with no prerequisite knowledge of the

system. The type of audience is composed mainly of two disciplines. First, the

accountants who are responsible for the input of data and upkeep of the system.

These individuals are responsible for reconciling individual capital appropriation

projects within the Project Accounting System to the General Ledger System. The other type of users are the engineers who inquire on projects to check the spending status and the completion of phases of projects and commitments.

The manual begins with the Contents, followed by a listing of the Figures contained within, and a Welcome section. The Welcome section describes the intended audience, gives a content summary, explains prerequisite knowledge, and explains some user guide conventions used throughout the manual.

Chapter One (1) of this manual introduces general information about using the on-line system, including sign on procedures and system commands. Chapter Two (2) covers procedures for setting up a new company in the Project Accounting System. Chapters Three (3) through Six (6) describe the procedures for setting up projects, work units, commitments, and expenditures, respectively.

The organization of Chapters Two (2) through Six (6) is the same. Each of these chapters begins with a description of what the chapter is about. This is followed by a practical application of how to set up, or add, the particular topic. The example is followed by data entry field descriptions. Chapters Three (3), Four (4), Five (5), and Six (6) also include a summary screen of those particular chapter topics. These summary screens are also followed by field descriptions. Following this example is a description and example of how to make changes to

the particular chapter topic. Finally, the chapters end with a discussion of how to delete projects, work units, commitments, and expenditures, respectively.

Chapter Seven (7) describes the procedure for setting up standard reports. A practical application example is given, followed by data entry field descriptions. Within this chapter is a complete listing of control and accounting reports.

Chapter Eight (8) deals with transaction (error) corrections. A practical application example is given followed by Master File Edit/Update Messages.

Following Chapter Eight (8) is the Appendix. Within Appendix A, examples are given of all of the menu screens, including the Main menu, Project Menu, Work Unit Menu, Commitment Menu, Expenditure Menu, Company Menu, and Asset Menu. Appendix B is a listing of common on-line system screen commands.

Subjects

There were ten (10) evaluators of the Project Accounting Tutorial. The evaluators completed a preliminary questionnaire regarding their background, expertise, etc. (Appendix A).

The evaluators were chosen because they are representative of the intended audience of the Project Accounting Manual. Five are from within the

accounting discipline, four are from within the engineering discipline, and one is a technical (computer) expert. Of these ten evaluators, five are current users of the Project Accounting System and five are currently non-users of the system. Of the five current users, two are considered advanced users, one intermediate, and two beginners. All non-users are assumed to be beginners.

A majority of the evaluators are users of similar software programs, either Integral Fixed Assets or Integral General Ledger. Eight of the evaluators have experience using a system with similar features, while only two evaluators lack this experience. Of the eight who do have experience, five consider themselves intermediate users, one considers herself an advanced user, and the remaining two consider themselves beginners. The two with no experience on an Integral system will also be considered beginners. Of the eight evaluators who have experience with a similar software program, three have used both the Fixed Asset System and the General Ledger System. Two have used only the General Ledger System and three have used only the Fixed Asset System.

The evaluators, collectively, have an average of eight years experience using computers (PC's). They have an average of seven and one-half years experience with similar software programs (either Fixed Assets or General Ledger). Two years is the average number of years experience with the Project Accounting System.

Instrument

A combination of instruments were used to evaluate the manual. These
include an introduction letter giving general instructions to the evaluators
(Appendix B), a questionnaire supplied to the evaluators (Appendix C) and a
follow-up personal interview.

Procedure

Each reviewer received a copy of the tutorial manual, an instruction letter,
and the evaluation questionnaire. The manuals were personally delivered by the
author. At the time of delivery, the author discussed general guidelines for review
and answered any questions the evaluator had about the manual and/or the
evaluation process. The evaluators were requested to complete their review
within three weeks from delivery of the manual.

Chapter IV

RESULTS

Results

Most of the evaluators commented that they found the tutorial documentation easy to follow and to understand. The topics chosen on the evaluation questionnaire were all given high ratings. Table 8, below, summarizes the ratings on the questionnaire.

Table 8

Results of Questionnaire for Evaluation of Tutorial

Topic	Total	Great	Good	Average	Fair	Poor
Accuracy	7	6	1			
Completeness	7	4	3			
Usefulness	7	5	2			
Clarity of Language	7	3	4			
Retrievability	7	5	2			
Index	7	5	2			
Appendix	7	5	2			

Accuracy was defined to the evaluators as the technical accuracy of the documentation. "Do the instructions do what they say they will do?" And, "Are the screens in the manual reflective of what is on the computer screens?" All agreed that, technically, the documentation was precise:

> "I was able to go from page to page without any major glitches because of inaccuracies."

> "All examples followed directly with the screen."

> "I had no problems following along with the instructions. The instructions were very accurate."

> "The examples and instructions were easy to follow and helpful in understanding the topic."

> "The manual followed directly the commands given on the screen."

Completeness was defined as, "Did the documentation contain all of the information that you, as a user, need?" Basically, "Was anything left out?" Some comments gathered from the evaluators included:

> "DDA for Winchester access (not included in manual)."

> "Project number section incomplete. (Did not include numbering for Winchester projects.)"

> "(To) blank out a field, use R....."

> "Pages 3-1 to 3-4   re: Project #   Explain the transition from 06-0524 to 052400."

> "Could have used more examples in the error section."

> "Will we use the capitalized interest portion in the
> future? If so, will it be included in the manual?"

Usefulness was described to the evaluators as whether the topics included in the

manual provided the information needed to perform their necessary tasks. "Can

you use the information provided?" The evaluators remarked that for the target

audience this manual is a useful learning tool. It was concluded that the manual

accomplished the purpose stated in the preface.

> "The manual can be used as a training tool or as a
> reference tool."

> "The manual is very useful in learning the Project
> Accounting system."

> "The manual can be used for a variety of training
> purposes."

> "Thanks for finally giving us something to learn the
> Project Accounting system, we've needed this for a
> long time!"

> "This is a good training manual for beginners."

Clarity of language is always difficult to assess in a technical manual. Overall,

the evaluators were comfortable with the technicality of the language used in the

manual.

> "The manual provides basic information for the
> beginning user while not boring the more advanced
> user."

> "Not overwhelmed by technical jargon."

"Pg 2-9 was not sure from the example which period
and dates were going to change. Reminding the reader
to tab helps prevent getting into a protected field."

"This is a very good manual for beginners, as they are
not overwhelmed with a lot of technical stuff."

"There were only a few instances where the technical
language was difficult to understand."

"As far as clarity of language is concerned, for the
subject matter this manual was relatively clear."

"The language itself was very understandable, not over
your head like in a lot of computer documentation."

Retrievability was described to the evaluators as, "Are you able to find (retrieve)

the information that you need in order to perform the tasks that you are

attempting?" As a whole, the evaluators expressed that they were able to retrieve

information easily.

"The contents and index sections were easy to read and
helpful in finding the topics."

"Subject matter was easy to retrieve."

"The layout of the manual made it easy to find the
information needed."

"The problem is that I don't know what to look for
sometimes."

"I was able to find everything I was looking for."

Finally, the evaluators were asked to comment on whether they found the index

and appendix to be helpful. All evaluators responded positively.

> "The index is helpful in quickly finding a particular
> topic. Very complete."

> "The index was easy to use and well organized."

> "The appendix is good as a summary of system
> commands."

> "The Appendix is a good quick-reference."

> "The appendix is a useful tool in learning screens and
> system commands."

Evaluators were also asked their opinion on the overall organization and layout of

the documentation. The following are comments regarding the overall layout:

> "Arranged in a manner which leads easily from one
> topic to the next."

> "Each chapter logically flows from the previous
> chapter."

> "Good examples that lead from basic topics to more
> advanced topics."

> "Definition of terms within the chapter is a good idea."

Additional Comments by Evaluators

The following are comments made by the evaluators regarding their

overall impression of the tutorial documentation:

"As an infrequent user of the system, I thought the manual was very helpful. The examples and procedures were easy to follow."

"This is an excellent manual for a beginner and as a reminder for users. Very professional looking and easy to follow thru the topics."

"You had some very good helpful hints to the user like 'Type \SCA' (anywhere on the screen)."

"You did an excellent job on this manual. Please send a copy of the final draft."

"Thank you for letting me review your manual. I found it to be accurate and simple enough to be used by beginners."

"I thought the manual was very precise and easy to follow, even for a beginner."

"Project Accounting manual could be used by someone with no prior knowledge of Project Accounting. Step by step instructions made it easy to understand and follow each screen presentation."

Reduction in Sample Population

Initially, there were ten (10) evaluators chosen to review the Project Accounting Tutorial. Responses were received from seven (7) of those evaluators. The reduction in sample population was due to: (1) medical leave of absence of one evaluator; (2) transfer of one evaluator to another Olin location; and (3) reassignment of one evaluator's job responsibilities. The three

evaluators who were unable to complete the evaluation included two non-users

(beginners) of the Project Accounting system and one technical expert. Even

though the technical expert was unable to complete the evaluation and the

evaluation questionnaire, her input and verbal comments were taken into

consideration in the writing and review of the tutorial documentation.

Chapter V

DISCUSSION

Summary

The results of the review of the tutorial documentation were very favorable. The vast majority of evaluators commented that they found the tutorial documentation easy to follow and to understand. The evaluators were asked to be scrupulous in examining the material and in giving feedback. The topics chosen for review on the evaluation questionnaire were all given high ratings. The technical accuracy of the documentation was found to be precise. The evaluators commented that they were able to move freely through the manual with no technical difficulties. They responded that the instructions were accurate and the examples accurately depicted what was on the computer screen. The completeness of the documentation, whether or not the manual contained everything a user needs, was in good standing. The evaluators did have a few comments regarding specific items that they would like to see included in the manual. Most of these comments dealt with other divisions within the Olin Corporation. This manual was designed with the Brass Division as a guideline. The usefulness of the documentation, whether the topics included in the manual provided the information needed to perform the necessary task, was coherent with

the target audience. The evaluators commented that the manual could be used as

a training tool or as a reference tool. Both beginners and learned users of the

Project Accounting System could benefit from this documentation. The clarity of

language of the documentation also received favorable ratings. As with most

technical manuals, not all of the evaluators understood every technical term used

in the manual. Overall, they were satisfied with the style in which the manual was

written. The retrievability of information within the documentation was found to

be good. The evaluators commented that the layout of the manual along with the

contents, index, and appendix aided in the retrievability of information. They

were able to find (retrieve) the information that was needed in order to perform

the task being attempted. In summary, the evaluators were impressed by the

overall presentation of the manual.

The purpose of the present study is to examine the strengths and

weaknesses of current tutorial documentation. This research has culminated in the

creation of an effective internal tutorial manual for the Project Accounting System

at the Olin Corporation. This manual is a technical manual that provides step-by-

step instruction and introduces the user to a sampling of the basic functions. The

tutorial consists of examples demonstrating use of the Project Accounting System

to manage capital spending projects. This tutorial emphasizes teaching the

acquisition of new performance skills. It was not designed to cover everything within the Project Accounting System.

Learning the new program is a step that some writers try to skip. As a writer of the manual, and a user of the Project Accounting System, the functions of the program were understood prior to beginning to write. This knowledge helped to build quality into the manual. As a starting point, however, existing documentation was reviewed in order to become more familiar with background information on the program (generally technical). Interviews with technical people were also utilized to gain knowledge of the program and its existing documentation (or lack thereof). A more effective manual was written due to the writer's commitment to thoroughly understand the program prior to beginning the endeavor of writing.

As with most manuals, the Project Accounting System manual will be used by a variety of audiences. This manual has been successful in that it accommodates readers with differing backgrounds and skills. Essentially, the manual was written for beginning users of the Project Accounting System. The manual was written in such a way that whether or not the users possess familiarity with this program or a similar program they are able to easily follow the instructions. The typical user will have an accounting background. These individuals are responsible for the input of data and upkeep of the system. They

are also responsible for reconciling individual capital appropriation projects within the Project Accounting System to the General Ledger System. The other type of users are the engineers who inquire on projects to check the spending status and the completion of phases of projects and commitments. The evaluators were reflective of both groups. Within each of these disciplines, the evaluators possessed varying degrees of knowledge of the Project Accounting System. Applying Brockmann's user categories, the group of evaluators included novices, technicians, experts, and intermittent users. The manual is effectively written to address the beginning user, while also aiding more advanced users.

The task analysis was basically performed through the writer's own knowledge of the current system. There are currently few users of the Project Accounting System, therefore few sources to obtain information on what the user intends (or hopes) to accomplish with the program. The lack of users corresponds with the general lack of knowledge of the system. Hence, the need for effective tutorial documentation. By being a user, the writer was able to understand, or empathize with, the user for whom the manual was intended. The manual effectively covers the most basic tasks which the beginning user will utilize.

The decision was made to include a glossary within Chapters Two (2) through Eight (8) rather than at the end of the manual. It was determined that this organization would be more helpful to the beginning user. The user could either

look up a term as they were proceeding through the instructions or review all of the new terms within a particular chapter once they had completed the examples. Additionally, all terms are listed alphabetically in the index at the end of the manual.

Creating effective computer documentation is the lifeblood of any computer program. If the user can not understand the instructions for use, it is likely that they will get frustrated and discontinue using the program. It is essential, therefore, to create effective documentation. Computer documentation must adhere to certain criteria in order to be effective. Availability is an important aspect of documentation in that it needs to be present when needed by the user. Through this endeavor, documentation for the Project Accounting System is becoming available to the user. Suitability, or alignment with the audiences intended tasks and interests, is also an important consideration. Through the writer's experience and through the evaluator's efforts the suitability of this documentation is coherent with the audience and their tasks. Accessibility is important in order for the user to be able to follow the documentation. Accessibility contends that the documentation is comfortably organized, or designed in a manner that increases the user's chance of success. As is discussed in the results of the evaluation, the documentation is designed in a manner which helps in the user's ability to comprehend the instructions. Readability, how easily

and accurately documentation can be understood by its intended audience, is also an important element of effective documentation. The writing within the documentation is at a level appropriate to the audience and includes enough clear explanations, examples, and illustrations to enable the readers to evaluate the information. It has been determined through the evaluation of this documentation that readability is at an appropriate level.

Limitations

One classic problem in developing effective documentation is that the writer may be lacking in either writing or technical skills. It is difficult sometimes to write for a beginning user. Because of the technical knowledge of the writer, assumptions made in the document can be a hindrance to the less knowledgeable user. Too often the writer takes for granted certain knowledge and abilities the user does not possess. Putting oneself in the beginning user's place is the key to writing effectively. Precautions were taken to painstakingly go through procedures step-by-step in order to avoid skipping any steps within the examples.

A fact that documentors have to face is that "adults resist explicitly addressing themselves to new learning" (Carroll, 101). Even when well written and well designed documentation is given to adult readers they constantly skip ahead and begin to try to use the system without reading the whole manual.

Rather than spending time searching for answers, typical users of computer programs prefer to ask others for information that enables them to use the program. This study was no different. It was stressed to the users to review the documentation in order to aid in the evaluation. There were instances where an evaluator would try to jump ahead of the information and would ask for help rather than rely on the documentation.

Ideally, the writer would be able to sit with each evaluator as they worked through the manual. Valuable information on the way the user thinks and works their way through the program may be obtained by this observation. Because of conflicting schedules and time limitations this was not possible.

Variations in the hardware of each user also created confusion for some evaluators. Because the evaluators were from varying disciplines, and used different types of hardware and software, the configurations of each personal computer were different. As these differences were discovered, the evaluators were given instructions on how to maneuver through the task. This problem occurred exclusively with sign-on procedures.

Suggestions for Future Research

Naturally, a larger number of evaluators would be ideal in this type of study. A larger number of evaluators would enable the writer to get more

feedback regarding areas needing improvement. If replicating the study, direct observation of evaluators would be essential.

Because there is currently a lack of knowledgeable users of the Project Accounting System at Olin Corporation, contact with users from other companies may aid in the development of the documentation. Conferring with proficient users may bring forth procedures unknown to the writer. These other users may also have developed their own tutorial documentation which may be beneficial to the writer. A users conference would be a good source for securing these contacts.

Observing content experts as they use the program is a good means of obtaining information. Perhaps once contacts were developed with users from other companies the writer may be able to observe them at work. Direct observation of these experts may clarify why they are doing something.

Observing a novice as they use the program is also a good means of obtaining information. This observation may clarify at what points the writer needs to be more specific in the documentation and where problems may arise. Additionally, observing the novice hopefully will keep the writer from assuming too much when writing.

While all evaluators were honest in their responses, the majority did not expound on the subject matter. Rather than general questions on the evaluation

questionnaire, more precise questions should be utilized. More specifically,

questions such as, "What terms did they find difficult to understand?" "Were

there particular chapters that seemed more difficult to understand than others?"

"Were there areas within a particular chapter that seemed confusing?" "Did the

glossary within the chapter text help or hinder their learning experience?" "Were

there too many or too few examples?" This type of questioning will help to

determine exact areas that need improvement.

Appendix A

Project Accounting Tutorial Evaluator Questionnaire

PROJECT ACCOUNTING TUTORIAL DOCUMENTATION
EVALUATOR QUESTIONNAIRE

NAME: _____

JOB TITLE: _____

COMPUTER/SYSTEM KNOWLEDGE:

(Please circle the answer that best applies)

Do you currently use the Project Accounting System?   **YES   NO**

If Yes, do you consider yourself: **Beginner   Intermediate   Advanced**

Do you currently use any other Integral System (FA or GL)? **YES   NO**

If Yes, do you consider yourself: **Beginner   Intermediate   Advanced**

Which other systems do you use?   **Fixed Assets   General Ledger**

(Please answer to the best of your knowledge)

Number of years of computer (PC) experience   ____**Yrs**

Number of years experience with related systems (FA or GL) ____**Yrs**

Number of years experience with Project Accounting   ____**Yrs**

Describe (as a user) what you wish to get out of the Project Accounting System:

_____

_____

_____

Appendix B

Introduction Letter to Evaluators

Dear   :

Thank you for taking the time from your busy schedule to review this manual. The purpose of the manual is to give beginning Project Accounting users an overview of some major topics. The intent is **not** to cover everything about the system. Basic skills will be described in order to get the novice user up and running on the Project Accounting System. The intended audience is composed of accountants and engineers who will be utilizing the system.

Please review the manual for technical accuracy and completeness. Typographical errors should not be present, however if you find one please make a note of it. All comments and questions are welcome. Be constructive and specific. Feel free to suggest better ways to present the material if necessary.

Because we are working in the live system, rather than a test environment, you may experience some difficulty executing some procedures. Please call me if this is the case. I understand you are busy at this time of year. I am requesting the reviews be completed and returned to me by October 6th.

Thank you so much for your help with this project.

Sheryl

Appendix C

Questionnaire for Evaluation of Tutorial

<div style="border: 1px solid black;">

PROJECT ACCOUNTING TUTORIAL DOCUMENTATION

Name: _____

Circle the number from 1 to 5 that best corresponds with your rating of the topic for this manual, then give an explanation for your rating.

Topic	Great	Good	Average	Fair	Poor
Accuracy Why?	1	2	3	4	5
Completeness Why?	1	2	3	4	5
Usefulness Why?	1	2	3	4	5
Clarity of Language Why?	1	2	3	4	5
Retrievability Why?	1	2	3	4	5
Index Why?	1	2	3	4	5
Appendix Why?	1	2	3	4	5

Additional comments: _____

Thank you for your help in this endeavor.

</div>

Appendix D

Olin

BEGINNING
Project Accounting

Contents

Figures

Welcome to the Project Accounting User Guide

This Project Accounting User Guide consists of examples demonstrating use of the Project Accounting System to manage your capital spending projects. This guide covers the basic operations with common examples. When you need more information on technical questions, use your Project Accounting reference manuals for further details.

Intended Audience

This user guide is written for all beginning users of the Project Accounting System. This includes people who deal with setting up projects, and those inquiring on commitments or expenditures.

Content Summary

This user guide presents basic procedures for using the Project Accounting System. Once you follow the demonstrated procedures and see how they work, you can use the reference manuals to find how to use additional optional fields or screens.

Chapter 1 of this guide introduces general information about using the online system, including sign on procedures and system commands.

Chapter 2 covers procedures for setting up a new company in the Project Accounting System.

Chapters 3 through 6 describe the procedures for setting up projects, work units, commitments, and expenditures. Examples of inquiry summary screens are also included.

Chapter 7 describes procedures for setting up standard reports.

Chapter 8 describes procedures for error reporting.

Prerequisite Knowledge

This guide assumes you have access to and are familiar with the organization of the *Project Accounting Reference Manuals.*

If you are not familiar with using the Integral Online System, you should read the topics on Using the Online System and Online System Commands in the Screens section of the *Project Accounting Reference Manuals.*

User Guide Conventions

This guide uses the term workstation to refer to any of the 3270-series terminals or a personal computer used as a terminal.

Field names referring to where you type your entries, plus standard key functions such as ENTER, ESCAPE, and TAB; and program function keys such as PF5, all appear in text in capital letters.

The word "enter" used without capitals means typing data on a screen.

Emphasized words and titles of other manuals appear in *italics.*

Data you must type is shown in **Courier bold** typeface.

Chapter 1   Getting Started

Project Accounting System

The Integral Project Accounting System is an online realtime batch data entry and inquiry system with extensive user options. It provides comprehensive and flexible reports to track all of your expenditures on a project. Standard reports are provided to accommodate all project reporting requirements. You can tailor these reports as required.

The Project Accounting System (referred to as the System from here on) may be used independently or interface to the Integral General Ledger and Fixed Asset products or to any other general ledger product.

Organizational Structure

The Project Accounting System is designed as a hierarchical structure. The first level being company, followed by project, work unit, commitment, and expenditures. Each of these areas will be examined more closely in subsequent chapters.

```
                          ┌──────┐
                          │  CO  │
                          └──────┘

                      ┌────────────┐
                      │  PROJECT   │
                      └────────────┘

                      ┌────────────┐
                      │ WORK UNIT  │
                      └────────────┘

                    ┌──────────────┐
                    │ COMMITMENT   │
                    └──────────────┘

                    ┌──────────────┐
                    │ EXPENDITURE  │
                    └──────────────┘
```

Signing On

Sign on to the System by turning on your workstation and following this procedure to access the Function Selection screen.

```
                    OOOOOOOOOOOOOOOO
                OOOOOOOOOOOOOOOOOOOOOOOOOO
            OOOOOOOOOOOOOO/ \OOOOOOOOOOOOOO
          OOOOOOOOOOOOOOO/   \OOOOOOOOOOOOOO
        OOOOOOOOOOOOOOOO/     \OOOOOOOOOOOOOO
       OOOOOOOOOOOOOOOO/       \OOOOOOOOOOOOOO
      OOOOOOOOOOOOOOOO/         \OOOOOOOOOOOOOO
     OOOOOOOOOOOOOOOO/           \OOOOOOOOOOOOOOO
    OOOOOOOOOOOOOOOO/             \OOOOOOOOOOOOOOO
                      OLIN CORPORATION
    OOOOOOOOOOOOOOOO\             /OOOOOOOOOOOOOOO
     OOOOOOOOOOOOOOO\            /OOOOOOOOOOOOOOO
      OOOOOOOOOOOOOO\           /OOOOOOOOOOOOOO
       OOOOOOOOOOOOO\          /OOOOOOOOOOOOOO
        OOOOOOOOOOOO\         /OOOOOOOOOOOOO
          OOOOOOOOOO\        /OOOOOOOOOOO
            OOOOOOOO\ /OOOOOOOOOOOOO
                OOOOOOOOOOOOOOOOOOOOOOOO
                    OOOOOOOOOOOOOO


ENTER APPLICATION REQUEST:
TPX
```

Fig. 1-1   Olin "O" Sign-on Screen

1. Type **TPX** under "ENTER APPLICATION REQUEST."
2. Press ENTER to go to the TQM Sign-on screen. (Figure 1-2)

```
WELCOME TO THE OLIN DATA NETWORK

TTTTTTTTTTTTTTTTTTTTTTTTT   QQQQQQQQQQQQQQQQQQQQ        MMMMM          MMMMM
TTTTTTTTTTTTTTTTTTTTTTTTT   QQQQQQQQQQQQQQQQQQQQQQQ     MMMMMMM        MMMMMM
        TTTTT              QQQQQ            QQQQQ       MMMMMMMM     MMMMMMMM
        TTTTT              QQQQQ            QQQQQ       MMMMM MMMM MMM MMMM
        TTTTT              QQQQQ            QQQQQ       MMMMM MMMMMMM   MMMM
        TTTTT              QQQQQ            QQQQQ       MMMMM    MMMM    MMMM
        TTTTT              QQQQQ       QQQQ QQQQQ       MMMMM     MM     MMMM
        TTTTT              QQQQQ         QQQQQQQ        MMMMM            MMMM
        TTTTT              QQQQQ          QQQQQQQ       MMMMM            MMMM
        TTTTT              QQQQQQQQQQQQQQQQQQQQQQQ      MMMMM            MMMM
        TTTTT              QQQQQQQQQQQQQQQQQQQQ QQQ     MMMMM   FAIRNESS  MMMM
                                                                TRUTH TELLING
FOR HELP CALL (618) 258-3282                                   PROMISE KEEPING
        OR 8-524-3282                                    RESPECT FOR INDIVIDUALS

     User id  WXAF70                              Password:
New Password:

Welcome OLIN TPX! For a copy of the TPX User's Guide Supplement, Call Helpdesk.
HELPDESK FAX:  (618) 258-3533 or DDT 8-524-3533
  PF1 = Help    PF3 = Logoff
```

Fig. 1-2   **TPX Sign-on Screen**

1. Type your USER ID and press TAB to go to Password.

2. Type your PASSWORD.

3. Press ENTER to go to the CICS sign-on screen. (Figure 1-3)

```
  DDB
  DFH3549 SIGN-ON TO CICS COMPLETE
```

Fig. 1-3   CICS Sign-on Screen

1. Type **DDB**.
2. Press ENTER to go to Function Selection Sign-on Screen. (Figure 1-4)

```
================================================================
   INTEGRAL  FINANCIAL  SYSTEMS       GS/ON-LINE  REL 3.6.7
================================================================


            - - - - FUNCTION SELECTION - - - -

                  FUNCTION: F                    F=FILE MAINTENANCE
                                                 R=ON-LINE REPORTS
                                                 S=SECURITY
                                                 U=USER PF KEYS & OPTIONS
                                                 V=DD-VIEW
                                                 P=DD-PAINT
                                                 Z=DD-VISTA
                                                 I= InFocus
                                                 E=EXIT



                   USER-ID: WXAF70
                   PASSWORD:
               NEW PASSWORD:

               SCREEN WIDTH:                      0 = 80 (DEFAULT)
                                                  1 = 132
```

Fig. 1-4   Function Selection Screen

1. Type **F** for File Maintenance.
2. Type your USER ID and PASSWORD. (Use the TAB key to move to the
   next entry field if necessary.)
3. Press the ENTER key to go to the File Maintenance Sign-on Screen.
   (Figure 1-5)
   (Your keyboard may have two keys labeled ENTER and either or
   both of them may be operational on your workstation. Test to find the
   active ENTER key. When the System registers an ENTER, it
   responds immediately or displays an X in the bar at the lower left of
   your Project Accounting screen to indicate System activity.)

```
=================================================================
   INTEGRAL FINANCIAL SYSTEMS        GS/ON-LINE REL 3.6.7
=================================================================



               - - - - FILE MAINTENANCE SIGN-ON - - - -

                    APPLICATION:  CP

                    COMPANY NO:  L040

                    FIRST SCREEN:

                 ADD/CHANGE MODE:




```

Fig. 1-5   File Maintenance Sign-on Screen

1. Type **CP** for the APPLICATION and **L040** for the COMPANY
     NUMBER.
2. Type the FIRST SCREEN if you know which screen you want to
     access, otherwise leave this field blank.
3. Leave the ADD/CHANGE MODE field blank to default to Add mode.
4. Press ENTER to go to the MU Project Accounting Main Menu Screen.
     (Figure 1-6)

```
= MU ========== PROJECT ACCOUNTING MAIN MENU ======== CP / ONLINE REL 1 . 4 . 4


                        * * MENU SCREENS * *

                        MP   PROJECT MENU
                        MW  WORK UNIT MENU
                        MK   COMMITMENT MENU
                        ME   EXPENDITURE MENU
                        MC   COMPANY MENU
                        MA   ASSET MENU
                        MM  MASS MAINTENANCE DATA ENTRY

                        * * HELP SCREENS * *

                        HL    FILE MAINTENANCE HELP

                        * * FILE PRINT SCREENS * *

                        XA   MASTER FILE PRINT
                        XC   CONTROL FILE PRINT

                                    * * PRESS PF4 FOR NEXT MENU * *
```

Fig. 1-6   Project Accounting Main Menu Screen

This screen lists all the secondary menu screens which, in turn, list all screens in the Project Accounting System. On any menu screen, you can use the TAB key to move the cursor to any selection and press ENTER to bring up that screen.

System Commands

When you are using the online System you can move from screen to screen by using various commands preceded by the bar character (|).

System commands can be entered in any field on a screen. The *Project Accounting Quick Reference Guide* as well as the Screens section of the reference manuals contain a complete list of the online system commands. A few commands are described here.

The most basic system command is the Switch Screen command, | **Sxx**, where **xx** is the two letter identifier of the screen you wish to see. The bar character tells the System that a command follows. The command means "switch to screen **xx**."

Interrupt and Resume

The | **Gxx** command lets you leave an entry screen, go to another screen, and then return to your interrupted screen without losing data you have entered. The command means "Interrupt this data entry and go to screen **xx** without losing data." Return to the interrupted screen by pressing PF3 or use the | **Y** | command.

Data Entry Screens

There are three steps to using data entry screens: inquiry, entry/edit, and write/update.

Data entry screens have an ACTION field you use to add (A), change (C), or delete (D) records. If left blank, the System assumes the action is a Change.

When you use the Project Accounting system you can type text in uppercase or lowercase. When it is redisplayed it is always displayed in uppercase.

Inquiry Step

On any screen, the Project number must be entered, then press ENTER to display information for that Project.

Entry and Edit Step

Next you enter your data. Use the TAB key to move from field to field and the BACK TAB (or SHIFT TAB on some keyboards) to move to previous fields. Press the ENTER key after entering the data and the System automatically checks the data for field-level errors. Any error messages are displayed one at a time. Press PF7 to view subsequent messages. Correct any errors and continue pressing the ENTER key until you see the appropriate F50 message.

Inquiry Screens

All System screens can be used in inquiry mode to check for an existing record. Data entry screens let you modify these records. In addition to the data entry screens, some screens are designed for inquiry use only. See the *Project Accounting Quick Reference Guide* for a complete list of all screens.

Wild Card Feature

In any inquiry field where you type an identifier to call up a record, you can use the wild card character (#) to retrieve all records or a subset of records. For example, if you are using **3#** in a project number inquiry field, you will see all project records beginning with the number 3. You can then use |**D**| to page through these projects for the one you want. In general, use the wild card character to save time or when the exact number of a key number is unknown.

Online Help

Any time the cursor is on a data field and you are not sure what to enter, or the field is highlighted and an error message indicates the entry is incorrect, use the |**H**| command or press PF1 to go to a field help screen.

To use | H |, press HOME key and type | H | in the home position. Then use the arrow keys to position the cursor in the field on which you want help.

Pressing PF1 or typing | H | a second time displays the HX Extended Help Screen which has further information of a more technical nature. Use PF3 or | Y | to return to the previous screen.

Add/Change Mode

The System stores most data in the default Add Mode. Use the PF10 key or the | A | command to toggle (switch back and forth) between Add and Changes modes. You can also select the mode at the File Maintenance Sign-on screen.

Chapter 2   Company Set Up

Processing a Company

The Project Accounting System is designed to process either a single company or multiple companies. A company is an accounting entity and is not necessarily a unique legal entity. Each company is defined to the System as being a single entity with its own organization, fiscal year, and reporting requirements. Each company is identified to the System by company number.

Assigning Company Numbers

The System will accept any four alphanumeric characters as a company number, provided the number has not already been assigned to another company. Since the System can receive input automatically from other financial applications such as Accounts Payable, and it can produce inputs into the Fixed Asset and General Ledger Systems, there are considerable benefits of using the same company number for all financial applications.

Current company numbers in use are:

Brass Parent	L040
Indianapolis	B092
Winchester	L010

Adding A Company

A company is added to the System by completing the Company Data Entry (CA) online screen. The company number, an action code of "A", the company name, current period, current date, report date and company description are all required. The current period and current date are required to identify the accounting period and calendar period to be processed, and the report date is needed for report headings. The additional company fields can be entered as appropriate for the company. Refer to the Investment Tax Credit and Capitalization of Interest sections in the *Project Accounting Reference Manuals* for a complete description of those topics and the associated input fields.

Practical Applications

Set up a company using company number B050 named Brass Fine Weld Tube.
Assume the current period is July, 1995 (07/95).

```
I N T E G R A L    F I N A N C I A L    S Y S T E M S     G S / O N - L I N E   R E L 3 . 6 . 7


            - - - - FILE MAINTENANCE SIGN-ON - - - -

                        APPLICATION:   CP

                        COMPANY NO:    B050

                        FIRST SCREEN:  CA

                    ADD/CHANGE MODE:
```

Fig. 2-1   File Maintenance Sign-on Screen

1. Type **CP** in APPLICATION field.
2. Type **B050** in COMPANY NUMBER field.
3. Type **CA** in FIRST SCREEN field.
4. Press ENTER to go to the Company Data Entry (CA) screen (Figure 2-2).

** If you are currently at the MU screen follow these procedures:

1. Type |**SCA** (anywhere on the screen).
2. Press ENTER to go to the Company Data Entry (CA) Screen (Figure 2-2).

```
= CA ===================COMPANY DATA ENTRY===================== CO:  B050

                    ACTION   A
                    STATUS
             COMPANY NAME   BRASS FINE WELD TUBE

           CURRENT PERIOD   0795
          PREVIOUS PERIOD   0695
             CURRENT DATE   073195
              REPORT DATE   07-31-95
       ACCOUNTING PERIODS
        RETENTION PERIODS   12
             PRINT ERRORS   Y
      CONTROL REPORT DEST
   ACCOUNTING REPORT DEST
             CAP INT RATE
       CAP INT ANNUAL COST
                 ITC DATE
                 ITC RATE
      RECALCULATE ROLL-UP
      COMPANY DESCRIPTION   COMP
                      ADJ

                                                    CO TO CHANGE*   B050
                                                                ADD MODE
```

Fig. 2-2   **Company Data Entry Screen**

1. Type **A** in ACTION field
2. TAB to COMPANY NAME field and type **BRASS FINE WELD TUBE**.
3. TAB to CURRENT PERIOD field and type **0795**.
4. Type **0695** in PREVIOUS PERIOD field.
5. Type **073195** in CURRENT DATE field.
6. Type **07-31-95** in REPORT DATE field.
7. Type **12** in RETENTION PERIODS field.
8. TAB to PRINT ERRORS field and type **Y**.
9. TAB to COMPANY DESCRIPTION field and type **COMP**.
   ** All other fields will default to system defaults. **
10. Press ENTER to update this screen.

```
= CA ========================COMPANY DATA ENTRY========================= CO: B050

                         ACTION  A
                         STATUS  A
                   COMPANY NAME   BRASS FINE WELD TUBE

                 CURRENT PERIOD   0795
                PREVIOUS PERIOD   0695
                   CURRENT DATE   073195
                    REPORT DATE   07-31-95
             ACCOUNTING PERIODS   12
              RETENTION PERIODS   12
                   PRINT ERRORS   Y
             CONTROL REPORT DEST  1
          ACCOUNTING REPORT DEST  1
                   CAP INT RATE
              CAP INT ANNUAL COST
                       ITC DATE
                       ITC RATE
             RECALCULATE ROLL-UP  N
            COMPANY DESCRIPTION   COMP
                            ADJ

     M10  INPUT OK, DEPRESS ENTER TO ACCEPT                          CO TO CHANGE*
                                                                 B050     ADD MODE
```

Fig. 2-3   Company Data Entry Screen - Accept Input

1. Press ENTER to accept if all input and defaults are correct.
   If not, correct input then press ENTER.

Company Data Entry Field Descriptions

CO

COMPANY NUMBER is a user assigned code that uniquely identifies the company.

ACTION

ACTION CODE specifies that information is to be added, changed, or deleted from the file. It is required for adds and deletes since change is the default. Deleting a record deletes all records subordinate to it. To delete information, the record key (company number) and name are required and must be entered exactly as they are on the file.

> A = Add a new record to the file
> C = Change an existing record (default)
> D = Delete an existing record and all subordinate records

STATUS

COMPANY STATUS CODE specifies whether a company is active, marked for deletion, or on hold. No maintenance activity is allowed, no calculations are performed and no reports are produced for a company unless the status is active. A deleted status occurs when an action code of "D" is entered for a company.

> A = Active (default)
> D = Deleted (set by the system, cannot be input by user)
> H = Hold

COMPANY NAME

COMPANY NAME is the name printed in the heading of all reports. The company name is required when the action code is "A" or "D". The name is used to verify the correct company is being deleted. It must be spelled and punctuated exactly as it is on the file.

CURRENT PERIOD

CURRENT ACCOUNTING PERIOD is the current accounting fiscal year and period.

PREVIOUS PERIOD

PREVIOUS ACCOUNTING PERIOD is the previous accounting year and period. The current accounting period automatically becomes the previous accounting period when the current period is updated if the Compute cycle and Accounting Report cycle have both been run for the company.

CURRENT DATE

CURRENT DATE is the current calendar month, day, and year for the company.

REPORT DATE

REPORT DATE is the date printed on reports. It may be entered in any format and may consist of any combination of characters. For example: "2ND QTR" or "YEAR END" or "07-31-95".

ACCOUNTING PERIODS

ACCOUNTING PERIODS is the number of accounting periods in the company fiscal year. It indicates whether 13 period accounting is in effect.

> 12 = Use 12 months per year (default)
> 13 = Use 13 periods per year

RETENTION PERIODS

RETENTION PERIODS designates the number of periods that closed projects are kept on the Master File before being moved to the Project History File. Closed projects do not move to the History File until after the year-end of the year in which they are closed.

PRINT ERRORS

ERRORS ONLY option determines which transactions are printed on the Edit/Update Reports (CPR200/220/240/380). All transactions can be reported, or just the ones with errors.

N = Print all transactions (default)
Y = Print only transactions with errors.

CONTROL REPORT DEST

CONTROL REPORT DESTINATION is the report splitter destination file for all control reports.

01 = Route to hardcopy print (default)
02 - 13 = Route to file specified

ACCOUNTING REPORT DEST

ACCOUNTING REPORT DESTINATION is the default report splitter destination file for accounting reports which do not have a destination explicitly specified.

01 = Route to hardcopy print (default)
02 - 13 = Route to file specified

CAP INT RATE

INTEREST RATE is the interest rate used in computing capitalized interest cost. This is the annual weighted average interest rate of the company borrowings.

This field is currently not being used.

CAP INT ANNUAL COST

INTEREST COST is the actual interest incurred. This is the maximum amount of interest that can be capitalized using the company interest rate.

This field is currently not being used.

ITC DATE

ITC EFFECTIVE DATE is the date the investment tax credit (ITC) rate became effective.

This field is currently not being used.

ITC RATE

INVESTMENT TAX CREDIT (ITC) RATE is the percentage rate applied to qualified investments to compute the investment tax credit amount. This rate is used for capital expenditures or assets installed on or after the ITC effective date. If no rate is entered, the system determines the appropriate rate based on expenditure date or the date the asset entered service.

This field is currently not being used.

RECALCULATE ROLL-UP

RECALCULATE CONTROL indicates if this company should have its roll-up totals recalculated and whether or not to update the Project Accounting Master File.

> N = Do not recalculate (default)
> F = Final (recalculate and update master)
> T = Trial (recalculate and report only - no update)

COMPANY DESCRIPTION

COMPANY DESCRIPTION is a descriptive title abbreviation. The field appears on reports in front of the company number.

ADJ

ADJUSTMENT CODE specifies that the amounts input are to be added to or subtracted from, or are to replace the associated amounts on the file.

> Blank = Replace amounts on file with input amounts
> A = Add input amounts to amounts on file.
> S = Subtract input amounts from amounts on file

Changing A Company

The company information can be changed by using the Company Data Entry (CA) online screen. The company number is required to identify the company being changed. Only the individual fields to be changed need to be entered.

Practical Applications

Change the current period, current date, and report date in order to move to the next month of processing.

```
═ CA ═══════════════════COMPANY DATA ENTRY════════════════════ CO: B050

                    ACTION  A
                    STATUS  A
              COMPANY NAME   BRASS FINE WELD TUBE

            CURRENT PERIOD   0795          0895
           PREVIOUS PERIOD   0695
              CURRENT DATE   073195        083195
               REPORT DATE   07-31-95      08-31-95
        ACCOUNTING PERIODS   12
         RETENTION PERIODS   12
              PRINT ERRORS   Y
       CONTROL REPORT DEST   1
    ACCOUNTING REPORT DEST   1
              CAP INT RATE
         CAP INT ANNUAL COST
                  ITC DATE
                  ITC RATE
        RECALCULATE ROLL-UP  N
       COMPANY DESCRIPTION   COMP
                       ADJ

   M10  INPUT OK, DEPRESS ENTER TO ACCEPT                     CO TO CHANGE*
                                                          B050     ADD MODE
```

Fig. 2-4   Company Data Entry Screen - Change Input

1. TAB to CURRENT PERIOD field and type **0895**.
2. Type **083195** in CURRENT DATE field.
3. Type **08-31-95** in REPORT DATE field.
4. Press ENTER to update this screen.
5. Press ENTER to accept if all input is correct.
   If not, correct input then press ENTER.

Deleting A Company

A company and all the associated projects, work units, commitments, and expenditures can be deleted by using the Company Data Entry online screen. The company number, an action code of "D", and the company name are required. A deleted company remains on the Control File and Master File until the next run of the Master File Purge to History job (CPJ700). When CPJ700 is run, all records for the deleted company are physically removed. Deleted Master File records are also written to the History File.

Chapter 3   Project Set Up

Processing a Project

The Project Accounting System can have an unlimited number of projects within each company. Each project has its own authorizations, budgets, commitments, and expenditures which are tracked during the course of the project. Upon completion of the project, the expenditures can be closed out to an asset or to expense. Each project is identified to the system by project number.

Assigning Project Numbers

The size of the project number is six (6) positions. Project numbers are assigned numerically by the Project Accounting Department. The numbers are unique to each operating area. Project numbers are given a prefix to indicate the area where the project is taking place followed by a four position number indicating the year and sequential order for that year.

27 - 3525

Indicates series number 3000 (Brass mill), project beginning in year 1995, sequentially the 25th project of the year.

Indicates the project will take place in the annealing area of the Brass mill.

Adding A Project

A project is added to the System by using the Project Data Entry (PA) online screen. The company number, project number, an action code of "A", and the project name are required. The company number must specify a currently active company. The balance of the project fields can be entered as needed for the project.

practical Applications

Set up a project using the following CAR (Capital Appropriations Request) as the basis. (Figure 3-1)

CAPITAL APPROPRIATION REQUEST
OC 6510 REV. 9/90   *INSTRUCTIONS: Refer to CAR*
Manual

	DATE PREPARED	CAR NUMBER
	July 1, 1995	09-0525

PROJECT TITLE	APPROPRIATION INVOLVES (CHECK ONE)		
Office Reorganization to accommodate computer	X OLIN SPENDING		CAP LEASE

OPERATING UNIT	PROJECT SPONSOR	APPROPRIATION AMOUNT
General Services	Stanley J. Pala, M.D.	$1,926.00

LOCATION	DEPARTMENT NAME AND NUMBER	BUILDING NAME AND NUMBER
East Alton, IL	Medical Dept - 8331	0014

AMOUNT INCLUDED IN STRATEGIC PLAN	AMOUNT INCLUDED IN BUDGET	CAR CLASSIFICATION
	$1,926.00	5B

PROJECT SCOPE AND OBJECTIVES

To purchase:

    #75-00380 NOVA COMPUTER DESK, DOUBLE PEDESTAL
    18" VIEW PORT-MONITOR SUPPORT
    KEYBOARD DRAWER-MULTIIPLUG POWER STRIP

    #75-58090 OPEN HUTCH FOR DESK

    CWM-4224-27 TYPING/PRINTER TABLE

1	AMOUNT TO BE CAPITALIZED (LINE NO. 1 OF ECONOMIC EVALUATION)	$1,426.00	5	CASH RECOVERY PERIOD	N/A	9	ESTIMATED PROJECT DURATION (MONTHS)	I MONTH
2	AMOUNT TO BE EXPENSED (LINE NO. 27 OF ECONOMIC EVALUATION)	$500.00	6	ROI	N/A	10	SCHEDULE	THIS YEAR $1,926.00
				NORMAL YEAR	N/A		OF	
3	TOTAL (MUST AGREE WITH APPROPRIATION AMOUNT ABOVE)	$1,926.00	7	DCFRR	N/A		PROPOSED	NEXT YEAR
				TIME PERIOD	N/A		EXPENDITURES	
4	WORKING CAPITAL NORMAL YEAR	N/A	8	NET GAIN (LOSS) ON RETIREMENTS (BOX 7 OF FORM OC-6514)	N/A			FOLLOWING YEAR

OPERATING UNIT SIGNATURES				
SPONSOR	DATE			DATE
S. J. Pala	07/01/95	S. L. Fields		
	DATE			DATE
D. C. Gilkison		J. G. Horton		
	DATE			DATE
L. J. Aubrecht				

Fig. 3-1   Capital Appropriation Request

1. Go to Project Data Entry (PA) screen (Figure 3-2) either by using the |SPA
   command, or by entering **PA** in the First Screen field on the File Maintenance
   Sign-on screen.

```
= PA ========================PROJECT DATA ENTRY==========================CO: B050

       PROJECT
ACTN   052500            PROJECT NAME

TYPE STAT CAP 1245 INT ITC SELF SCH START EST-CMP RVS-CMP PCT ACT-CMP CLOSE
CD   CD   EXP 1250 CD  CD  CD   CD  DATE  DATE    DATE    CMP DATE    PER


--------------------------------AUTHORIZATION--------------------------------- ADJ
NUMBER         DATE   CAPITAL AMT   EXPENSE AMT   TOTAL AMT         CD


--------------BUDGET-------------  INTEREST  PRINCIPAL   ANNUAL   ADJ  GL CD   SOURCE
NUMBER        DATE   VER    RATE   BORROWED   INTEREST  CD

----- RESPONSIBILITY----        ACCOUNT   CENTER   CPL    CDT DTL1  DTL2  LC  DTL3


GRP DIV FUNC DEPT  PR LN      FCST        CTL EST       OH RTE  REQ#      ASSET NO

   NO RECORD FOUND                                                     ADD MODE
```

Fig. 3-2   Project Data Entry Screen - Inquiring on Project

2. First, inquire on the project number by typing **052500** under PROJECT field
   and pressing ENTER.
   If the Project has not previously been entered, the message "NO RECORD
   FOUND" will appear at the bottom of the screen. Continue with setting up the
   project.

```
══ PA ═══════════════════════PROJECT DATA ENTRY═══════════════════════CO: B050

        PROJECT
ACTN    052500            PROJECT NAME
  A     052500            OFFICE REORGANIZATION TO ACCOMMODATE COMPUTER
TYPE  STAT CAP  1245 INT ITC SELF SCH  START   EST-CMP RVS-CMP PCT ACT-CMP CLOSE
CD    CD   EXP  1250 CD  CD  CD   CD   DATE    DATE    DATE    CMP DATE    PER
5B                                             083195

-----------------------------------AUTHORIZATION------------------------------- ADJ
 NUMBER          DATE    CAPITAL AMT   EXPENSE AMT   TOTAL AMT        CD
                 070195    1426          500

--------------BUDGET------------    INTEREST    PRINCIPAL    ANNUAL    ADJ   GL CD   SOURCE
 NUMBER         DATE    VER    RATE         BORROWED     INTEREST  CD


----- RESPONSIBILITY----       ACCOUNT    CENTER   CPL    CDT  DTL1  DTL2  LC  DTL3
PALA, S. J.                    1615100    8331     GSV    000  052500      40


GRP  DIV  FUNC DEPT  PR LN      FCST       CTL EST     OH RTE  REQ#     ASSET NO
09                  5

                                                                      ADD MODE
```

Fig. 3-3   Project Data Entry Screen - Adding A Project

3. Type **A** below ACTION code.
4. Type **052500** below PROJECT field.
5. Type **OFFICE REORGANIZATION TO ACCOMMODATE COMPUTER** below
   PROJECT NAME field.
6. TAB to TYPE CD field and type **5B**.
7. TAB to EST-CMP DATE field and type **083195**.
8. TAB to DATE field under AUTHORIZATION and type **070195**.
9. Type **1426** below CAPITAL AMT field.
10. TAB to EXPENSE AMT field and type **500**.
11. TAB to RESPONSIBILITY field and type project sponsor's name in this order:
    Last Name, First initial. Middle initial.
    PALA, S. J.
12. TAB to ACCOUNT field and type **1615100** (under 50K).
13. Type **8331** (department number) below CENTER field.
14. Type **GSV** (corporate product line) below CPL field.
15. Type **000** below CDT field.
16. Type **052500** (project accounting project number) below DTL1 field.
17. TAB to LC field and type **40** (East Alton).
18. TAB to GRP field and type **09**.
19. TAB to PR LN field and type **5**.
20. Press ENTER to update this screen.

```
== PA ======================PROJECT DATA ENTRY======================CO: B050

        PROJECT
ACTN    052500              PROJECT NAME
  A     052500              OFFICE REORGANIZATION TO ACCOMMODATE COMPUTER
TYPE  STAT  CAP  1245  INT  ITC  SELF  SCH  START  EST-CMP  RVS-CMP  PCT  ACT-CMP  CLOSE
CD    CD    EXP  1250  CD   CD   CD    CD   DATE   DATE     DATE     CMP  DATE     PER
 5B    A    C     4    N    N    Y     Y           083195

----------------------------AUTHORIZATION----------------------------------  ADJ
 NUMBER          DATE     CAPITAL AMT      EXPENSE AMT      TOTAL AMT        CD
                 070195  1426              500                1926

---------BUDGET---------      INTEREST     PRINCIPAL     ANNUAL    ADJ   GL CD    SOURCE
 NUMBER        DATE    VER     RATE        BORROWED      INTEREST  CD
                       1                                                            N

----- RESPONSIBILITY----        ACCOUNT    CENTER    CPL       CDT  DTL1  DTL2   LC  DTL3
PALA, S. J.                     1615100    8331      GSV       000  052500       40

GRP  DIV  FUNC  DEPT   PR LN       FCST        CTL EST        OH RTE  REQ#      ASSET NO
09                       5

M10 INPUT OK, DEPRESS ENTER TO ACCEPT                                      ADD MODE
```

Fig. 3-4   Project Data Entry Screen - Accept Input

21. Press ENTER to accept if all input and defaults are correct.
    If not, correct input then press ENTER.

Project Data Entry Field Descriptions

PROJECT

PROJECT is the user defined code that uniquely identifies the project.

PROJECT NAME

PROJECT NAME is a general description of the project.

TYPE CD

PROJECT TYPE CODE allows projects to be classified.

Class 1A	Capacity Maintenance (Maint & Replacement)
Class 1B	Capacity Maintenance (OSHA, Safety, Loss Prev)
Class 2	Environmental Protection
Class 3A	Cost Reduction (Nonenergy)
Class 3B	Cost Reduction (Energy)
Class 4	New Capacity
Class 5A	Support Facilities (Manufacturing)
Class 5B	Support Facilities (People)
Class 5C	Support Facilities (R&D)
Class 5D	Support Facilities (Other)

STAT CD

PROJECT STATUS CODE is the status of the project.

A = Active (default)
B = Budgeted
C = Closed
E = Estimated
F = Funded (approved)
H = Hold
P = Proposed
X = Expenditures Only

CAP EXP

PROJECT CAPITAL/EXPENSE CODE indicates how expenditures are capitalized or expensed.

> C = Capitalize the expenditures for corporate and tax books (default)
> E = Expense the expenditures for corporate and tax books
> B = Capitalize the expenditure for the corporate book, and expense it for the tax book
> T = Capitalize the expenditure for the tax book, and expense it for the corporate book

1245 1250

PROJECT 1245/1250 CODE defines the project as being either "section 1245" or "section 1250" property.

> 4 = 1245 personal property (default)
> 5 = 1250 real property

INT CD

PROJECT INTEREST CODE determines if capitalized interest is calculated.

> Y = Calculate capital interest cost
> N = Do not calculate capital interest cost (default)

ITC CD

PROJECT INVESTMENT TAX CREDIT (ITC) CODE indicates if the project is eligible for investment tax credit for qualified progress expenditures.

> N = Project is not eligible for tax credit (default)
> Y = Project is eligible for tax credit
> E = Project is eligible for tax credit with reduced rate.

SELF CD

PROJECT SELF CODE identifies the project as being self-constructed for the purpose of the ITC progress payments.

N = Project is not self-construct
Y = Project is self-construct (default)

SCH CD

PROJECT SCHEDULE CODE indicates if the project is on schedule.

Y = Project is on schedule (default)
N = Project is behind schedule.

START DATE

PROJECT START DATE is the actual date the project was started.

EST-CMP DATE

PROJECT ESTIMATED COMPLETION DATE is the original estimated completion date for the project.

RVS-CMP DATE

PROJECT REVISED COMPLETION DATE is the latest estimated completion date for the project.

PCT CMP

PROJECT PERCENT COMPLETED is an estimated percentage of completion for the project.

ACT-CMP DATE

PROJECT COMPLETION DATE is the actual date the project was completed.

CLOSE PER

PROJECT CLOSE PERIOD is the accounting period when the project was closed.

AUTHORIZATION NUMBER

PROJECT AUTHORIZATION NUMBER is the authorization number assigned to the project.

AUTHORIZATION DATE

PROJECT AUTHORIZATION DATE is the date funds were authorized for the project.

AUTHORIZATION CAPITAL AMT

PROJECT AUTHORIZED CAPITAL AMOUNT is the amount authorized for capitalized expenditures for the project. The sum of this filed and the Project Authorized Expense Amount will equal the Project Authorized (Total) Amount.

AUTHORIZATION EXPENSE AMT

PROJECT AUTHORIZED EXPENSE AMOUNT is the amount authorized for expensed expenditures for the period. The sum of this field and the Project Authorized Capital Amount will equal the Project Authorized (Total) Amount.

AUTHORIZATION TOTAL AMT

PROJECT AUTHORIZED AMOUNT is the total amount authorized to be expended for the project. It is the sum of the Project Authorized Capital Amount and the Project Authorized Expense Amount. This field is recomputed every time there is a change to either of these amount fields.

ADJ CD

ADJUSTMENT CODE specifies that the amounts input are to be added to or subtracted from, or are to replace the associated amounts on file.

> Blank = Replace amounts on file with input amounts
> A = Add input amounts to amounts on file
> S = Subtract input amounts from amounts on file

BUDGET NUMBER

PROJECT BUDGET NUMBER is the budget item number assigned to the project.

BUDGET DATE

PROJECT BUDGET DATE is the date the original budget amount for the project was approved.

BUDGET VER

PROJECT BUDGET VERSION identifies the current version of the budget for the project. Each project can have up to nine different budgets.

INTEREST RATE

PROJECT INTEREST RATE is the weighted average interest rate for the specific borrowings for the project.

PRINCIPAL BORROWED

PROJECT PRINCIPAL AMOUNT is the principal amount of the specific borrowings for the project.

ANNUAL INTEREST

PROJECT INTEREST COST is the actual interest cost incurred for the specific borrowings for the project. This is the maximum amount of interest that can be capitalized using the project interest rate.

ADJ CD

ADJUSTMENT CODE specifies that the amounts input are to be added to or subtracted from, or are to replace the associated amounts on file.

> Blank = Replace amounts on file with input amounts
> A = Add input amounts to amounts on file
> S = Subtract input amounts from amounts on file

GL CD

PROJECT GL CODE determines wether GL detail activity should be accumulated for expenditures related to this project.

> N = Do not accumulate GL detail activity (default)
> Y = Accumulate GL detail activity

SOURCE

PROJECT SOURCE CODE designates where the project originated. Its usage and values are user defined.

RESPONSIBILITY

PROJECT RESPONSIBILITY designates who is responsible for the project. This is normally the project sponsor.

ACCOUNT

PROJECT GENERAL LEDGER ACCOUNT is the general ledger account number assigned to the project.

> 1615100 = Project total is less than $50,000
> 1615200 = Project total is greater than $50,000

CENTER

PROJECT GENERAL LEDGER COST CENTER is the general ledger cost center number assigned to the project.

CPL

PROJECT CORPORATE PRODUCT LINE is the general ledger product line assigned to the project.

CORP	LOC	PROD-LINE	DEPT
B060	40	BMP	6300-6499
B060	40	FAB	6500-6599
B060	40	FWT	6800-6899

B060	40	GRP	6000-6299
B060	40	GSV	8300-8499
B060	40	BSV	6900-6999
B060	40	BMP	6700-6799
B060	80	SOM	ALL
B060	85	MRL	ALL
B092	92	IND	ALL
B092	94	BRY	ALL
W010	10	NAA	ALL

CDT

PROJECT CORPORATE DESIGNATED DETAIL is the general ledger detail assigned to the project. This will always be "000" for new projects.

DTL1

PROJECT DETAIL ONE is the general ledger detail one field assigned to the project. This is the project number.

DTL2

PROJECT DETAIL TWO is not currently used when setting up a project.

LC

PROJECT LOCATION CODE is the general ledger location code assigned to this project.

      40 = Brass East Alton
      80 = Somers
      85 = MRL
      92 = Indianapolis
      94 = Bryan
      10 = Winchester

DTL3

PROJECT DETAIL THREE is not currently used when setting up a project.

GRP

PROJECT GROUP NUMBER is used to indicate which area the project is taking place in. (Prefix of the project number - see assigning project numbers section.)

GROUP NUMBER	DESCRIPTION
01	Major Expansion Programs
07	Common Services
08	Waste Water Treatment Facility
09	Administration & Finance
10	Cupping
12	Fabricating
13	Brass Marketing
14	Data Processing/Mgmt Systems
15	Corporate Resources
16	Fineweld Tube
22	Somers
23	MRL
25	Mill - Rolling
27	Mill - Annealing
29	Mill - Cleaning
31	Mill - Slitting
33	Mill - Other
34	Mill - Plant 3 and 4
35	Mill Products Production Control
37	Brass Mill Products Engineering
39	Zn 1 Metallurgical Eng, Lab, and QA
41	Brass Mill Maintenance
43	Industrial Engineering
47	Zn 1 Storeroom and Purchasing
51	Utilities
55	Environmental Eng and Industrial Hygiene
61	Casting
63	Casting - Rolling
65	Casting - Raw Material
67	Casting - Other
69	Casting - Maintenance
71	Zn 17 Metallurgical Eng and Lab
73	Zn 17 Storeroom
81	A.J. Oster
86	Indianapolis

DIV

PROJECT DIVISION indicates whether this is a special projects department project.
Enter "SPL" if this is a project sponsored by Brass Special Projects Engineering
Department.

FUNC

Currently not being used.

PR LN

This field is used for the estimated number of years the assets of this project will be
depreciated. It is a user defined field.

FCST

Currently not being used.

CTL EST

Currently not being used.

OH RTE

Currently not being used.

REQ

Currently not being used.

ASSET NO

Currently not being used.

Project Summary Screen

The Project Summary (PS) screen is used to display one line of information for each project in the company. The Project Summary screen is an inquiry only screen. The inquiry key is the Project number.

```
= PS ═══════════════════════════PROJECT SUMMARY═══════════════════════════CO: B050

        PROJECT
        052500

                    OA   AUTHORIZED   COMMITTED AMT      EXPENDED AMT
                 O  OC    CAPITAL     CAPITAL COMMIT    CAPITAL EXPEND
    PROJECT      F  OE    EXPENSE     EXPENSE COMMIT    EXPENSE EXPEND      FORECAST

    052500                  1926               1400             1055
                            1426               1050              855
                             500                350              200
```

Fig. 3-5   Project Summary Screen

Inquire on the project number by typing **052500** under PROJECT field and pressing ENTER

The top line of information represents the totals for the project, the second line represents the capital portion, and the bottom line represents the expense portion for this project.

Project Summary Fields

OF

PROJECT FORECAST OVER AUTHORIZED is a code indicating if the cost forecast for the project exceeds the amount authorized for the project.

Blank = The project forecast cost is less than the project authorized amount or the amount authorized is zero

Y = The project forecast cost is greater than the project authorized amount

OA

PROJECT OVER AUTHORIZED is a code indicating the amount committed for the project exceeds the total amount authorized for the project.

Blank = The project commitment amount is less than the project authorized amount or the authorized amount is zero

Y = The project commitment amount is greater than the project authorized amount

OC

PROJECT OVER CAPITAL AUTHORIZED is a code indicating if the amount committed for the project exceeds the total capitalized amount authorized for the project.

Blank = The project capital commitment amount is less than the project authorized capital amount or the authorized capital amount is zero

Y = The project capital commitment amount is greater than the project authorized capital amount

OE

PROJECT OVER EXPENSE AUTHORIZED is a code indicating if the amount committed for the project exceeds the total expensed amount authorized for the project.

Blank =   The project expense commitment amount is less than the
           project authorized expense amount or the authorized capital
           amount is zero

Y   =   The project expense commitment amount is greater than the
           project authorized expense amount

AUTHORIZED

PROJECT AUTHORIZED AMOUNT is the total amount authorized to be
expended for the project.

CAPITAL

PROJECT AUTHORIZED CAPITAL AMOUNT is the amount authorized for
capitalized expenditures for the project.

EXPENSE

PROJECT AUTHORIZED EXPENSE AMOUNT is the amount authorized for
expensed expenditures for the project.

COMMITTED AMT

PROJECT COMMITMENT AMOUNT is the total dollar amount committed
for the project.

CAPITAL COMMIT

PROJECT CAPITAL COMMITMENT AMOUNT is the dollar amount
committed for the project for capitalized expenditures.

EXPENSE COMMIT

PROJECT EXPENSE COMMITMENT AMOUNT is the dollar amount
committed for the project for expensed expenditures.

EXPENDED AMT

PROJECT EXPENDITURE AMOUNT is the total expenditure amount for all detail expenditures in the project.

CAPITAL EXPEND

PROJECT CAPITAL EXPENDITURE AMOUNT is the sum of the expenditure amount for all detail capitalized expenditures in the project.

EXPENSE EXPEND

PROJECT EXPENSE EXPENDITURE AMOUNT is the sum of the expenditure amount for all detail expensed expenditures in the project.

FORECAST

PROJECT FORECAST COST is an estimate of the actual project cost based on the actual amount committed and the percent complete.

Changing A Project

The project information can be changed by using the Project Data Entry (PA) online screen. The company number and project number are required to identify the project being changed. First, inquire on the project by typing the Project Number in the PROJECT field and pressing ENTER. Only the individual fields to be changed need to be entered. Once entered, press ENTER to update screen. Press ENTER to accept when the system displays the message "M10 INPUT OK, PRESS ENTER KEY TO ACCEPT".

Deleting A Project

A project and all the associated work units, commitments and expenditures can be deleted by using the Project Delete (PD) online screen. The company number, an action code of "D", the project number and name are required. First, inquire on the project by typing the Project Number in the PROJECT field. Type "D" in the action field and press ENTER. Press ENTER to accept when the system displays the message "M10 INPUT OK, PRESS ENTER KEY TO ACCEPT". Deletes are applied in the next batch Edit/Update Cycle.

Chapter 4   Work Unit Set Up

Processing a Work Unit

A work unit is a way to divide a project into manageable units of work. A project must have at least one work unit and can have an unlimited number of work units within the project. The way each project is broken down into work units is totally user defined.

Each work unit has it's own budgets, commitments, and expenditures which are tracked during the course of the project and work unit. When the project or the work unit is completed, the expenditures can be closed out to an asset or to expense. Each work unit is identified to the system by project number and work unit number.

Assigning Work Unit Numbers

The size of the work unit number is six (6) positions. The system will accept any alphanumeric characters as a work unit number, provided the work unit is unique within the individual project. This allows for the same work unit to be used for a number of projects in the same company. It is generally the responsibility of the project sponsor to assign work units and their corresponding values.

Examples of work units currently being utilized are as follows:

GEN000	General Expenditures (usually used for smaller CARs)
GEN001	General expense
ELQ000	Electrical equipment
ELI000	Electrical installation
MEQ000	Mechanical equipment
MEI000	Mechanical installation
PIP000	Piping
FND000	Foundations

Note that work units which are to be expensed rather than capitalized should end with "001" rather than "000". This is a user defined field, however because of the interface with accounts payable this convention should be utilized.

(Note: Winchester uses a different convention. Work units that are to be expensed rather than capitalized end with "201" rather than the normal "101".)

Adding A Work Unit

A work unit is added to the System by using the Work Unit Data Entry (WA) online screen. The company number, an action code of "A", the project number, the work unit number, and the work unit name are required. The company number must specify a currently active company, and the project number must be for a project that has been added to the system.

When adding a work unit for a project, the values for the following fields default to the values for the corresponding fields from the project:

- TYPE CODE
- STATUS CODE
- CAPITAL EXPENSE CODE
- SECTION 1245/1250 PROPERTY CODE
- INTEREST CODE
- INVESTMENT TAX CREDIT CODE
- SELF-CONSTRUCT CODE
- START DATE
- ESTIMATED COMPLETION DATE
- BUDGET NUMBER
- BUDGET DATE
- RESPONSIBILITY
- GENERAL LEDGER INFORMATION (ACCOUNT, CENTER, CPL, CDT, DTL1, DTL2, LC, DTL3)
- LOCATION LEVELS (GRP, DIV, FUNC, DEPT, PRLN)
- USER FIELDS (FCST, CTL EST, OH RTE, REQ#)
- ASSET NUMBER
- GENERAL LEDGER CODE
- SOURCE CODE

Consequently, values for these fields do not need to be entered unless the desired values for the work unit are different than those for the project.

Practical Applications

Set up a work unit for general capital (GEN000) and a work unit for general expense (GEN001) for CAR 052500.

1. Go to Work Unit Data Entry (WA) screen (Figure 4-1) either by using the |SWA command, or by entering **WA** in the First Screen field on the File Maintenance Sign-on screen. (Note: the project must be set up prior to setting up the work unit.)

```
== WA ═══════════════════════WORK UNIT DATENTRY═══════════════════════CO: B050

         PROJECT          WORK UNIT
  ACTN   052500           #                          PROJECT NAME

  TYPE  STAT  CAP  1245  INT  ITC  SELF  SCH
   CD    CD   EXP  1250   CD   CD   CD    CD


  START      --- ESTIMATED ---     --- REVISED ---       PCT    ACT-CMP  CLOSE  ADJ
  DATE         DATE    COST         DATE    COST          CMP     DATE    PER    CD


  --------BUDGET--------  INTEREST  PRINCIPAL   ANNUAL     PROGRESS  ADJ   GL CD    SOURCE
  NUMBER    DATE           RATE     BORROWED   INTEREST    PAYMENTS  CD


  ----- RESPONSIBILITY----       ACCOUNT   CENTER   CPL     CDT  DTL1   DTL2   LC  DTL3


  GRP DIV FUNC DEPT  PR LN        FCST        CTL EST        OH RTE  REQ#        ASSET NO

     NO RECORD FOUND                                                         ADD MODE
```

Fig. 4-1   Work Unit Data Entry Screen - Inquiring on Work Unit

2. First, inquire on the project number and work unit by typing **052500** under PROJECT field, and typing a **#** under WORK UNIT field (using # as a wild card will inquire on any work unit which may be set up for this project), then pressing ENTER.
   If no work unit has previously been entered, the message "NO RECORD FOUND" will appear at the bottom of the screen. Continue with setting up the work unit.

```
═ WA ═══════════════════WORK UNIT DATA ENTRY═══════════════════CO: B050

      PROJECT            WORK UNIT
ACTN  052500             #                        PROJECT NAME
 A    052500             GEN000                   GENERAL
TYPE  STAT CAP 1245 INT ITC SELF SCH
 CD   CD   EXP 1250 CD  CD  CD   CD


START      --- ESTIMATED ---    --- REVISED ---      PCT    ACT-CMP  CLOSE  ADJ
DATE       DATE      COST        DATE    COST         CMP    DATE     PER    CD
                     1426

--------BUDGET--------  INTEREST  PRINCIPAL   ANNUAL     PROGRESS  ADJ  GL CD    SOURCE
NUMBER        DATE      RATE      BORROWED    INTEREST   PAYMENTS  CD


----- RESPONSIBILITY----        ACCOUNT    CENTER    CPL      CDT  DTL1  DTL2  LC  DTL3


GRP  DIV  FUNC  DEPT  PR LN        FCST         CTL EST       OH RTE  REQ#      ASSET NO
                                                1426

   NO RECORD FOUND                                                           ADD MODE
```

Fig. 4-2   Work Unit Data Entry Screen - Adding A Work Unit

3. Type **A** below ACTION code.

4. Type **052500** below PROJECT field.

5. Type **GEN000** below WORK UNIT field.

6. Type **GENERAL** below WORK UNIT NAME field.

7. TAB to ESTIMATED COST field and type **1426**.

8. TAB to CTL EST field and type **1426**.

9. Press ENTER to update this screen.

```
WA ═══════════════════WORK UNIT DATA ENTRY════════════════════CO: B050

        PROJECT             WORK UNIT
ACTN    052500              #                PROJECT NAME
  A     052500              GEN000           GENERAL
TYPE  STAT  CAP  1245  INT  ITC  SELF  SCH
CD    CD    EXP  1250  CD   CD   CD    CD
5B    A     C    4     N    N    Y     Y

START      --- ESTIMATED ---     --- REVISED ---    PCT    ACT-CMP  CLOSE  ADJ
DATE        DATE    COST         DATE    COST        CMP     DATE     PER    CD
                    1426

--------BUDGET--------  INTEREST  PRINCIPAL   ANNUAL    PROGRESS  ADJ   GL CD    SOURCE
NUMBER      DATE        RATE      BORROWED    INTEREST  PAYMENTS  CD
                                                                         N

----- RESPONSIBILITY----     ACCOUNT    CENTER    CPL     CDT  DTL1  DTL2   LC   DTL3
PALA, S. J.                  1615100    8331      GSV     000  052500       40

GRP  DIV  FUNC  DEPT   PR LN       FCST        CTL EST       OH RTE  REQ#     ASSET NO
09                                             1426

   M10 INPUT OK, DEPRESS ENTER TO ACCEPT                              ADD MODE
```

Fig. 4-3   Work Unit Data Entry Screen - Accept Input

10. Press ENTER to accept if all input and defaults are correct.
    If not, correct input then press ENTER.

```
==WA ====================WORK UNIT DATA ENTRY====================CO: B050

        PROJECT           WORK UNIT
ACTN    052500            #                    PROJECT NAME
 A      052500            GEN001               GENERAL EXPENSE
TYPE STAT CAP 1245 INT ITC SELF SCH
CD   CD  EXP 1250 CD  CD  CD   CD
          E


START   --- ESTIMATED ---    --- REVISED ---     PCT    ACT-CMP  CLOSE  ADJ
DATE       DATE     COST        DATE    COST      CMP    DATE     PER    CD
                    500


--------BUDGET--------  INTEREST  PRINCIPAL   ANNUAL    PROGRESS  ADJ  GL CD  SOURCE
NUMBER     DATE         RATE      BORROWED    INTEREST  PAYMENTS  CD


----- RESPONSIBILITY----        ACCOUNT   CENTER   CPL    CDT  DTL1  DTL2  LC  DTL3



GRP DIV FUNC DEPT  PR LN     FCST        CTL EST      OH RTE  REQ#     ASSET NO
                                         500

   NO RECORD FOUND                                             ADD MODE
```

Fig. 4-4   **Work Unit Data Entry Screen - Adding A Work Unit for Expense**

To enter a work unit for expense follow these steps:

1. Type **A** below ACTION code.
2. Type **052500** below PROJECT field.
3. Type **GEN001** below WORK UNIT field.
4. Type **GENERAL EXPENSE** below WORK UNIT NAME field.
5. TAB to CAP EXP field and type **E**.
6. TAB to ESTIMATED COST field and type **500**.
7. TAB to CTL EST field and type **500**.
8. Press ENTER to update this screen.

```
WA ═══════════════════════WORK UNIT DATA ENTRY═══════════════════════CO: B050

        PROJECT              WORK UNIT
ACTN    052500               #                    PROJECT NAME
  A     052500               GEN001               GENERAL EXPENSE
TYPE  STAT  CAP  1245  INT  ITC  SELF  SCH
 CD    CD   EXP  1250   CD   CD   CD    CD
 5B    A     E    4     N    N    Y     Y


START       --- ESTIMATED ---      --- REVISED ---       PCT    ACT-CMP  CLOSE   ADJ
DATE        DATE      COST          DATE    COST          CMP     DATE     PER    CD
                      500


--------BUDGET--------  INTEREST   PRINCIPAL    ANNUAL     PROGRESS   ADJ   GL CD   SOURCE
 NUMBER      DATE        RATE      BORROWED    INTEREST    PAYMENTS   CD
                                                                           N


----- RESPONSIBILITY----       ACCOUNT    CENTER   CPL    CDT   DTL1   DTL2   LC   DTL3
PALA, S. J.                    1615100     8331    GSV    000   052500        40


GRP  DIV  FUNC  DEPT   PR LN        FCST          CTL EST          OH RTE   REQ#       ASSET NO
09                                                500

   M10  INPUT OK, DEPRESS ENTER TO ACCEPT                                      ADD MODE
```

Fig. 4-5   Work Unit Data Entry Screen - Accept Input

9. Press ENTER to accept if all input and defaults are correct.
   If not, correct input then press ENTER.

Work Unit Data Entry Field Descriptions

PROJECT

PROJECT is the user defined code that uniquely identifies the project.

WORK UNIT

WORK UNIT is a user assigned code that uniquely defines the major subdivisions of the project.

WORK UNIT NAME

WORK UNIT NAME is a general description of the work unit.

REVISED DATE

WORK UNIT REVISED COMPLETION DATE is the latest estimated completion date for the work unit.

REVISED COST

WORK UNIT REVISED COMPLETION COST is the latest estimated cost to complete the work unit.

PCT CMP

WORK UNIT PERCENT COMPLETED is an estimated percentage of completion for the work unit.

ACT-CMP DATE

WORK UNIT COMPLETION DATE is the actual date the work unit was completed.

CLOSE PER

WORK UNIT CLOSE PERIOD is the accounting period when the work unit was closed.

ADJ CD

ADJUSTMENT CODE specifies that the amounts input are to be added to or subtracted from, or are to replace the associated amounts on file.

> Blank = Replace amounts on file with input amounts
> A = Add input amounts to amounts on file
> S = Subtract input amounts from amounts on file

INTEREST RATE

WORK UNIT INTEREST RATE is the weighted average interest rate for the specific borrowings for the work unit.

PRINCIPAL BORROWED

WORK UNIT PRINCIPAL AMOUNT is the principal amount of the specific borrowings for the work unit.

ANNUAL INTEREST

WORK UNIT INTEREST COST is the actual interest cost incurred for the specific borrowings for the work unit. This is the maximum amount of interest that can be capitalized using the work unit interest rate.

PROGRESS PAYMENTS

WORK UNIT PROGRESS PAYMENTS is the actual amount of progress payments received for partial completion of the work unit.

ADJ CD

ADJUSTMENT CODE specifies that the amounts input are to be added to or subtracted from, or are to replace the associated amounts on file.

Blank = Replace amounts on file with input amounts
A = Add input amounts to amounts on file
S = Subtract input amounts from amounts on file

DTL2

WORK UNIT DETAIL TWO is not currently used when setting up a work unit.

DTL3

WORK UNIT DETAIL THREE is not currently used when setting up a work unit.

ASSET NO

Currently not being used.

Work Unit Summary Screen

The Work Unit Summary (WS) screen is used to display summary information for a project and three lines of information for each work unit in the project specified. The Work Unit Summary screen is an inquiry only screen.

```
=WS ================WORK UNIT SUMMARY=====================CO: B050

   PROJECT            WORK UNIT              PROJECT NAME         O  OA OA O  PCT
   052500             GEN000         OFFICE REORGANIZATION TO     A  C  E  F  CMP
   052500


   AUTHORIZED         COMMITTED      ATH CAPITAL      CAPITAL  CMT           EXPENSE CMT
   FORECAST           EXPENDED       ATH EXPENSE      CAPITAL  EXP           EXPENSE EXP
      1926               1400            1426            1050                    350
                         1055             500             855                    200


                             TOTAL BUDGET   COMMITTED       EXPENDED
                  O  OB OB O  CAPITAL        CAPITAL EXP     CAPITAL EXP
   WORK UNIT      B  C  E  F  EXPENSE        EXPENSE CMT     EXPENSE EXP     FORECAST
   GEN000                                       1050            855
                                                1050            855
```

Fig. 4-6   Work Unit Summary Screen

Inquire on the project number and work unit number by typing **052500** under PROJECT field and **GEN000** under WORK UNIT field.

The top line of information represents the capital protion committed and expended for the work unit. The second line of information represents the expense portion committed and expended for the work unit.

Detail Work Unit Summary Fields

PCT CMP

PROJECT PERCENT COMPLETED is an estimated percentage of completion for the project.

AUTHORIZED

PROJECT AUTHORIZED AMOUNT is the total amount authorized to be expended for the project.

FORECAST

PROJECT FORECAST COST is an estimate of the actual project cost based on the actual amount committed and the percent complete. The project forecast cost is zero if the project percent complete is zero.

COMMITTED

PROJECT COMMITMENT AMOUNT is the total dollar amount committed for the project.

EXPENDED

PROJECT EXPENDITURE AMOUNT is the total expenditure amount for all detail expenditures in the project.

ATH CAPITAL

PROJECT AUTHORIZED CAPITAL AMOUNT is the amount authorized for capital expenditures for the project.

ATH EXPENSE

PROJECT AUTHORIZED EXPENSE AMOUNT is the amount authorized for expensed expenditures for the project.

CAPITAL CMT

PROJECT CAPITAL COMMITMENT AMOUNT is the dollar amount committed for the project for capitalized expenditures.

CAPITAL EXP

PROJECT CAPITAL EXPENDITURE AMOUNT is the sum of the expenditure amount for all detail capitalized expenditures in the project.

EXPENSE CMT

PROJECT EXPENSE COMMITMENT AMOUNT is the dollar amount committed for the project for expensed expenditures.

EXPENSE EXP

PROJECT EXPENSE EXPENDITURE AMOUNT is the sum of the expenditure amount for all detail expenditures in the project.

OB

WORK UNIT OVER BUDGET indicates if the work unit commitment amount exceeds the current budget amount for the work unit.

Blank = The work unit commitment amount is less than the current budget amount for the work unit or the budget is zero
Y = The work unit commitment amount is greater than the current budget amount for the work unit.

OB C

WORK UNIT OVER CAPITAL BUDGET indicates if the work unit capital commitment amount exceeds the current capital budget amount for the work unit.

Blank = The work unit commitment amount is less than the capital budget amount for the work unit or the budget is zero
Y = The work unit commitment amount is greater than the capital budget amount for the work unit.

OB E

WORK UNIT OVER EXPENSE BUDGET indicates if the work unit expense commitment amount exceeds the current expense budget amount for the work unit.

Blank = The work unit commitment amount is less than the expense budget amount for the work unit or the budget is zero
   Y = The work unit commitment amount is greater than the expense budget amount for the work unit.

OF

WORK UNIT FORECAST OVER BUDGET is a code indicating if the cost forecast for the work unit exceeds the amount budgeted for the work unit.

Blank = The work unit forecast cost is less than the work unit budgeted amount or the budget is zero
   Y = The work unit forecast cost is greater than the work unit budgeted amount.

Changing A Work Unit

The work unit information can be changed by using the Work Unit Data Entry (WA) online screen. The company number, project number and work unit number are required to identify the work unit being changed. First, inquire on the work unit by typing the Project Number in the PROJECT field, and the work unit number in the WORK UNIT field. Only the individual fields to be changed need to be entered. Once entered, press ENTER to update screen. Press ENTER to accept when the system displays the message "M10 INPUT OK, PRESS ENTER KEY TO ACCEPT".

Deleting A Work Unit

A work unit and all the associated commitments and expenditures can be deleted by using the Work Unit Delete (WD) online screen. The company number, an action code of "D", the project number and work unit are required. First, inquire on the work unit by typing the Project Number in the Project field and the work unit in the Work Unit field. Type "D" in the action field and press ENTER. Press ENTER to accept when the system displays the message "M10 INPUT OK, PRESS ENTER KEY TO ACCEPT". Deletes are applied in the next batch Edit/Update Cycle.

Chapter 5   Commitment Set Up

Processing a Commitment

A commitment is used to track committed amounts by work unit within a project. Purchase orders, service orders, and work orders are examples of commitments. There can be an unlimited number of commitments for a work unit and they are identified to the system by project number, work unit number and commitment number.

Assigning Commitment Numbers

The size of the commitment number is fifteen (15) positions. The system will accept any alphanumeric characters as a commitment number, provided the commitment is unique within the individual project and work unit.

Generally, the commitments are fed automatically from the purchasing system (purchase orders and service orders) and the maintenance system (work orders). Occasionally, however, a commitment may need to be set up in the system.

Examples of common commitments that need to be set up are:

FRT	Freight charges
TRANSPORTATION	Transportation charges
PROTECT	Protection charges

Adding A Commitment

A commitment is added for a project and work unit by using the Detail Commitment Data Entry (KA) online screen. The company number, an action code of "A", the project number, the work unit number, and the commitment number and name are required. The company number must specify a currently active company, and the project and work unit numbers must be for a project and work unit that are currently active in the system.

When adding a commitment, the values for the following fields default to the values for the corresponding fields from the work unit:

- TYPE CODE

- STATUS CODE
- CAPITAL EXPENSE CODE
- SECTION 1245/1250 PROPERTY CODE
- INTEREST CODE
- INVESTMENT TAX CREDIT CODE
- GENERAL LEDGER INFORMATION (ACCOUNT, CENTER, CPL, CDT, DTL1, DTL2, LC, DTL3)
- LOCATION LEVELS (GRP, DIV, FUNC, DEPT, PRLN)
- USER FIELDS (FCST, CTL EST, OH RTE, REQ#)
- GENERAL LEDGER CODE
- SOURCE CODE

Consequently, values for these fields do not need to be entered unless the desired values for the commitment are different than those for the work unit. The commitment period will default to the current accounting date and period, if an accounting date and period are not entered.

Practical Applications

Set up a commitment for freight charges (FRT) in the amount of $125 for CAR 052500. (Note: the project and work unit must be set up prior to setting up the commitment.)

1. Go to Commitment Data Entry (KA) screen (Figure 5-1) either by using the |SKA command, or by entering **KA** in the First Screen field on the File Maintenance Sign-on screen. (Note: the project and work unit must be set up prior to setting up the commitment.)

```
== KA =================COMMITMENT DATA ENTRY================CO: B050

       PROJECT          WORK UNIT        COMMITMENT
ACTN   052500           GEN000           FRT            COMMITMENT NAME


TYPE STAT CAP 1245 INT ITC ACCOUNTING                          UNIT  DO  ADJ
 CD   CD  EXP 1250 CD  CD  DATE PER     QUANTITY   UNIT PRICE  MEAS  CD   CD


-------- VENDOR --------
  NAME           NUMBER


ACCOUNT   CENTER   CPL   CDT   DTL1   DTL2   LC   DTL3   GL CD   SOURCE



GRP DIV FUNC DEPT  PR LN



  FCST      CTL EST    OH RTE   REQ#


 NO RECORD FOUND                                               ADD MODE
```

Fig. 5-1   Commitment Data Entry Screen - Inquiring on Commitment

2. First, inquire on the project number , work unit and commitment number by typing **052500** under PROJECT field, typing **GEN000** under WORK UNIT field, and typing **FRT** under COMMITMENT field, then pressing ENTER. If no commitment has previously been entered, the message "NO RECORD FOUND" will appear at the bottom of the screen. Continue with setting up the commitment.

```
== KA =========================COMMITMENT DATA ENTRY========================CO: B050

          PROJECT          WORK UNIT        COMMITMENT
   ACTN   052500           GEN000           FRT              COMMITMENT NAME
    A     052500           GEN000           FRT              FREIGHT CHARGES

   TYPE STAT CAP 1245 INT ITC ACCOUNTING                                    UNIT  DO  ADJ
   CD   CD   EXP 1250 CD  CD  DATE PER        QUANTITY   UNIT PRICE          MEAS  CD  CD
                                                         125

      -------- VENDOR --------
      NAME          NUMBER



   ACCOUNT    CENTER    CPL    CDT    DTL1    DTL2    LC    DTL3    GL CD    SOURCE



   GRP DIV FUNC DEPT  PR LN



      FCST         CTL EST     OH RTE   REQ#
                                        FRT

      NO RECORD FOUND                                                         ADD MODE
```

Fig. 5-2   Commitment Data Entry Screen - Adding A Commitment

3. TAB to below ACTION field and type **A**.

4. Type **052500** below PROJECT field.

5. Type **GEN000** below WORK UNIT field.

6. Type **FRT** below COMMITMENT field.

7. TAB to COMMITMENT NAME field and type **FREIGHT CHARGES**.

8. TAB to UNIT PRICE field and type **125**.

9. TAB to REQ# field and type **FRT**.

10. Press ENTER to update this screen.

```
══ KA ═══════════════════COMMITMENT DATA ENTRY════════════════════CO: B050

        PROJECT            WORK UNIT       COMMITMENT
 ACTN   052500             GEN000          FRT           COMMITMENT NAME
        052500             GEN000          FRT           FREIGHT CHARGES

 TYPE STAT CAP 1245 INT ITC ACCOUNTING                        UNIT  DO  ADJ
 CD   CD   EXP 1250 CD  CD  DATE    PER    QUANTITY  UNIT PRICE MEAS CD  CD
 5B   A    C   4    N   N   073195  0795                  125

    - - - - - - - - VENDOR - - - - - - - -
   NAME              NUMBER


 ACCOUNT    CENTER    CPL    CDT   DTL1    DTL2    LC    DTL3    GL CD    SOURCE
 1615100    8331      GSV    000   052500          40


 GRP DIV FUNC DEPT   PR LN
 09


    FCST        CTL EST      OH RTE   REQ#
                                      FRT

   M10 INPUT OK, DEPRESS ENTER TO ACCEPT                          ADD MODE
```

Fig. 5-3   Commitment Data Entry Screen - Accept Input

11. Press ENTER to accept if all input and defaults are correct.
    If not, correct input then press ENTER.

Commitment Data Entry Field Descriptions

PROJECT

PROJECT is the user defined code that uniquely identifies the project.

WORK UNIT

WORK UNIT is a user assigned code that uniquely defines the major subdivisions of the project.

COMMITMENT

COMMITMENT is a user assigned code that uniquely identifies the detail commitment.

COMMITMENT NAME

COMMITMENT NAME is a general description of the detail commitment.

ACCOUNTING DATE

DETAIL COMMITMENT DATE is the date of the commitment. It defaults to the current date for the company if it is not entered.

ACCOUNTING PERIOD

DETAIL COMMITMENT PERIOD is the accounting period charged with the commitment. It defaults to the current period for the company if it is not entered.

QUANTITY

DETAIL COMMITMENT QUANTITY is the number of items ordered.

UNIT PRICE

DETAIL COMMITMENT PRICE is the unit price for each item ordered.

UNIT MEAS

DETAIL COMMITMENT UNIT OF MEASURE is a user defined code that describes the commitment quantity.

DO CD

DETAIL COMMITMENT DOLLAR ONLY CODE indicates a commitment which has an established dollar amount but no associated quantity or number of units.

Y = Process commitment as "dollar only"
N = Do not process commitment as "dollar only" (default)

ADJ CD

ADJUSTMENT CODE specifies that the amounts input are to be added to or subtracted from, or are to replace the associated amounts on file.

Blank = Replace amounts on file with input amounts
A = Add input amounts to amounts on file
S = Subtract input amounts from amounts on file

VENDOR NAME

DETAIL COMMITMENT VENDOR NAME is the short vendor name for the commitment.

VENDOR NUMBER

DETAIL COMMITMENT VENDOR NUMBER is the vendor number for the commitment.

Commitment Summary Screen

The Detail Commitment Summary (KS) screen is used to display summary
information for a work unit and one line of information for each commitment
for the work unit specified. The Commitment Summary screen is an inquiry
only screen.

```
== KS ================ DETAIL COMMITMENT SUMMARY================CO: B050

        PROJECT         WORK UNIT                          OVER  FCST  PCT
        052500          GEN000              WORK UNIT NAME  BGT  OVER  CMP
        052500          GEN000                 GENERAL

        AMOUNT          AMOUNT      AMOUNT         AMOUNT       AMOUNT
        BUDGETED        COMMITTED   OPEN COMMIT    EXPENDED     FORECAST
                         1050          195           855

COMMITMENT      C/E    PER   DESCRIPTION      OVR    COMMITTED    OPEN COMMIT
12-123456        C    07/95  OFFICE FURNITURE              1050          195
```

Fig. 5-4   Detail Commitment Summary Screen

Inquire on the project number and work unit number by typing **052500** under
PROJECT field and **GEN000** under WORK UNIT field, then pressing ENTER.

The individual commitments for this work unit are displayed alphanumerically.

Detail Commitment Summary Fields

AMOUNT BUDGETED

WORK UNIT AMOUNT BUDGETED is the total amount budgeted for the work unit.

AMOUNT COMMITTED

WORK UNIT COMMITMENT AMOUNT is the total dollar amount committed for the work unit. It is the sum of the amount committed but not yet spent and the amount already spent.

AMOUNT OPEN COMMIT

WORK UNIT OPEN COMMIT is the sum of the open commitment amount for the detail commitments in the work unit.

AMOUNT EXPENDED

WORK UNIT EXPENDITURE AMOUNT is the total expenditure amount for all detail expenditures in the work unit.

AMOUNT FORECAST

WORK UNIT FORECAST COST is an estimate of the actual work unit cost based on the actual amount committed and the percent complete. The work unit forecast cost is zero if the work unit percent complete is zero.

OPEN COMMIT

DETAIL OPEN COMMITMENT is the amount of the commitment not yet spent.

Changing A Commitment

The commitment information can be changed by using the Detail Commitment Data Entry (KA) online screen. The company number, project number, work unit and commitment number are required to identify the commitment being changed. First, inquire on the commitment by typing the Project Number in the Project field, the work unit number in the Work Unit field, and the commitment number in the Commitment field. Only the individual fields to be changed need to be entered. Once entered, press ENTER to update screen. Press ENTER to accept when the system displays the message "M10 INPUT OK, PRESS ENTER KEY TO ACCEPT".

Deleting A Commitment

A commitment and all the associated expenditures can be deleted by using the Detail Commitment Delete (KD) online screen. The company number, an action code of "D", the project number, work unit, and commitment number are required. First, inquire on the commitment by typing the Project Number in the Project field, the work unit in the Work Unit field, and the commitment number in the Commitment field. Type "D" in the action field and press ENTER. Press ENTER to accept when the system displays the message "M10 INPUT OK, PRESS ENTER KEY TO ACCEPT". Deletes are applied in the next batch Edit/Update Cycle.

Chapter 6   Expenditure Set Up

Processing an Expenditure

An expenditure is used to track the actual amount spent for a work unit within a project. Invoices, protection charges, and freight charges are examples of expenditures. There may be an unlimited number of expenditures for a work unit and they are identified to the system by project number, work unit number and expenditure number.

Expenditures may be related to a specific commitment, and multiple expenditures may be related to the same commitment. To indicate that an expenditure is related to a specific commitment, simply enter the commitment number.

Assigning Expenditure Numbers

The size of the expenditure number is fifteen (15) positions. The system will accept any alphanumeric characters as an expenditure number, provided the expenditure number is unique within the individual project and work unit.

Generally, the expenditures are fed automatically from the accounts payable system (vouchers) and the maintenance system (work order expenditure numbers). Occasionally, however, an expenditure may need to be set up in the system. An expenditure may need to be set up if a manual journal entry was made to the general ledger.

Adding An Expenditure

An expenditure is added for a project and work unit by using the Detail Expenditure Data Entry (EA) online screen. The company number, an action code of "A", the project number, the work unit number, and the expenditure number and name are required. The company number must specify a currently active company, and the project and work unit numbers must be for a project and work unit that are currently active in the system.

When adding an expenditure, the values for the following fields default to the values for the corresponding fields from the work unit or commitment, if a commitment number is indicated:

- TYPE CODE
- STATUS CODE
- CAPITAL EXPENSE CODE
- SECTION 1245/1250 PROPERTY CODE
- INTEREST CODE
- INVESTMENT TAX CREDIT CODE
- GENERAL LEDGER INFORMATION (ACCOUNT, CENTER, CPL, CDT, DTL1, DTL2, LC, DTL3)
- LOCATION LEVELS (GRP, DIV, FUNC, DEPT, PRLN)
- USER FIELDS (FCST, CTL EST, OH RTE, REQ#)
- VENDOR NUMBER (commitment only)
- VENDOR NAME (commitment only)
- GENERAL LEDGER CODE
- SOURCE CODE

Consequently, values for these fields do not need to be entered unless the desired values for the expenditure are different than those for the work unit or commitment. The expenditure date and period will default to the current accounting date and period, if an accounting date and period are not specified.

Practical Applications

Set up an expenditure for freight charges (FRT0795) for the month of July, 1995 in the amount of $55 for CAR 052500. (Note: the project, work unit, and commitment must be set up prior to setting up the expenditure.)

1. Go to Expenditure Data Entry (EA) screen (Figure 6-1) either by using the |SEA command, or by entering **EA** in the First Screen field on the File Maintenance Sign-on screen. (Note: the project, work unit, and commitment must be set up prior to setting up the expenditure.)

```
== EA ================DETAIL EXPENDITURE DATA ENTRY==================CO:  B050

        PROJECT          WORK UNIT      EXPENDITURE
ACTN    052500           GEN000         FRT0795          EXPENDITURE NAME


TYPE  STAT  C/E  45/50  INT  ITC  DATE  PER          QUANTITY         MDSE AMT    UOM    ADJ


COMMIT NO        CLS PER       VND NAME     VND NO


INV NO    INV DATE   ACCOUNT    CENTER    CPL    CDT    DTL1    DTL2    LC    DTL3


GRP  DIV  FUNC  DEPT   PR LN      GL CD    SOURCE


    FCST        CTL EST     OH RTE   REQ#                    ASSET NO


    NO RECORD FOUND                                                      ADD MODE
```

Fig. 6-1   Expenditure Data Entry Screen - Inquiring on Expenditure

2. First, inquire on the project number , work unit and expenditure number by typing **052500** under PROJECT field, typing **GEN000** under WORK UNIT field, and typing **FRT0795** under EXPENDITURE field, then pressing ENTER.
   If no expenditure has previously been entered, the message "NO RECORD FOUND" will appear at the bottom of the screen. Continue with setting up the expenditure.

```
══ EA ═══════════════════DETAIL EXPENDITURE DATA ENTRY═══════════════CO: B050

        PROJECT         WORK UNIT        EXPENDITURE
ACTN    052500          GEN000           FRT0795      EXPENDITURE NAME
  A     052500          GEN000           FRT0795      FREIGHT CHGS - JULY, 95

TYPE  STAT  C/E  45/50  INT  ITC  DATE  PER        QUANTITY      MDSE AMT    UOM    ADJ
                                                                 55

COMMIT NO      CLS PER       VND NAME      VND NO
FRT

INV NO    INV DATE   ACCOUNT    CENTER    CPL    CDT    DTL1    DTL2    LC    DTL3

GRP  DIV  FUNC  DEPT   PR LN      GL CD   SOURCE


  FCST        CTL EST     OH RTE   REQ#               ASSET NO


  NO RECORD FOUND                                               ADD MODE
```

Fig. 6-2   Expenditure Data Entry Screen - Adding An Expenditure

3. TAB to below ACTION field and type **A**.
4. Type **052500** below PROJECT field.
5. Type **GEN000** below WORK UNIT field.
6. Type **FRT0795** below EXPENDITURE field.
7. TAB to EXPENDITURE NAME field and type **FREIGHT CHGS - JULY, 95**.
8. TAB to MDSE AMT field and type **55**.
9. TAB to COMMIT NO field and type **FRT**.
10. Press ENTER to update this screen.

```
= EA ================DETAIL EXPENDITURE DATA ENTRY================CO: B050

        PROJECT          WORK UNIT        EXPENDITURE
ACTN    052500           GEN000           FRT0795       EXPENDITURE NAME
  A     052500           GEN000           FRT0795       FREIGHT CHGS - JULY, 95

TYPE STAT C/E 45/50 INT ITC DATE      PER      QUANTITY      MDSE AMT   UOM    ADJ
 1A   A   C    45    N   N  073195    0795                      55

COMMIT NO      CLS PER      VND NAME     VND NO
FRT

INV NO     INV DATE   ACCOUNT    CENTER    CPL    CDT    DTL1     DTL2    LC    DTL3
                      1615100    8331      GSV    000    052500           40

GRP DIV FUNC DEPT   PR LN     GL CD   SOURCE
09

   FCST       CTL EST     OH RTE    REQ#                     ASSET NO
                                    FRT

   M10 INPUT OK, DEPRESS ENTER TO ACCEPT                              ADD MODE
```

Fig. 6-3   Expenditure Data Entry Screen - Accept Input

11. Press ENTER to accept if all input and defaults are correct.
    If not, correct input then press ENTER.

Expenditure Data Entry Field Descriptions

PROJECT

PROJECT is the user defined code that uniquely identifies the project.

WORK UNIT

WORK UNIT is a user assigned code that uniquely defines the major subdivisions of the project.

EXPENDITURE

EXPENDITURE is a user assigned code that uniquely identifies the detail expenditure.

EXPENDITURE NAME

EXPENDITURE NAME is a general description of the detail expenditure.

QUANTITY

DETAIL EXPENDITURE QUANTITY is the number of items for the expenditure.

MDSE AMT

DETAIL EXPENDITURE MERCHANDISE AMOUNT is the dollar amount of goods or services for this expenditure item.

UOM

DETAIL EXPENDITURE UNIT OF MEASURE is a user defined code that describes the expenditure quantity.

ADJ CD

ADJUSTMENT CODE specifies that the amounts input are to be added to or subtracted from, or are to replace the associated amounts on file.

Blank = Replace amounts on file with input amounts
A = Add input amounts to amounts on file
S = Subtract input amounts from amounts on file

TAX

DETAIL EXPENDITURE TAX AMOUNT is the dollar amount of taxes allocated to this expenditure item.

FREIGHT

DETAIL EXPENDITURE FREIGHT AMOUNT is the dollar amount of freight charges allocated to this expenditure.

MISC AMT 1

DETAIL EXPENDITURE MISCELLANEOUS AMOUNT 1 is the dollar amount of miscellaneous amount 1 allocated to this expenditure.

MISC AMT 2

DETAIL EXPENDITURE MISCELLANEOUS AMOUNT 2 is the dollar amount of miscellaneous amount 2 allocated to this expenditure item.

EXP AMT

DETAIL EXPENDITURE AMOUNT is the total amount of the expenditure. The detail expenditure amount is calculated internally and cannot be entered directly
EXP AMT = MDSE AMT + TAX + FREIGHT + MISC AMT 1 + MISC AMT 2

COMMIT NO

DETAIL EXPENDITURE COMMIT identifies the detail commitment to which the detail expenditure is related. Detail expenditures do not have to be related to

detail commitments, but if they are, the commitment must be established before the expenditure.

CLS PER

DETAIL EXPENDITURE CLOSED PERIOD is the accounting period that the detail expenditure was closed.

VND NAME

DETAIL EXPENDITURE VENDOR NAME is the vendor name for the expenditure.

VND NUMBER

DETAIL EXPENDITURE VENDOR NUMBER is he vendor number for the expenditure.

INV NO

DETAIL EXPENDITURE INVOICE NUMBER is the vendor's invoice number for the expenditure.

INV DATE

DETAIL EXPENDITURE INVOICE DATE is the vendor's invoice date for the expenditure.

Expenditure Summary Screen

The Detail Expenditure Summary (ES) screen is used to display summary
information for a work unit and one line of information for each expenditure
for the work unit specified. The Expenditure Summary screen is an inquiry
only screen.

```
== ES ====================DETAIL EXPENDITURE SUMMARY===================CO: B050

      PROJECT            WORK UNIT                                OVER FCST  PCT
      052500             GEN000                   WORK UNIT NAME   BGT OVER  CMP
      052500             GEN000                   GENERAL

      AMOUNT            AMOUNT       AMOUNT        AMOUNT      AMOUNT       AMOUNT
      BUDGETED         EXPENDED     FORECAST     OPEN EXPEND  CAPITALIZED  EXPENDED
                          855                       855

   EXPENDITURE   EXT ST CE 45 IN IT   PER       DESCRIPTION           EXPENDED
   V123456           A  C  4  N  N   07/95    COMPUTER DESK               500
   V987654           A  C  4  N  N   07/95    OPEN HUTCH                  355
```

Fig. 6-4   Detail Expenditure Summary Screen

Inquire on the project number and work unit number by typing **052500** under
Project field and **GEN000** under work unit field.

The individual expenditures for this work unit are displayed alphanumerically.

Detail Expenditure Summary Fields

AMOUNT BUDGETED

WORK UNIT BUDGET AMOUNT is the total amount budgeted for the work unit. It is the sum of the work unit total annual budget amount for each fiscal year budgeted.

AMOUNT EXPENDED

WORK UNIT EXPENDITURE AMOUNT is the total expenditure amount for all detail expenditures in the work unit.

AMOUNT FORECAST

WORK UNIT FORECAST AMOUNT is an estimate of the actual work unit cost based on the actual amount committed and the percent complete. The work unit forecast cost is zero if the work unit percent is zero.

AMOUNT OPEN EXPEND

WORK UNIT OPEN EXPENDITURE is the work unit expenditure amount that has not been closed to either a capital or expense account.

AMOUNT CAPITALIZED

WORK UNIT CLOSED TO CAPITAL is the work unit expenditure amount that has been closed to a capital account. It is the sum of the capital detail expenditure amounts that are closed in the work unit.

AMOUNT EXPENSED

WORK UNIT CLOSED TO EXPENSE is the work unit expenditure amount that has been closed to an expense account. It is the sum of the expense detail expenditure amounts that are closed in the work unit.

Changing An Expenditure

The expenditure information can be changed by using the Detail Expenditure Data Entry (EA) online screen. The company number, project number, work unit and expenditure number are required to identify the expenditure being changed. First, inquire on the expenditure by typing the Project Number in the Project field, the work unit number in the Work Unit field, and the expenditure number in the Expenditure field. Only the individual fields to be changed need to be entered. Once entered, press ENTER to update screen. Press ENTER to accept when the system displays the message "M10 INPUT OK, PRESS ENTER KEY TO ACCEPT".

Deleting An Expenditure

An expenditure can be deleted by using the Detail Expenditure Delete (ED) online screen. The company number, an action code of "D", the project number, work unit, and expenditure number are required. First, inquire on the expenditure by typing the Project Number in the Project field, the work unit in the Work Unit field, and the expenditure number in the Expenditure field. Type "D" in the action field and press ENTER. Press ENTER to accept when the system displays the message "M10 INPUT OK, PRESS ENTER KEY TO ACCEPT". Deletes are applied in the next batch Edit/Update Cycle.

Chapter 7   Reporting

Project Accounting Standard Reports

A comprehensive set of reports is offered to maintain a complete audit trail of all data in the system and to monitor projects.

The system provides a full range of standard Accounting and Control Reports including the following:

Control Reports

CPR085	Detail File Extract Report
CPR200	Control File Edit/Update Report
CPR220	Mass Maintenance Edit
CPR240	Master File Edit/Update Report
CPR380	Recalculation Summary
CPR400	Report Options Edit List
CPR500	Translation Edit/Select Report
CPR520	Fixed Asset Report
CPR560	General Ledger Interface Edit List
CPR580	Journal Distribution Report
CPR600	Control File Inquiry Report
CPR640	Master File Inquiry Report
CPR700	Master File Purge to History Report

Accounting Reports

CPR20	Project Summary Report
CPR21	Project Status Report
CPR22	Project Expenditures Report
CPR23	Project Budget Summary Report
CPR24	Project Budget Report
CPR25	Project Expenditures Versus Budget Report
CPR30	Work Unit Summary Report
CPR31	Work Unit Status Report
CPR32	Work Unit Expenditures Report
CPR34	Work Unit Budget Report
CPR35	Work Unit Expenditures Versus Budget Report
CPR40	Commitment Activity Report
CPR41	Commitment Status Report
CPR50	Expenditure Activity Report

CPR51	Investment Credit Form 3468 - Part II
CPR52	Expenditure Investment Tax Credit Report
CPR53	Expenditure Capital Interest Cost Report

Control Reports Descriptions

CPR85 - Detail File Extract Report

The Detail File Extract Report shows edit error on the control input to CPP085, and shows a process summary if no control input errors are found. This report is produced each time CPP085 is run (daily).

CPR200 - Control File Edit/Update Report

The Control File Edit/Update Report shows all input transactions processed in a given run of the Control File Edit/Update. Inputs with errors are reported with diagnostics, and retained on the Detail File for correction. Valid transactions can be optionally listed as they are applied to the Control File. This report is produced each time the Control File Edit/Update Job (CPJ200) is run (daily).

CPR220 - Mass Maintenance Edit

The Mass Maintenance Edit lists all transactions for the current mass maintenance process and the asociated errors are shown with diagnostics. It also shows all detail transactions generated by the mass maintenance process which will be input into the batch Master File Edit/Update process. This report is produced each time the Master File Mass Maintenance Job (CPJ220) is run (daily).

CPR240 - Master File Edit/Update Report

The Master File Edit/Update Report shows all input transactions currently present for updating the Master File. Inputs with errors are reported with diagnostics, and are retained on the Detail File for correction. Valid transactions are listed as they are applied to the Master File. This report is produced each time the Master File Edit Update Job (CPJ240) is run (daily).

CPR380 - Recalculation Summary

The Recalculation Summary lists the Project Accounting roll-up totals at the Company, Project, Work Unit and Commitment levels. The report shows the current totals on the Project Accounting Master File and the amounts when these totals are recalculated. The report will also identify any discrepancies. This report is produced for each requesting company, each time the Recalculate Roll-up Totals Job (CPJ380) is run (upon request).

CPR400 - Report Options Edit List

The Report Options Edit List report lists the accounting report controls being used in the current accounting report cycle. The report options and selection criteria are shown to provide an audit trail. Any report definition errors are also shown. This report is produced each time the Accounting Reports Job (CPJ400) is run (daily).

CPR500 - Translation Edit/Select Report

The translation Edit/Select Report lists all transactions for the current asset translation process and the associated errors are shown with diagnostics. It also shows all detail expenditures selected to be translated into fixed assets. (The translation process is not being utilized at this time, therefore no report is produced).

CPR520 - Fixed Asset Report

The Fixed Asset Report shows the assets being created or adjusted by the translation process. The report is used to verify the asset translation process for trial translation. It is also a complete audit trail of the assets being passed from the Project Accounting System to the Fixed Asset System for real translation. (The translation process is not being utilized at this time, therefore no report is produced).

CPR560 - General Ledger Interface Edit List

The General Ledger Interface Edit List shows the General Ledger options being used for the current cycle of the General Ledger Interface, and any definition errors in those options. It also shows any General Ledger Detail File records which cannot be processed by the current set of options. This report is produced each time the General Ledger Interface Job (CPJ560) is run. (The General

Ledger Interface is not being utilized at this time, therefore no report is produced.)

CPR580 - Journal Distribution Report

The Journal Distribution Report is a complete audit trail of the expenditure related journal entries being passed from the Project Accounting System to the General Ledger System. This report is produced each time the General Ledger Interface Job (CPJ560) is run. (The General Ledger Interface is not being utilized at this time, therefore no report is produced.)

CPR600 - Control File Inquiry Report

The Control File Inquiry Report shows the complete contents of the company, report, distribution pattern and general ledger records on the Project Accounting Control File. This report is produced each time the Control File Print Job (CPJ600) is run (upon request).

CPR640 - Master File Inquiry Report

The Master File Inquiry Report shows the complete contents of the company, project, work unit, commitment and expenditure records on the Project Accounting System Master File. This report is produced each time the Master File Print Job (CPJ640) is run (upon request).

CPR700 - Master File Purge to History Report

The Master File Purge to History Report is a complete audit trial of all projects which are removed from the Project Accounting Master File and written to the Project Accounting History File. This report is produced each time the Master File Purge to History Job (CPJ700) is run (annually).

Standard Accounting Reports Descriptions

All Standard Accounting Reports are run upon request.

CPR20 - Project Summary Report

The Project Summary Report is a summary of the financial information for a project. It shows the amount authorized for the project and compares it to the actual amount committed. Likewise, the authorized capital and expense amounts are compared against the capital and expense commitment amounts. It identifies the projects that are overspent and those that are forecast to be overspent.

CPR21 - Project Status Report

The Project Status Report shows the complete status information for a project. It shows financial amounts, dates, and control codes.

CPR22 - Project Expenditures Report

The Project Expenditures Report shows the current, year-to-date and life-to-date expenditures for a project. It also shows the amount spent that has not been closed, in addition to the break out of expenditures by the capital and expense categories.

CPR23 - Project Budget Summary Report

The Project Budget Summary Report shows the budget amounts on a year-by-year basis for each project.

CPR24 - Project Budget Report

The Project Budget Report shows the budget amounts on a period-by-period basis for each project.

CPR25 - Project Expenditures Versus Budget Report

The Project Expenditures Versus Budget Report compares the actual amount expended for a project to the amount budgeted for the project, and calculates the difference. The report shows either the current, quarterly, year-to-date, or life-to-date amounts based on the Content option selected.

CPR30 - Work Unit Summary Report

The Work Unit Summary Report is a summary of the financial information for a work unit. It shows the amount budgeted for the work unit and compares it to the actual amount committed. It identifies the work units that are overspent, and those that are forecast to be overspent.

CPR31 - Work Unit Status Report

The Work Unit Status Report shows the complete status information for a work unit. It shows financial amounts, dates, and control codes.

CPR32 - Work Unit Expenditures Report

The Work Unit Expenditures Report shows current, year-to-date, and life-to-date expenditures for a work unit. It also shows the amount spent that has not been closed, in addition to the break out of expenditures by the capital and expense categories.

CPR34 - Work Unit Budget Report

The Work Unit Budget Report shows the budget amounts on a period-by-period basis for each work unit.

CPR35 - Work Unit Expenditures Versus Budget Report

The Work Unit Expenditures Versus Budget Report compares the actual amount expended for a work unit to the amount budgeted for the work unit, and calculates the difference. The report shows either the current, quarterly, year-to-date, or life-to-date amounts based on the Content option selected.

CPR40 - Commitment Activity Report

The Commitment Activity Report shows one line of information for each commitment in the accounting period specified by the Report Content Option.

CPR41 - Commitment Status Report

The Commitment Status Report shows the complete status of a commitment. It has the original commitment information and the expenditure amounts against the commitment.

CPR50 - Expenditure Activity Report

The expenditure Activity Report shows one line of information for each expenditure in the accounting period specified by the Report Content Option.

CPR51 - Investment Credit Form 3468 Part II

The Investment Credit Form 3468 Part II has the information required for IRS Form 3468 Part II, the computation of investment credit for qualified progress expenditures.

CPR52 - Expenditure Investment Tax Credit Report

The Expenditure Investment Tax Credit Report shows how investment credit was calculated for qualified progress expenditures. It supports the Investment Credit Form 3468 Part II.

CPR53 - Expenditure Capital Interest Cost Report

The Expenditure Capital Interest Cost Report shows the capital interest cost calculated for a capital expenditure.

Report Options

Each of the accounting reports has a set of options which allows the reports to be tailored to the user's requirements. The report options are:

- **Report Version**

    Each accounting report can be produced with up to nine different versions. Each version has its own reporting options and selection criteria.

- **Report Frequency**

    A report can be produced for the current period, current quarter, or year-end.

- **Report Sequence**

    A report can be sequenced by using one to six separate fields from the master file.

- **Report Totals**

    A report can be totaled on the one to six fields used to sequence it.

- **Report Page Break**

    A report can skip to a new page based on a change in value of the one to six fields used to sequence it.

- **Report Spacing**

    A report can be single or doubled spaced.

- **Report Detail**

    A report can contain detail information and totals, or details can be suppressed and only totals printed.

- **Report Description**

    A report can contain all, part, or none of the additional description for projects, work units, and detail items.

- **Report Subtitle**

    A report can have a user-defined subtitle.

- **Report Selection**

    Selection criteria can be entered for a report to further define the content of the report. The selection process

compares user specified field values against master file fields to determine if the record should be selected for reporting.

- **Report Destination**

  A report can be printed or routed to one of the 12 destination files.

Practical Applications

The main thing to remember in learning reporting procedures is that the best way to learn is by trial and error.

Set up a Project Summary Report (CPR20) using version 9 and sequencing by Project.

```
= CR ===============REPORT OPTIONS DATA ENTRY===============  CO: L040

INQUIRY REPORT NUMBER        20         INQUIRY VERSION        9
        REPORT NUMBER                           VERSION




SEQUENCE BY             1
REFERENCE NAME          2
                        3
                        4
                        5
                        6

FREQUENCY           LOW TOTAL           LOW PAGE
DESCRIPTION         SPACE               DETAIL
CONTENT             ONLINE              BUDGET
DESTINATION


SUBTITLE

M21   NO RECORD FOUND                                          ADD MODE
```

Fig 7-1   Report Options Data Entry Screen - Inquire on Report Version

1. Inquire on the report number and version by typing **20** on the INQUIRY REPORT NUMBER line and **9** on the INQUIRY VERSION line. Press ENTER. If the report has not previously been set up, the message "NO RECORD FOUND" will appear at the bottom of the screen. Continue with setting up the report.

```
═ CR ═════════REPORT OPTIONS DATA ENTRY═══════════════ CO: L040

INQUIRY REPORT NUMBER        20        INQUIRY VERSION      9
          REPORT NUMBER      20               VERSION       9



SEQUENCE BY          1       PROJECT
REFERENCE NAME       2
                     3
                     4
                     5
                     6

FREQUENCY     T      LOW TOTAL    1      LOW PAGE
DESCRIPTION   9      SPACE               DETAIL          Y
CONTENT       L      ONLINE              BUDGET
DESTINATION   1


SUBTITLE                     BY PROJECT

M21  NO RECORD FOUND                                    ADD MODE
```

Fig 7-2   Report Options Data Entry Screen - Set up Report

2. Type **20** by REPORT NUMBER field and **9** by VERSION field.

3. Type **PROJECT** by REPORT SEQUENCE 1 field.

4. TAB to FREQUENCY field and type **T**.

5. Type **1** by LOW TOTAL field

6. TAB to DESCRIPTION field and Type **9**.

7. TAB to DETAIL field and type **Y**.

8. Type **L** by CONTENT field.

9. TAB to DESTINATION field and type **1**.

10. Type **BY PROJECT** in SUBTITLE field.

11. Press ENTER to update this screen.

```
= CR ==============REPORT OPTIONS DATA ENTRY=================== CO: L040

INQUIRY REPORT NUMBER        20          INQUIRY VERSION        9
        REPORT NUMBER        20                   VERSION        9



SEQUENCE BY           1      PROJECT
REFERENCE NAME        2
                      3
                      4
                      5
                      6

FREQUENCY      T      LOW TOTAL     1      LOW PAGE      1
DESCRIPTION    9      SPACE         S      DETAIL        Y
CONTENT        L      ONLINE        N      BUDGET
DESTINATION    1


SUBTITLE                     BY PROJECT

M10   INPUT OK, DEPRESS ENTER TO ACCEPT                        ADD MODE
```

Fig 7-3   Report Options Data Entry Screen - Accept Input

12. Press ENTER to accept if all input and defaults are correct
    If not, correct input then press ENTER.

The procedure described in steps one through twelve set up the report to run. Next, the selection criteria need to be established on the Report Selection Criteria Data Entry (CT) screen.

13. Type | SCT at any location on this screen in order to move to the Selection Criteria Data Entry (CT) Screen.

```
= CT ==============REPORT SELECTION CRITERIA DATA ENTRY============ CO: L040

  INQUIRY REPORT NUMBER        20          INQUIRY VERSION        9
         REPORT NUMBER                           VERSION


  NO   ------------------------------- SELECTION CRITERIA --------------------------------------








  M21   NO RECORD FOUND                                              ADD MODE
```

Fig 7-4   Report Selection Criteria Data Entry Screen - Inquire

14. Inquire on the report number and version by typing **20** on the INQUIRY REPORT
    NUMBER line and **9** on the INQUIRY VERSION line. Press ENTER. If the
    selection criteria has not previously been set up, the message "NO RECORD FOUND"
    will appear at the bottom of the screen. Continue with setting up the selection criteria.

```
= CT ==============REPORT SELECTION CRITERIA DATA ENTRY============= CO: L040

   INQUIRY REPORT NUMBER      20          INQUIRY VERSION       9
              REPORT NUMBER   20                  VERSION       9


NO  --------------------------- SELECTION CRITERIA -------------------------------
  1   PR-STAT-CD = A
  2   PROJECT = 043500;345100










M21  NO RECORD FOUND                                                  ADD MODE
```

**Fig 7-5   Report Selection Criteria Data Entry Screen - Set up
Selection Criteria**

15. Type **20** by REPORT NUMBER field and **9** by VERSION field.

16. Type **1** under NO field to indicate the line number and type **PR-STAT-CD = A**
    under selection criteria field (indicating that you wish to extract only "Active"
    projects).

17. TAB to the next line and type **2** under the 1 (indicating line 2 of selection criteria).
    Type **PROJECT = 043500;345100** to indicate that you wish to extract
    information on these two CAR's only.

18. Press ENTER to update this screen.

**   ** For information on the correct set up of selection criteria value names **
      refer to the Dictionary section of the Project Accounting Manual.**

```
┌─────────────────────────────────────────────────────────────────────────────┐
│ ═ CT ═══════════REPORT SELECTION CRITERIA DATA ENTRY═══════════════ CO: L040  │
│                                                                               │
│  INQUIRY REPORT NUMBER       20        INQUIRY VERSION       9                 │
│            REPORT NUMBER      20               VERSION       9                 │
│                                                                               │
│ NO ───────────────────────── SELECTION CRITERIA ──────────────────────────── │
│  1   PR-STAT-CD = A                                                            │
│  2   PROJECT = 043500;345100                                                  │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
│  M10 INPUT OK, DEPRESS ENTER TO ACCEPT                          ADD MODE       │
└─────────────────────────────────────────────────────────────────────────────┘
```

Fig 7-6   Report Selection Criteria Data Entry Screen - Accept Input

19. Press ENTER to accept if all input is correct and no error messages are received. If error messages are received, correct input then press ENTER.

** See last page of Chapter 7 (Fig 7-7) for Report Example **

Report Options Data Entry Fields

CO

COMPANY NUMBER is a user assigned code that uniquely identifies the company.

REPORT NUMBER

REPORT NUMBER is the accounting report number

VERSION

REPORT VERSION identifies the version of the report. Each version has its own complete set of options. Values are 1 through 9.

1

REPORT SEQUENCE 1 is the reference name of the Master File field used to sequence this version of the report. Company number is the highest sequence field; it precedes all other sequence fields specified, and does not require entry by the user.

2

REPORT SEQUENCE 2 is the reference name of the second Master File field used to sequence this version of the report. REPORT SEQUENCE 3 through 6 are also used to sequence this version of the report.

FREQUENCY

REPORT FREQUENCY specifies when to produce this version of the report. One-time reports are produced in the next reporting cycle, then revert to frequency "N". They are not deleted from the system, and may be reactivated at any time by entering a frequency code.

      A = Annual year end
      C = Current period
      D = Delete this report version from the system
      N = No report produced (default)
      Q = Quarterly
      T = One-time only

LOW TOTAL

REPORT LOW TOTAL specifies the lowest sequence field for which totals are accumulated and printed. The values are 1-6 corresponding to report sequence fields 1-6,

and zero for company totals only. The maximum value is the number of sequence fields specified.

LOW PAGE

REPORT LOW PAGE specifies the lowest sequence field which causes the report to skip to the top of a new page when the value of the field changes. The values are 1-6 corresponding to report sequence fields 1-6, and zero for page break on company number only. The maximum value is the number of sequence fields specified.

DESCRIPTION

REPORT DESCRIPTION controls the printing of the ten lines of project, work unit, commitment or expenditure description

- 0   = Do not print description (default)
- 1-8   = Print the number of lines requested up to the actual number of lines available
- 9   = Print all description lines present

SPACE

REPORT SPACE specifies single or double spacing for the report.

- D = Double spacing
- S = Single spacing (default)

DETAIL

REPORT DETAIL specifies whether details or totals only are to be printed on this version of the report.

- Y = Print details (default)
- N = Print totals only

CONTENT

REPORT CONTENT controls the report content by activity date.

- C = Current activity (default)
- Q = Quarterly activity
- Y = Year-to-date activity
- L = Life- to-date activity

BUDGET

REPORT BUDGET VERSION specifies which version of the budget is to be reported.

    0   = Print current budget version
  1-9 = Print this budget version

DESTINATION

REPORT DESTINATION specifies the accounting report destination file.

    01   = Route to hardcopy print
  02-13   = Route to file specified

SUBTITLE

REPORT SUBTITLE appears on the report under the report title. It can identify the sequence, content, or distribution of the report and is user defined.

Selection Criteria Data Entry Fields

NO

REPORT SELECTION NUMBER is the line number for the selection criteria. The line numbers are 1-9.

SELECTION CRITERIA

REPORT SELECTION is the selection criteria for a report, which allows the user to restrict the content of a version of a report. The selection criteria specifies conditions which must be satisfied in addition to any system conditions for a report. The selection process compares user specified field values with actual Master File field values to determine if the record should be selected for reporting.

Rules for Selection Criteria

Up to 9 selection criteria lines of 64 characters each can be entered for each report.
Selection criteria is free-format and can include spaces between elements of the
syntax. The general format of selection criteria is:

REFNAME (NOT) RELATION VALUE1:VALUE2;VALUE3...AND/OR

REFNAME is the data mapping reference name for the field whose value is to be
tested.

RELATION is the symbol for the type of comparison to be made.

=	Select records with values equal to those specified	
<	Select records with values less than those specified	
>	Select records with values greater than those specified	

The effect of the comparison can be reversed by using the word "NOT" before any of
the relation symbols.

VALUE is the actual field value to be used in the comparison. The maximum length
of the value to be tested is 15 characters, or the length of the field specified by
reference name, whichever is less.

If the reference name specifies a numeric field, the value must be numeric. A numeric
value may include a decimal point (.), and may be preceded by a sign (+ or -).

A character string which includes spaces must be enclosed in single (') or double (")
quotes.

If a date field is used, the value must be entered in MMDDYY format. A period field
must specify a PPYY value format.

If the relation code is "=" or "NOT =", a range of values can be specified with a colon
between the low and high values. A list of independent values can be specified
separated by semicolons.

EXAMPLES:

- Ranges of values are expressed by separating the low and high values of the range by a colon (:)

    Example: PROJECT = 050000:052500

    This extracts all projects from 050000 through 052500.

- Lists of values are separated by semi-colons (;)

    Example: PROJECT = 050000;050500;052500

    This extracts only projects 050000, 050500, and 052500.

- Multiple conditions on a single line can be connected by "AND" or "OR"

    Example: PROJECT = 050000 AND 050500

    This extracts only projects 050000 and 050500.

- Multiple lines of selection criteria on the screen are automatically connected by "AND"

Reference names cannot be used more than once in a single set of selection criteria (i.e., same screen).

BRASS EAST ALTON
COMP L040
CPR20 VERSION 9

PROJECT SUMMARY REPORT
BY PROJECT
REPORT DATE 07-31-95

CURRENT DATE 07/31/95   PAGE   1
CURRENT PERIOD 07/95
SYSTEM DATE 07/27/95

SEQUENCE : PROJECT
043500

PROJECT	NAME DESCRIPTION	0 0 0 0 A C E F	EST-CMP DATE	AUTHORIZED ATH CAPITAL ATH EXPENSE	COMMITTED CAPITAL CMT EXPENSE CMT	OVER/UNDER CAPITAL EXPENSE	EXPENDED CAPITAL EXP EXPENSE EXP	FORECAST COST	PCT CMT CMF
043500	DATA CENTER PC UPGRADE			35,000 35,000 0	25,402 25,402 0	-9,598 -9,598 0	25,402 25,401 0		0 73

			----- TOTAL ---- AUTHORIZED ATH CAPITAL ATH EXPENSE	----- TOTAL ---- COMMITTED CAPITAL CMT EXPENSE CMT	----- TOTAL ---- OVER/UNDER CAPITAL EXPENSE	----- TOTAL ---- EXPENDED CAPITAL EXP EXPENSE EXP	----- TOTAL ---- FORECAST COST
PROJECT 043500		35,000 35,000 0	25,402 25,402 0	-9,598 -9,598 0	25,402 25,402 0	

| 345100 | #6 MILL GAUGE IMPROVEMENT Y Y | | | 100,000 100,000 0 | 130,609 130,609 0 | 30,609 30,609 0 | 98,813 98,812 0 | | 0 131 |

			----- TOTAL ---- AUTHORIZED ATH CAPITAL ATH EXPENSE	----- TOTAL ---- COMMITTED CAPITAL CMT EXPENSE CMT	----- TOTAL ---- OVER/UNDER CAPITAL EXPENSE	----- TOTAL ---- EXPENDED CAPITAL EXP EXPENSE EXP	----- TOTAL ---- FORECAST COST
PROJECT 345100		100,000 100,000 0	130,609 130,609 0	30,609 30,609 0	98,813 98,813 0	
COMPANY L040		135,000 135,000 0	156,010 156,010 0	21,010 21,010 0	124,214 124,214 0	

*** END OF REPORT ***

Chapter 8   Error Corrections

Transaction (error) Correction

All input transactions are added to the Project Accounting System Detail File with a key. The key has five parts:

1. Transaction Set
2. Company Number
3. Sub Key
4. Screen Number
5. Transaction Number

When the Control File Edit/Update Cycle - CPJ200, the Master File Edit/Update Cycle - CPJ240, the Mass Maintenance Edit/Update - CPJ220 or the Translations Edit/Select Cycle - CPJ500 is run, the appropriate transactions are selected from the Detail File and edited. The valid transactions are applied, and the applied flag is updated on the Detail File. The transactions with error are reported on the respective edit reports and the error flag is updated on the Detail File. Each edit report prints a correction header line, which contains the first four parts of the key, before the transactions, and the transactions in error. Each transaction has a transaction number assigned and it is reported along with the error.

All rejected transactions are suspended on the Detail File to be corrected. They can be corrected by using online in "Change Mode". The transactions in error can be corrected using the same online screens that are used to enter the data originally. The screen is selected and placed in "Change Mode" using the online commands. The sub key is entered as the detail file key and the transactions are displayed with the cursor on the first field in error. Just type over the invalid data with the correct value and press the ENTER key. The changed transactions are written back to the Detail File to be processed by the next batch cycle.

Practical Applications

The main thing to remember in learning error correction procedures is that the best way to learn is by trial and error.

```
BRASS EAST ALTON          PROJECT ACCOUNTING MASTER FILE EDIT/UPDATE      CURRENT DATE  07/31/95        PAGE   1
COMP L040                                                                 CURRENT PERIOD 07/95
CPR240                              REPORT DATE 07-31-95                   SYSTEM DATE   08/01/95

IN      1        2        3        4        5        6        7     TRAN    —— ERROR MESSAGE ——          PREV
TY 34567890123456789012345678901234567890123456789012345678901234567  NO ACTION  LOC  FIELD   PROBLEM  ERROR
TRAN COMPANY                            COMMITMENT         SCREEN
SET  NUMBER    PROJECT   WORK-UNIT      EXPENDITURE        NUMBER  USERID
 E    B050     052500                   V354828            000702

EA B050A052500    V354828              INDUSTRIAL ELECTRIC SUPPLY     09  REJECTED 14-19 WORK-UNIT  IS REQUIRED
         ******
EC        080195089500005000000000035954     W626                    10  REJECTED 01-02 INPUT-TYPE PREV TRAN REQD
**                                                                       REJECTED 42-56 DE-COMMIT IS NOT ON FILE
EE INDUSTRIAL 32074   13991500   0726951615200000BMP000052500    40  11  REJECTED 01-02 INPUT-TYPE PREV TRAN REQD
**

EG     0000          0000000000000000000CM6954                       12  REJECTED 01-02 INPUT-TYPE PREV TRAN REQD
```

Fig 8-1   Error Report (CPR240)

The first thing to look at on the error report is the screen upon which the error occurs. In this case, the error occurs on the EA screen (found under column heading TRAN SET).

Additionally, the type of error must be identified by the error message. In this instance, the work unit is missing on this expenditure.

If necessary, look up the correct work unit on the KA screen.

1. Go to the EA screen by typing | **SEA**

```
== EA===============DETAIL EXPENDITURE DATA ENTRY ===============CO:  B050

        PROJECT         WORK UNIT            EXPENDITURE
 ACTN   #               #                    #              EXPENDITURE  NAME


 TYPE  STAT  C/E  45/50  INT  ITC   DATE  PER   QUANTITY      MDSE AMT   UOM  ADJ


      TAX          FREIGHT       MISC AMT 1    MISC AMT 2     EXP AMT


 COMMIT NO       CLS PER      VND NAME    VND NO


 INV NO      INV DATE      ACCOUNT  CENTER   CPL  CDT  DTL1   DTL2  LC  DTL3


 GRP DIV  FUNC DEPT    PR LN     GL CD     SOURCE


     FCST          CTL EST     OH RTE     REQ #          ASSET NO


                                                               ADD MODE
```

Fig 8-2   Detail Expenditure Screen - Error correction

2. Press **F10** to get into change mode

3. Type # under PROJECT field, WORK UNIT field, and EXPENDITURE field, then press ENTER.

```
╔══════════════════════════════════════════════════════════════════════════╗
║ == EA═══════════════════════DETAIL EXPENDITURE DATA ENTRY ═══════════════CO:  B050 ║
║                                                                            ║
║        PROJECT         WORK UNIT              EXPENDITURE                   ║
║  ACTN  #               #                      #          EXPENDITURE  NAME  ║
║   A    052500          ?                      V354858    INDUSTRIAL ELECTRIC SUPPLY ║
║                                                                            ║
║  TYPE  STAT  C/E  45/50  INT  ITC   DATE    PER   QUANTITY    MDSE AMT  UOM  ADJ ║
║                                     070295  0795     1.00      191.60       ║
║                                                                            ║
║        TAX            FREIGHT        MISC AMT 1     MISC AMT 2     EXP AMT   ║
║                                                                            ║
║  COMMIT NO       CLS PER       VND NAME    VND NO                           ║
║  W626                          INDUSTRIAL  32074                            ║
║                                                                            ║
║  INV NO       INV DATE        ACCOUNT   CENTER   CPL  CDT  DTL1   DTL2  LC  DTL3 ║
║  SV9699       062495          1615100   0000     GSV  000  052500      40   ║
║                                                                            ║
║  GRP  DIV    FUNC  DEPT    PR LN      GL CD      SOURCE                      ║
║                    0000                                                     ║
║        FCST        CTL EST     OH RTE       REQ #          ASSET NO         ║
║        0.00          0         0.000        W626                            ║
║                                                                            ║
║  M44  WORK-UNIT     IS REQUIRED             REJECT             CHG MODE     ║
╚══════════════════════════════════════════════════════════════════════════╝
```

Fig 8-3   Detail Expenditure Screen - Error correction

4. On the row below the inquiry line, type | K | , then press ENTER.

```
== EA================DETAIL EXPENDITURE DATA ENTRY ================CO:  B050

       PROJECT        WORK UNIT              EXPENDITURE
ACTN   #              #                      #            EXPENDITURE  NAME
 A     052500         ?                      V354858      INDUSTRIAL ELECTRIC SUPPLY


TYPE  STAT  C/E  45/50  INT  ITC   DATE    PER   QUANTITY        MDSE AMT   UOM  ADJ
                                   070295  0795      1.00         191.60


       TAX            FREIGHT         MISC AMT 1    MISC AMT 2       EXP AMT



COMMIT NO        CLS PER       VND NAME    VND NO
W626                           INDUSTRIAL  32074

INV NO        INV DATE       ACCOUNT   CENTER   CPL   CDT   DTL1    DTL2    LC  DTL3
SV9699        062495         1615100   0000     GSV   000   052500          40

GRP DIV    FUNC DEPT     PR LN       GL CD      SOURCE
                0000
    FCST          CTL EST     OH RTE      REQ #          ASSET NO
     0.00               0      0.000      W626

M02    SCREEN COMMAND ACCEPTED                          ALTERING  KEY    CHG MODE
```

Fig 8-4   Detail Expenditure Screen - Error correction

5. TAB to WORK UNIT field and type **GEN000**, then press ENTER.

```
═ EA═══════════════════DETAIL EXPENDITURE DATA ENTRY ═══════════════════CO: B050

        PROJECT          WORK UNIT              EXPENDITURE
ACTN    #                #                      #            EXPENDITURE NAME
 A      052500           ?                      V354858      INDUSTRIAL ELECTRIC SUPPLY


TYPE  STAT  C/E  45/50  INT  ITC    DATE    PER    QUANTITY    MDSE AMT   UOM  ADJ
                                    070295  0795     1.00       191.60

      TAX            FREIGHT         MISC AMT 1    MISC AMT 2      EXP AMT


COMMIT NO        CLS PER       VND NAME    VND NO
W626                           INDUSTRIAL  32074

INV NO       INV DATE       ACCOUNT  CENTER    CPL   CDT   DTL1    DTL2   LC   DTL3
SV9699       062495         1615100  0000      GSV   000   052500         40

GRP  DIV   FUNC  DEPT     PR LN     GL CD     SOURCE
                 0000
     FCST         CTL EST      OH RTE     REQ #          ASSET NO
     0.00            0         0.000      W626

M02    SCREEN COMMAND ACCEPTED                    ALTERING  KEY      CHG MODE
```

Fig 8-5   Detail Expenditure Screen - Error correction

6. Press ENTER to accept if all input and corrections are correct.
   If not, correct input then press ENTER.

Continue until all errors have been corrected.

The changed transactions are written back to the Detail File to be processed by the next batch cycle.

CPR240 - Master File Edit/Update Messages

APPLIED ONLINE

Transactions that were applied online since the last time the batch edit/update cycle was run are reported with this informational message. No action is required.

CMT NOT FOUND

The transaction is attempting to change a detail commitment record which is not on the Project Accounting Master File. The project and work unit records were found, so the commitment number is probably incorrect. To correct either change the action code to "A", or re-enter the transaction with the correct commitment number.

IS MISSING

No value was entered for a field which requires input. If the transaction was rejected, enter the appropriate value. If the message is a warning, verify that a value is not necessary.

IS NOT ACTIVE

Commitment activity is rejected when the project or work unit status is not "Active". Expenditure activity is rejected when the project or work unit status is not "Active" or "Expenditures Only". To correct, either change the project or work unit status to "A", or change the project or work unit number to one which is active.

IS NOT LOGICAL

The action requested by the transaction is inconsistent with the records on the file for the key specified. One of the following conditions is present:

- Add a record that is already on the file.
- Change a record that is not on file.
- Delete a record that is not on file.
- Delete a record that was just added to the file by a previous transaction.
- Add a record that was just deleted from the file by a previous transaction.

- Sequence or select on a field in a record which is not included in the report (e.g. sequencing a work unit report with an expenditure record field.)
- Select on a field in a record which is not included in the translation process (e.g. selecting on a commitment record field).
- Define a GL summary level or low page break which exceeds the number of journal ID components.
- Define a GL chart key or journal ID component which is not a Master File key field or an expenditure record field.
- Define a GL journal override which does not refer to one of the chart key or journal ID component reference names.
- Define an invalid subscript value or a subscript for a field which cannot have multiple occurrences.
- Specify a start key greater than the ending key on a Master File Print (XA).
- Specify a start record group greater than the ending record group on a Control File Print (XC).

To correct, review the specific action being taken and change the date as necessary.

IS NOT ON FILE

The key specified by the transaction is not on file. Verify the key fields specified and correct as necessary.

IS REQUIRED

A value must be entered for the field indicated. To correct, enter the value.

PR NOT ACTIVE

Commitment activity is rejected when the project status is not "Active". Expenditure activity is rejected when the project status is not "Active" or "Expenditure Only". To correct, either change the project status to "A" or "X", or change the project number to one which is active.

PREV TRAN REQD

The preceding header transaction was rejected, therefore this transaction is suspended since it is for the same record. To correct, make the necessary changes to the previous transaction.

PROJ NOT FOUND

The project number specified is not on the Project Accounting Master File. To correct, either add the project with the "PA" screen or re-enter the transaction with the correct project number.

RECORD DELETED

The transaction deleted the record(s) requested from the file. It also deleted all of the records subordinate to the one specified. For example, deleting a work unit record also deletes all of the commitments and expenditures for the work unit.

WU NOT ACTIVE

Commitment activity is rejected when the work unit status is not "Active". Expenditure activity is rejected when the work unit status is not "Active" or "Expenditure Only". To correct, either change the work unit status to "A" or "X", or change the work unit number to one which is active.

WU NOT FOUND

The work unit number specified is not on the Project Accounting Master File. To correct, either add the work unit with the "WA" screen or re-enter the transaction with the correct work unit number.

Appendix A   Project Accounting Menus

== MU ===== PROJECT ACCOUNTING MAIN MENU ==== CP / ONLINE REL 1.4.4

* *   MENU SCREENS   * *

MP   PROJECT MENU
MW   WORK UNIT MENU
MK   COMMITMENT MENU
ME   EXPENDITURE MENU
MC   COMPANY MENU
MA   ASSET MENU
MM   MASS MAINTENANCE DATA ENTRY

* *   HELP SCREENS   * *

HL   FILE MAINTENANCE HELP

* *   FILE PRINT SCREENS   * *

XA   MASTER FILE PRINT
XC   CONTROL FILE PRINT

* *   PRESS PF4 FOR NEXT MENU   * *

== MP ==== PROJECT ACCOUNTING PROJECT MENU ========================

* *   PROJECT MAINTENANCE SCREENS   * *

PA   PROJECT DATA ENTRY
PD   PROJECT DELETE
PJ   PROJECT DESCRIPTION ENTRY

* *   PROJECT INQUIRY SCREENS   * *

PI   PROJECT INQUIRY
PK   PROJECT DESCRIPTION INQUIRY
PS   PROJECT SUMMARY
PU   PROJECT BUDGET SUMMARY

* *   PRESS PF4 FOR NEXT MENU   **

== MW ==== PROJECT ACCOUNTING WORK UNIT MENU ==================

* * WORK UNIT MAINTENANCE SCREENS * *

WA   WORK UNIT DATA ENTRY
WB   WORK UNIT TOTAL BUDGET DATA ENTRY
WC   WORK UNIT MODEL BUDGET DATA ENTRY
WD   WORK UNIT DELETE
WE   WORK UNIT QUICK ENTRY
WF   WORK UNIT CAPITAL BUDGET DATA ENTRY
WG   WORK UNIT EXPENSE BUDGET DATA ENTRY
WJ   WORK UNIT DESCRIPTION ENTRY

* * WORK UNIT INQUIRY SCREENS * *

WI   WORK UNIT INQUIRY
WK   WORK UNIT DESCRIPTION INQUIRY
WL   WORK UNIT BUDGET DATA INQUIRY
WS   WORK UNIT SUMMARY
WU   WORK UNIT BUDGET SUMMARY

* * PRESS PF4 FOR NEXT MENU **

== MK ==== PROJECT ACCOUNTING COMMITMENT MENU =================

** COMMITMENT MAINTENANCE SCREENS **

KA   COMMITMENT DATA ENTRY
KD   COMMITMENT DELETE
KE   COMMITMENT QUICK ENTRY
KJ   COMMITMENT DESCRIPTION ENTRY

** COMMITMENT INQUIRY SCREENS **

KI   COMMITMENT INQUIRY
KK   COMMITMENT DESCRIPTION INQUIRY
KS   COMMITMENT SUMMARY

** PRESS PF4 FOR NEXT MENU **

== ME ==== PROJECT ACCOUNTING EXPENDITURE MENU ================

        * *   EXPENDITURE MAINTENANCE SCREENS   * *

        EA   EXPENDITURE DATA ENTRY
        ED   EXPENDITURE DELETE
        EE   EXPENDITURE QUICK ENTRY
        EJ   EXPENDITURE DESCRIPTION ENTRY

        * *   EXPENDITURE INQUIRY SCREENS   * *

        EI   EXPENDITURE INQUIRY
        EK   EXPENDITURE DESCRIPTION INQUIRY
        ES   EXPENDITURE SUMMARY

        * * PRESS PF4 FOR NEXT MENU **

== MC ==== PROJECT ACCOUNTING COMPANY MENU ==================

* * COMPANY MAINTENANCE SCREENS * *

CA   COMPANY DATA ENTRY
CR   REPORT OPTIONS DATA ENTRY
CT   REPORT SELECTION CRITERIA DATA ENTRY
DP   DISTRIBUTION PATTERN ENTRY

* * COMPANY INQUIRY SCREENS * *

CI   COMPANY DATA INQUIRY
CS   REPORT OPTIONS DATA INQUIRY
CU   REPORT SELECTION CRITERIA DATA INQUIRY
DI   DISTRIBUTION PATTERN INQUIRY

* * GENERAL LEDGER SCREENS * *

GA   GENERAL LEDGER CONTROLS
GC   GENERAL LEDGER ACCOUNTING RULES
GG   GENERAL LEDGER ACCOUNT NUMBERS

* * PRESS PF4 FOR NEXT MENU * *

== MA ==== PROJECT ACCOUNTING ASSET MENU ==================

                    * * ASSET TRANSLATION SCREENS * *

          TA   ASSET TRANSLATION DATA ENTRY
          TF   ASSET TRANSLATION FEDERAL TAX INFORMATION
          TL   ASSET TRANSLATION LOCATION INFORMATION
          TN   ASSET TRANSLATION ADDITIONAL DESCRIPTION
          TS   ASSET TRANSLATION SELECTION CRITERIA ENTRY
          TQ   ASSET TRANSLATION UNITS OF PRODUCTION
          TU   ASSET TRANSLATION USER FIELDS
          TV   ASSET TRANSLATION ADDITIONAL USER FIELDS
          TZ   ASSET TRANSLATION BOOK DATA ENTRY

          * *   ASSET INQUIRY SCREENS   * *

          AI   ASSET COMPOSITION INQUIRY

                          * * PRESS PF4 FOR NEXT MENU * *

Appendix B　　Online System Commands

System Command	Default Key	Description
|A|	PF10/22	Switch ADD/CHANGE mode
|C|		Switch to Application and Company Sign-on screen
|D|	PF12/24	Down Page
|DD|		Delete all Detail file transactions displayed on current screen. Valid only in Change Mode. |DD| must be entered twice to delete transactions.
|Gxx|		Interrupt current process and go to function or screen "xx."
|H|	PF1/13	Display Field Level Help screen if cursor is at screen data entry field. Otherwise, display PF Key Inquiry/Change screen.
|M|		Switch to Application Main Menu
|Q|	PA1	Quit File Maintenance session. Return to Function Selection screen.
|QE|		Quit online session and exit online.
|R|	PA2	Refresh current screen by repeating previous transmission.
|S|	PF4/16	Switch to default next screen.
|Sxx		Switch to screen "xx."
|Y|	PF3/15	Resume from an Interrupt.
|Z|	PF2/14	Interrupt and go to Function Selection screen.

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