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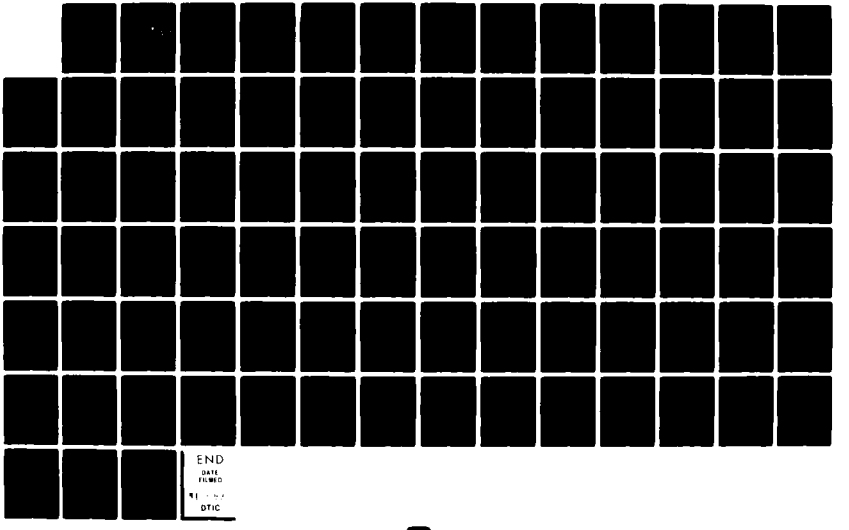

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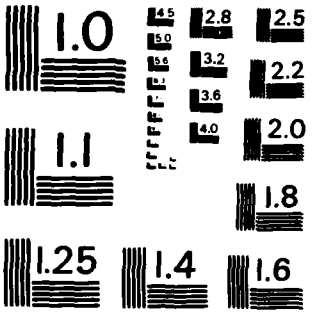

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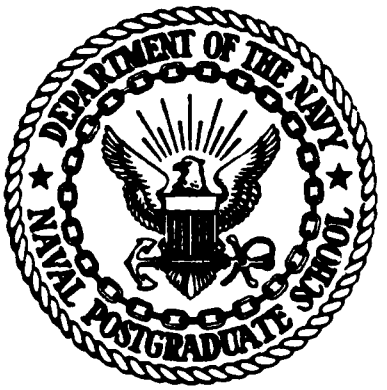

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THESIS

A GUIDELINE FOR THE PLANNING AND SYSTEM REQUIREMENT DETERMINATION OF A COMPUTER BASED EDUCATIONAL SYSTEM

by

Harry Wayne Johnson

June 1983

Thesis Advisor: John R. Hayes

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The objective of this thesis research was to create a guideline that can be followed to plan and determine the system requirements of a computer based educational system. The principle users of this report will be those commands that may not have personnel trained in computer management but desire to investigate the possibility of augmenting or replacing current traditional educational methods. Current advancements in computer technology and production processes have made even the smallest of commands potential users of the—>

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A Guideline for the Planning and System Requirement Determination of a Computer Based Educational System

by

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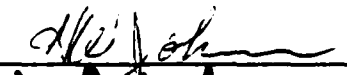
Author: 

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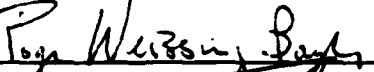
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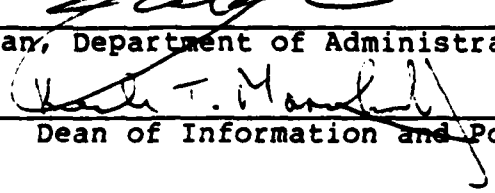
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ABSTRACT

The objective of this thesis research was to create a guideline that can be followed to plan and determine the system requirements of a computer based educational system. The principle users of this report will be those commands that may not have personnel trained in computer management but desire to investigate the possibility of augmenting or replacing current traditional educational methods.

Current advancements in computer technology and production processes have made even the smallest of commands potential users of the computer to ensure more effective and efficient personnel training and education. Computer Based Education (CBE) is at the forefront of this advancing technology of computers and possesses the potential to improve individual learning rates and comprehension, but only if the proper system is developed. Guidance for CBE system development is presented in this thesis.

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I. INTRODUCTION

A major concern of every Naval organization is that it use its resources in the most productive manner. One such resource common to all commands is their personnel. The very nature of personnel rotation in the Navy causes high turnover rates and consequently drives the need for large amounts of indoctrination training and further training of personnel in additional skills. One particular tool available to increase the command's teaching effectiveness is to incorporate the use of the computer. Computer Based Education (CBE) systems can provide a means by which the total productive time lost due to personnel training can be minimized while maintaining equal or better learning capabilibities.

Over the past ten to fifteen years, the computer industry has advanced its technological capabilities to a point where today almost any organization can benefit from the use of a computer in its educational and training functions. Advancements from technological progress in the production of computer components have made for attractive cost/benefit ratios where the marginal gain from a dollar invested in a computer based educational system far outweighs its cost.

This thesis will present an analytical approach that can be followed by a command that wishes to integrate the use of a computer into its educational process. The methodology

presented is aimed at the smaller organization such as an individual ship or squadron that has not previously used the computer in its training program but now envisions a possible use due to the availability of less expensive and more "user friendly" machines. These lower level commands are less likely to possess personnel trained in computer science or computer systems management and will thus utilize untrained personnel to develop and procure the CBE system.

To ensure the highest possible probability of system success, an integrated and well coordinated planning phase (Chapter III) must be undertaken to match an organization's goals with possible computer based educational functions (Chapter II). After planning has been completed, system requirements (Environment and Authoring System--Chapter IV, Personnel and Computer Components--Chapter V) must be determined from available component attributes.

II. COMPUTER BASED EDUCATIONAL FUNCTIONS

Prior to developing guidelines on how a computer based educational system should be planned and system requirements determined, it is necessary to discuss the major functions that make up the process of CBE.

Computers in education are used in two broad functional categories: (1) to instruct subjects or particular skills (computer aided instruction) and (2) managing the process of administrating, tracking of progress, test scoring, maintaining test results and providing feedback of course content.

Computer based education has been referred to by several terms--computer based learning (CBL), computer based instruction (CBI), computer aided learning (CAL), computer aided instruction (CAI), and computer managed instruction (CMI). The only aspect these terms have in common is the use of a computer. In essence these processes are subsets of the generic process, computer based education, and can be combined in varying fashions to be tailored into a very efficient system given an organization's requirements and resources.

R. DeV. Peters [Ref. 1] puts forth a general taxonomy of computer based educational functions as provided below.

A. INSTRUCTIONAL FUNCTIONS

Computer aided instruction (CAI) is defined as any teaching process that directly involves the computer in the storage and presentation of instructional materials, normally in a real-time and interactive mode, to provide and control an individual's learning environment. In this scenario, the student works independently at a computer terminal reacting to prompts provided on a screen, as directed by the system's courseware. There may exist multiple concurrent users of the system requiring a multiprogramming operating system (to be addressed later) or an individual user, depending upon the complexity of the system's hardware and software. Instructional uses can be further broken down into two subfunctions, tutorial CAI and laboratory CAI.

1. Tutorial Computer Assisted Instruction

Tutorial CAI was perhaps the first use of computers in the educational field, starting in the late 1950's and early 1960's. Early attempts at CAI were frustrating and, on the whole, a very inefficient use of the available computer resources, for at this state of computer development, CAI's interactive mode of operation required all of the central processing unit's (the computer's logical and data manipulator) capacity. The first use for CAI was to train computer programmers and was first used successfully in primary education by Dr. Patrick Suppes at Stanford

University and by Dr. Donald Bitzer in the automated teaching operation (PLATO) at the University of Illinois during the mid 1960's. Tutorial CAI attempts to provide a more efficient and cost effective education through many differing forms, depending upon the level of resources that are committed to the task.

a. Tutorial Function

Using the tutorial function, the student is progressed through a series of program segments by being given small amounts of text and then is tested on his comprehension. Depending upon his responses to the questions asked, he is most generally given an immediate feedback indicating that he is correct or that he has answered incorrectly and is either given amplifying instruction or repeats the portion of the text he has not yet mastered. Normally the student must show a certain level of competence before being allowed to progress to the next higher level of difficulty.

b. Drill and Practice

This function allows the student repeated practice at solving basic skill problems. Immediate response and guidance is given for incorrect procedures. The student response mode can vary from voice, keyboard use or even the touching of special pressure sensitive display monitors. Not only does this function provide the student with an "instructor" with unending patience and consistency, but also

frees the teacher from monitoring and correcting large numbers of practice problems.

c. Information Presentation

This is the least complex function of CAI, where the computer merely displays pages of information on the screen and is advanced on the command of the student. Technology now allows not only the display of written information on a screen but also allows the computer to control other presentation media which includes video tape recorder, slide projectors, audio tape recorder, and video discs.

Tutorial computer aided instruction allows for complex algorithms for the branching of control that allows students with different knowledge levels and learning rates to use the same courseware and yet progress at their own individual pace.

2. Laboratory Computer Aided Instruction

Laboratory CAI varies from the tutorial form in that the student is allowed to explore a greater portion of the computer's resources as compared to tutorial CAI, which generally uses the computer as a medium for information display. Laboratory CAI uses scientific style languages such as FORTRAN as opposed to specialized authoring languages like TUTOR and Pilot, used in tutorial CAI.

The following summations are representative of today's uses of laboratory CAI as reported by Peters [Ref. 1].

a. Simulation

Simulation is a technique where real world phenomena can be represented to the student through various media to allow the student to learn to operate or experiment with equipment or processes that would be either too costly or impractical to use the actual equipment for the learning process. Simulation can be designed to represent actual equipment for the training of proper operation or maintenance of the equipment. The U.S. Navy Personnel Research and Development Center is one of the pioneers in this field and is currently developing an electronics equipment maintenance trainer for the Navy's technical training schools.

Another form of computer simulation that is very useful is teaching complex systems and processes. Students can manipulate parameters of a system and are given immediate feedback as to the results of their actions. Of prime importance is the fact that with computer simulation, results can be given much faster than in more traditional learning processes and, in many cases, faster than the natural occurrence. An example of this computer use is the current project to simulate a high pressure steam propulsion system where students can simulate the operations of valves and controllers and immediately see the results of their actions.

b. Complex Problem Solving and Modeling

With the speed of modern day processors and the large memory storage capacities available, complex problems are now capable of being solved numerically, where only a few years ago they could only be taught analytically. Today at Naval Postgraduate School, calculus and statistics are being taught with the use of an inexpensive hand-held programmable calculator which enables the student to perform calculations in minutes, which manually done would require hours of tedious calculating. Because the tedious work is done by the processor, more time is then available to delve into more complicated (and interesting) topics.

c. Educational Games

Educational games provide a means of establishing competition, challenge, and stimulation using high levels of drill and practice. Educational games are becoming more popular as their usefulness is discovered and will probably continue this trend as more of game software becomes available. Games do present a managerial problem and are of questionable value at times due mainly to abuse of their purposes.

B. MANAGERIAL FUNCTIONS

As computer based education comes to be used on an ever increasing level, it creates its own administrative burden of managing itself. The most efficient (perhaps one of the

major advantages of CBE) manner to control its use is to allow the computer itself to provide the managing function, which is referred to as computer managed instruction (CMI).

The student receives no instruction, per se, from the CMI system but gains a more efficient and self-tailored course of training due to functions performed by the CMI system. Also, the instructor staff is relieved of many of the burdensome tasks associated with the educational process, allowing teachers a better opportunity to achieve a higher level of course development and provide more individual assistance to the students.

The management functions are becoming more important due to the educational trend toward individualized instruction and ever increasing pressure to develop systematic and consistent evaluation procedures.

For the most part, CMI functions are accounting, statistical analysis, and reporting procedures. These functions lend themselves quite nicely to incorporation into a computer system which can perform these function in a rapid and consistent manner and yet not be distracted from the paramount goal of student instruction.

Below is a compiled summary of CBE management functions as discussed by Peters [Ref. 1].

1. Skill Assessment

Since each student brings with him an unique educational and experience background, some system of assessing his ability level must be formulated so that the most efficient self paced and individualized course of study can be chosen. The computer lends itself nicely to this task by applying grading criteria to a battery of pretests or by continual assessment throughout the entire course of study, or by a combination of both methods.

a. Precourse Assessment

Prior to the undertaking of a course of study, the student can be subjected to any number of tests or questionnaires to determine individualized traits or attribute such as (1) previous experience, (2) skill levels, (3) purpose for taking the instruction, (4) expected attainment goals, and (5) other general student descriptors.

b. Under Instruction Assessment

During the prescribed course of study, the computer can update and analyze the student's progress and identify trends or traits of the student not identified previously. Descriptors of the student's learning ability, learning speed and goal attainment can be dynamically evaluated to ensure the most effective and efficient course of study.

2. Study Course Determination

After the student's skills and progress have been satisfactorily determined and assessed, then there can be mid-course corrections made as to the course of study speed, difficulty level or presentation methods, depending upon the student's assessment. By instituting these dynamic course adjustments, the student is afforded a completely individualized course of study, producing the most likely satisfaction of course goals and objectives. If the student is diagnosed prior to taking the course to be deficient in any of the basic or prerequisite skills determined necessary for successful completion of the course, he can be directed toward this remedial study, thus preventing him the frustration and time loss that would otherwise be effected.

Once the course has started, the computer is capable of determining what course of study is optimum in each student's case depending upon the student's present and future objectives in that particular field of study. Should the student fall behind in the course, CMI is capable of proposing alternative delivery styles or remedial study action which can include going over previously covered material, starting with more basic material, or possibly student disenrollment of the course due to motivational or ability shortcomings. Of prime importance is the computer's ability to query the student's own desires as to the

administration of the course's content or style. This function allows a high degree of individualized training, allowing the student (within predetermined limitations) to become a factor in the course presentation and content, leading the student toward greater personal satisfaction. It is human nature to perform better when a person feels he has some control over his study material since he'll most generally choose those topics which interest him the most.

Currently the course selection function of CMI is generally used for determining successful attainment of course objectives which falls short of the potential that is available from this function. The algorithms to service these analysis are more complex than those generated for the tutorial presentations which explains why this potentially beneficial function is commonly underdeveloped.

3. Feedback and Testing

As summarized in a survey of educators [Ref. 1], the use of computers in the scoring and reporting of test results is an important role and in all likelihood will continue as such in the future of computer based education.

By using the computer to give tests, it is no longer necessary nor advisable to give a few large tests as in traditional education, but rather a large number of smaller tests may be administered allowing those tests to be more accurately tailored to match the student's requirements.

Question banks forming a large data base can be formed making it possible for the computer to produce individualized and unique tests depending upon the instructor's guidelines and objectives for a given student or class of students.

Using the computer to score tests makes it a rather simple procedure for the instructor to construct algorithms to allow for weighting of question values, penalizing for guessing, and objective obtainment. With the ability of today's authoring systems, not only can multiple choice, true/false, or matching questions be asked but short answer questions are possible due to key word/phrase matching capabilities of the software.

The ability of the student to take exams online in a real-time mode allows for immediate response of test scores, areas of weakness or strength, and further assignment information, be it remedial study or progression to more advanced subjects.

4. Administrative Tracking

Since one of the greatest attributes of a computer based education system is the ability to allow for individualized course of study in a self-paced atmosphere, a requirement is levied upon the system itself to track the progress of the students, alerting to possible problem areas. After the system has been in operation for a time, a data base is formed on which times for completion of each subject

and whole courses of study can be statistically analyzed to produce standards or norms against which later students can be evaluated. Since military students are paid a salary and are lost to other productive efforts during training, minimizing the total training time is of utmost concern to system administrators. In order to do this, progress must be analyzed and reported in a timely fashion to identify problems in either individual attainment of goals or perhaps even identifying system component failures or inefficiencies.

Student progress reporting can also be used as a motivational tool to the student by positive reinforcement for satisfactory progress or negative inducement for poor performance, even to the point where students can be identified for possible disenrollment.

5. Miscellaneous Functions

a. Authoring

When the computer is used to present instructional material directly to the student, the information in the form of text, questions or logic decisions must be placed into the computer. This process, by which the educator's thoughts are translated into a language that is "understood" by a computer, is called authoring.

When computers were first used for CAI, computer languages such as BASIC were used to produce the programs. This required the educator to become experienced in a

computer language which did not lend itself to preparation of course material. For example, it is cumbersome in BASIC to match student replies with the programmed answer, unless there is an exact match.

This problem has caused the development of several special authoring languages (such as PILOT and TUTOR) that simplify the programming effort by providing commands that are tailored to the education task (matching, branching and recording student answers).

Computer programming and authoring language requirements are discussed in Chapter IV.

b. Flexible Scheduling

In many self-paced instruction installations there will not be enough terminals available to allow each student a dedicated terminal at all times. This situation can produce queueing and scheduling problems which can be solved by the appropriate computer resource scheduling.

c. Record Keeping

This accounting function can keep track of resource utilization, test scores, subject completion and statistical data to generate reports for administrators and educators alike. This function allows for trends in performance to be identified in a timely fashion in order to maintain top management visibility.

III. SYSTEM PLANNING

The process of establishing a computer based educational system is a complicated task requiring a large amount of planning, analysis, and evaluation.

In order to proceed with the establishment of a CBE project, a development cycle which includes system planning and requirement determination must be followed.

The first step of the development cycle, system planning, which includes the determination of the need for a CBE system and the feasibility study, will be addressed in this chapter. The second step, system requirement determination, where the environment, authoring system, personnel and computer components are considered, will be discussed in Chapters IV and V.

A. NEED DETERMINATION FOR A CBE SYSTEM

A CBE system is not necessarily the answer to every instructional process dilemma; however, Francis [Ref. 2] discussed several positive attributes of CBE.

1. Cost Savings

Establishing the need for implemention of a CBE in terms of reduced costs requires a truly comprehensive effort to determine all the costs of both the conventional method and the computer aided method. The costs of the computer system can generally be more accurately determined because of

its additional resources can be more easily identified. On the other hand, the traditional system can "hide" costs due to its longevity and existing status. Costs such as photocopying of text and teaching aids will sometimes be lumped under administrative expenses and will not be charged to the training functions as it should be. Another expense easily overlooked is that of transporting of students from site to site which may be cumulated into a travel budget and lost from the educational department's cost, thus understating the true cost of the existing system.

Some CBE costs can also be hard to quantify and allocate. Generally, since the CBE system is new, it is difficult to determine how much of the costs are capital expenditures or are recurring costs of operating the system.

It is desirable to establish a consistent and accurate method of recording the costs for a CBE once the need for reduced cost or time has been established in order to be evaluated after the system is implemented.

2. Enhanced Student Performance

The ability to perceive a need for CBE because of increased student performance requires some form of quantifier or yardstick to evaluate the relative performances. The need for greater performance lies on either a higher level of attainment in currently covered topics or a broader base of skills covering different topics

than are currently possible in the more traditional teaching system. Possible measures of better student performance are: higher test scores, lower times to complete courses or greater number of courses completed per student.

3. Attitudes and Motivation

Attitudes and motivation are easily ignored by administrators unless a problem exists. If the students express a positive interest in CBE, this indeed can produce the need required to at least explore the possibility of developing a CBE.

4. New Services

New services or functions can be offered by CBE, such as laboratory simulation, which were impossible in the traditional system.

It is important at this point to make clear that the need is envisioned as a goal and that instituting a CBE system is but one possible manner of reaching that goal. If a manager first decides that a CBE system would be a nice asset to have and then proceeds to justify a need for that system, he is likely to end up with an ineffective and possibly inefficient system.

B. FEASIBILITY STUDY

Once the need for a new system is established, a study should be initiated to determine whether or not the need can be satisfied given the organization's resource constraints

and the current technological requirements for the proposed new system.

The feasibility study requires the input of resources such as personnel, time and money. It is imperative that this study be managed in a planned and organized manner to preclude unnecessary committal of resources. Hussain and Hussain [Ref. 3] present such a plan for the organization and creation of a feasibility study. This plan consists of four phases: (1) organizing for the feasibility study; (2) search for a solution; (3) feasibility analysis; and (4) choice of solution. These steps are presented below.

1. Organizing for a Feasibility Study

Once the need for a CBE is established, management must determine the make up of the team that will actually perform the feasibility study. To do this, the manager (person tasked by the appropriate authority and given the responsibility for the study completion) must weigh certain factors such as system size, complexity and the perceived urgency.

Team members should possess the following attributes:

a. An understanding of the command's policies, functions and organization,

b. the ability to recognize the "big picture" of the situation without becoming overburdened by details,

c. the ability to cooperate and work with other team members,

d. the responsibility and authority to function in behalf of top management,

e. the knowledge of how current educational techniques are used,

f. if possible, a vested interest in the study's outcome to ensure maximum participation.

To find a person within a given command who possesses all of the above traits is highly unlikely. In order to ensure that the above traits are all represented on the team, more members should be added, even if they only possess a subset of the above listed attributes. To prevent excessive overhead of the added communication paths among the team members, usually teams should not exceed eight members.

After the composition of the feasibility study team is settled on, management should meet with the team to explain its ideas on the study's goals, policies and constraints. After management's presentation, the team should be allowed to alter, clarify or discuss with management the aspects of the study to ensure that everyone involved has a clear and consistent view of what is to be accomplished.

2. Search for Solutions

During this phase of the feasibility study, the team collects data regarding current system parameters, economic information, organizational information, financial information, technical data, and current system deficiencies. Care must be exercised on how much information is allowed to

be used from the examination of an existing system to ensure that current inefficiencies are not perpetuated into the new system, but then if the old system does contain some significant efficiencies, it would be foolish to ignore them.

Once this data has been compiled, the study team must identify solutions, if any, that warrant continuation of the feasibility study. The team is not doing a complete analysis at this point, but rather is trying to determine "ball park" figures to see if a new system may be able to be produced within the guidelines set forth in the earlier stage. As an illustration, suppose a command has determined that it could possibly benefit from a CBE system that would provide training for three years, if it could be done for approximately $40,000, but the feasibility study team estimates that purchase of the equipment alone would be over $100,000, then the team would report that no further study should be undertaken and the team be disbanded. In this case, the command has invested the time of some people only to learn that the new system is not feasible, but it has saved itself the more costly situation of undertaking the project only to find out too late that it is incapable of completing the project due to monetary constraints. The number of solutions should be limited to perhaps five or six to allow a thorough and timely evaluation by management.

3. Feasibility Analysis

During this phase of the study, the team will do a more detailed cost benefit analysis of those alternatives which were earlier determined to have merit. In the determination of each alternative's costs and benefits, care must be exercised to ensure all aspects are represented in the study. The study can be broken down into three parts: (a) economic feasibility; (b) financial feasibility; and (c) organizational feasibility [Ref. 4].

a. Economic Feasibility

The economic aspects include a general cost benefit study. Unfortunately a CBE system does not easily lend itself to this type of analysis.Problems occur because of the difficulty in quantifying the benefit into a common relationship with the costs (how much is an increase of 5% learning ability worth to the command?). One method to determine an alternative's worth is to give it an intuitive basis for value. Another manner would be for the team to determine what it would be willing to pay an outside organization to operate the CBE system. Putting a value on the costs can also be difficult because user requirements tend to be underestimated at this point of development and tend to increase with time.

In order to overcome some of the uncertainty of cost levels, it is advisable to develop range estimates with

corresponding probabilities in order to fence the range the organization will be spending. An example cost/benefit study is presented in Appendix A.

b. Financial Feasibility

The financial feasibility study is the process of determining whether an alternative that has a high benefit to cost ratio can be acquired with the organization's present and future funds.

The actual guidelines to be used to produce both the economic and financial feasibility is beyond the scope of this paper, but is covered thoroughly in Naval Data Automation Command's Publication 15 [Ref. 4].

Virtually all CBE systems will exceed the threshold of $3,000 for using Other Procurement Navy (OPN) Fund. OPN is used for the purchase of assets that exceed the dollar threshold as compared to less expensive assets that are bought with Operations and Maintenance, Navy funds (e.g., OPTAR). Procedures for applying for the use of OPN funds vary among each TYCOM, but generally if significant productivity enhancements can be shown, the command will have a better chance of receiving the funds.

c. Organizational Feasibility

Each organization has its own formal and informal chain of command and its resulting political power structure. When any computer system is introduced into an organization,

this power structure is vulnerable to shifts or restructuring which must be anticipated and discussed by the feasibility team. It is possible that those personnel who envision the implementation of the computer system as taking away their power and responsibilities may opt to impose counter-implementation tactics as discussed by Keen [Ref. 5]. These counter-implementation tactics must be anticipated and methods for overcoming them must be determined if the project is to be continued.

In order to give some insight to the quantitive studies produced to date on the positive results that have been gained by CBE, Table 1 [Ref. 6] and Table 2 [Ref. 7] are presented below as representative of Naval CBE experiences during the mid 1970's.

TABLE I

AMOUNTS OF STUDENT TRAINING TIME SAVED BY CAI AND CMI COMPARED TO CONVENTIONAL INSTRUCTION

Method of Instruction	Number of Comparisons	Student Time Savings Compared to Conventional Instruction, Percentage	
		Median	Range
CAI	40	29	-31 - 89
CMI	8	44	12 - 69
TOTAL	48	32	-31 - 89

TABLE II

CMI COST BENEFITS

Reduced Course Time		46.8%
Reduced Student to Instruction Ratio		23.0%
Reduced Student to Support Personnel Ratio		23.0%
Higher School Performance Levels		5.0%
Reduced Attrition		2.0%
Additional Benefits:	Longer active work tours	
	High work performance	
	Increased state of readiness	
	Potential for reduction on many levels	

4. Choice of Solution

The final phase of the feasibility study is management choice of a solution. In the Naval organization, this decision will normally be made by the Commanding Officer. It is his ultimate responsibility to ensure that the alternatives presented to him are accurate and are viable alternatives that satisfy the objectives given to the feasibility team.

It should be recognized that most computer systems take longer and cost more than most initial plans project. This is generally because of the difficulty in projecting accurate costs for a system that is developmental in nature.

If a satisfactory alternative is chosen, the implementation process of authorizing funds, priority determination, and personnel selection should be initiated as soon as possible to ensure that all those involved are familiar with the project. If the Commanding Officer

determines that none of the alternatives are satisfactory, the project is either terminated or restudied with possible relaxation of constraints or objectives in order to find a feasible solution.

After a solution is determined, methods of measuring goal obtainment must be determined to ensure that the benefits promised are realized. This process can be implemented by use of a time schedule that states the time, goal, and responsible person for each benefit. This practice will ensure that maximum benefit is provided and will serve to motivate involved personnel.

IV. SYSTEM REQUIREMENTS: ENVIRONMENT AND AUTHORING SYSTEM CONSIDERATIONS

After the need for the CBE system has been determined and the feasibility and economic studies have shown the advisability of continued development, and a solution has been selected, the system requirements must be researched and brought together in a coordinated fashion.

There are four major considerations a manager must address in respect to a CBE system requirement: the physical environment, the authoring system, personnel, and hardware. Care must be exercised at this point not to fall into the common trap of concentrating on hardware selection because its parameters are quantifiable vice taking an overall "big picture" approach where all four system requirements are developed in an integrated and coordinated fashion.

A. ENVIRONMENT

The environmental considerations are important to ensure maximum efficiency and effectiveness of both the system's physical components (hardware/software) and that of students.

1. Security

To ensure continued integrity of the system, security must be addressed, particularly in the military organization. Security has a two-fold aspect, physical security of the system components and the security of classified information

contained within the courseware. Physical security includes prevention of damage from accidental damage caused by students while under instruction, malicious damage and damage due to casualty (fire or flood). Physical security aspects must be anticipated by an organization and be reflected upon during all stages of system requirement development and continually reappraised, even after system initiation.

Information security and integrity apply to the information contained within both the courseware and the retained management information about the students. In most military organizations, the potential exists for classified information to be compromised through either accidental or covert actions. Information that is maintained about the students (e.g., grades, social security number) should also be considered sensitive and be afforded appropriate security. Security can be imposed by limiting access to the computer terminals (cypher locks on entrances), limiting use of the computer to only those students with proper security clearances and the need to know to access those course modules that are classified (confidential passwords is one possible solution). Managerial records can be maintained on-line on possible security breaches (time of day and user name information can identify possible trends which may otherwise go undetected).

2. Hardware Physical Environment

Electronic components contained within the system's hardware will be affected by the physical environment in which they are contained.

Of greatest concern within this consideration is that of heat and humidity. Generally, too high a temperature or humidity can cause system degradation, even to the point of damage, if either variable is allowed to reach an excessively high level. Both temperature and humidity must be considered together, for their interrelationship may cause damaging affects even though their individual levels may be within specifications. Most equipment manufacturers will provide this information and will assist in air conditioning and humidity control requirement determination.

Power supply and availability must also be addressed when determining the CBE system requirements. Not only does the proper voltage, wattage and amperage need to be considered but also the equipment's tolerance levels for the above variables must be determined. Voltage fluctuations can cause machine damage and stored information to be altered or erased. Consideration must be given to voltage filters, bus configuration (large equipment on the same line can cause bus fluctuations), and possibly the acquiring of an uninterrupted power supply to allow graceful system termination should the main power supply be interrupted.

3. User Environment

Perhaps one of the most commonly overlooked aspects of a CBE system is that of the user's comfort and convenience. Even a system with the most advanced authoring system, most friendly courseware and the latest hardware innovations is doomed to failure if the student is in an uncomfortable and unconducive learning environment.

Factors which must be addressed, commonly called ergonomic aspects, range from room lighting and temperature to considerations of CRT screen size and color.

B. AUTHORING SYSTEM SELECTION

The authoring system for any learning system provides the single most important component by which that learning system succeeds or fails, whether it be a computer based educational system or a more traditional "paper and pencil" method. The authoring system functions by converting ideas and factual information from within the instructor's mind and portrays this information by the use of some medium to the student. In a traditional education this has been accomplished by instructor lecturing, rudimentary visual aids, case study and class discussion. However, with the advancement of electronic technology, CBE systems provide greater leveraged presentation capability.

The task that an organization must accomplish in order to select an appropriate authoring system is to match those

technologically and economically feasible alternatives to the goals already determined for the system. In order to make this task possible, it is advisable to categorize each alternative authoring system by a list of its attributes as summarized below [Ref. 8].

There are four basic categories by which the attributes can be grouped: (1) content of learning material; (2) user related; (3) communication approaches used between the student and the computer; and (4) economics of the system.

1. Content

a. Ability to Telescope Time

Some occurences or phenomena, by their nature, take a long time to develop and are hard to conceive without some form of condensing or speeding up. In a CBE authoring system, this attribute is generally synonomous with its simulation capabililties or its ability to instruct the student on long, extended processes in a timely fashion.

b. Ability to Present Structure

This attribute measures the ability of the authoring system to present to the student all or partial overall structure of the material to be presented. Material structure presentation is usually enhanced by the computer's ability to present ideas with graphic or other visual illustration.

c. Provision of a Rich Environment

The learning process is directly related to the nature of the subject being taught. If the student is being taught relatively simple and straight forward concepts, such as accounting data for supply reports, a rich and data plentiful data base is not required from the authoring system. On the contrary, it will only serve to confuse the student. However, if the student is studying nuclear reactor operations, it would be advisable to make available a more multivariant data base to include information on such subjects as nuclear chemistry and metal fatigue. It is thus necessary to match the authoring system's capability to provide a rich environment with the nature of course material to ensure that neither too much capability is acquired, increasing costs greater than the attained benefits, or acquiring a limited system that is incapable of presenting the material in a satisfactory manner.

d. Ability to Present Ill-Structured Material

Some courses of instruction, such as programmed instruction, can be well structured and easily presented with an uncomplicated authoring system. Other courses, such as case study material, cannot be formally structured, requiring the authoring system to be more capable and complete.

e. New Material Inclusion

The ability for an individual organization to add new facts or concepts to existing courseware is of primary consideration to any command contemplating a CBE system. If changes become too hard to accomplish (such as when an external organization must do the changes), the courseware will deteriorate and soon become unreliable and of little value.

f. Student Support

The authoring system's support of the student's clerical and overhead tasks such as homework problems and rote calculation, which are not the major learning process, nevertheless require time and places a burden upon the student which could be better used learning new ideas. The greater the amount of relief the authoring system provides in this area, the greater the success potential of the CBE system will be.

2. User Factors

a. Learner Control

The ability of the system to adjust to the learner's desires to vary the speed or direction of instruction must be viewed continuously to prevent student abuse of the system (purposely taking longer than required per course), negating the ultimate goal of CBE systems, that of providing an efficient learning process. If the student's goal is in

line with that of the system, he can progress faster generally, if given a certain level of autonomy in the pace with which he is allowed to progress, because most systems will be geared to the average student's pace.

b. Ease of Use

The manner in which the authoring system avails itself to its users, both the programmer and the student, is termed its "user friendliness." If many special computer codes or complicated mechanisms are required to be mastered prior to use, the system will soon be deemed unfriendly causing alienation and underutilization. This alienation can affect both the instructor and the student. If the instructor finds the courseware production hard and time consuming, he is apt to either produce inferior courseware or may not produce at all. If the authoring system doesn't allow for the production of easy to read text and easy to use prompts, the student will become confused, thus defeating the purposes of the CBE system. The organization must be aware that expense and system overhead compromises must be made for the sake of user friendliness. If the CBE system is to become friendly, the authoring system must be made more complex requiring greater storage and development effort, both of which will drive the price of the CBE system upwards.

3. Communication Related

a. Sensory Impact

A positive correlation exists between the number of senses used in the learning process and the resulting attainment level. We learn at a certain level if only our sight is used (reading a book), but we learn at a greater level if we use both sight and audio (such as a movie). This is the reasoning behind the use of audiovisual materials in most teaching environments.

CBE systems have the potential to use numerous audiovisual aids which include CRT screens, tape recorders, video recorders and video discs to present varying amounts of sensory impact.

b. Student Feedback

Student feedback, which in a traditional system is usually provided during test taking, enables evaluation of student performance. The authoring system must be measured in its ability to accept student feedback and adjust the course study appropriately. Feedback can also be in the form of student ratings or comments which are stored by the authoring system for later evaluation.

The attributes of the authoring system discussed above must be weighed collectively by the organization in order to determine what its system will be required to

include. Generally, the greater the requirements, the more expensive the system will be. However, system attributes can be substituted for by energetic and enthusiastic personnel. To give an example, Appendix A was produced for the Navy Supply Corps School. The purpose of this project was to produce a mechanized procedure where the students could be presented with a management scenario and be allowed to respond to a limited number of possible alternatives. Then another scenario would be presented until finally a successful conclusion could be obtained. The student's name and a record of all his alternative selections were to be recorded for later evaluation. The authoring system used for this project was the program PILOT produced by John Starkweather, Ph.D. With a minimal number of instructions, this program was produced by the author in approximately twenty (20) hours and can be used as a program template for any further scenario development. The program was developed in a modular fashion which will allow additional scenarios to be added or included scenarios to be deleted.

The conclusion to this project was that the scenario project could be developed successfully, yet the price of the authoring system was a mere $30. General information [Ref. 9] about this authoring language is presented as Appendix B.

V. SYSTEM REQUIREMENTS: PERSONNEL AND HARDWARE

The remaining two functional categories of system requirements--personnel and computer components--are the hardest and easiest, respectively, to identify and quantify.

A. PERSONNEL

In the military organization, personnel turnover can cause the greatest amount of variation upon any given CBE system. Although normal personnel rotation within the Navy will preclude a high degree of continuity, judicious selection of personnel possessing those skills beneficial to CBE development will ensure maximum system effectiveness. Francis states that there exists ten skills which must be possessed by the CBE training staff to ensure proper efficiency and effectiveness [Ref. 3: p. 74-77].

1. Administrative/Managerial--This skill allows for the smooth operational flow of the entire system and to monitor system progress by maintaining standards and expediting non-clerical skills.

2. Leadership--This skill provides an example and determines the direction of system by initiating changes where required and rewarding those who earn such praise.

3. Curriculum Coordination--Coordination provides for an integrated and smooth operating package. This skill requires an overall view of the subject matter.

4. Subject-Matter Expertise--Expertise is required for any learning process.

5. Instructor Experience--This insight provides for the anticipating of possible problem areas to be

encountered and gives the staff continuity with more traditional educational processes.

6. Instructional Design--Design knowledge allows for more effective course presentation.

7. Evaluation/Testing--This skill is necessary to measure the level of goal attainment produced by the system.

8. CBE/Language Expertise--This is the most unique skill requirement of a CBE system when compared to the traditional learning method, which requires all of the previous skills. This skill in effect translates the instructional matter into the form required to be used by the computer.

9. Editorial Skills--This skill is required to give a finished product by "debugging" or smoothing out of previously completed courseware to ensure consistency.

10. General Support--These skills include ordinary overhead requirements such as proctors, secretaries and equipment maintenance.

It is not enough to merely identify these skills, but an organization must ensure that they are present in appropriate levels in both managerial and authoring personnel.

Managerial personnel must have an overall view of the system, but it is not necessary for them to have expertise on all phases of the system. There is also a fine line separating the amount of managerial involvement in day-to-day operations; too little and he will not have the feel of how the system is functioning, and too much and he will become entangled in micro-management and the large overview will deteriorate.

Most smaller Naval commands will not have personnel which possess all of these attributes, so care must be used to

combine individuals who possess different levels of attributes into a team that will be capable of providing all the required services and attributes.

B. COMPUTER COMPONENTS

The selection of computer components was left for last because these considerations should be the final focus of any CBE system requirements determination. Perhaps the largest error which can be made by an organization when developing a CBE system is to produce a shopping list of alternative manufacturers and hardware specifications, instead of concentrating on what the hardware is to do. This approach may provide the organization with excellent computer hardware, which may or may not meet the needs of the organization. A better approach is to determine what personnel assets will be available, find the proper authoring system that will meet the organization's goals, then search out the computer system that matches the other requirements.

Computers are generally classified into three categories: mainframe, minicomputer and microcomputers. Mainframes (e.g., IBM 370 models) are very large, expensive and capable machines which are generally only used in CBE at large training commands. Smaller and less expensive machines are referred to as minicomputers (e.g., PDP 11). These machines are very capable and provide the processing capabilities for medium to large CBE systems (300-500 students). Since the

late 1970's, microcomputers (e.g., Apple, Radio Shack) have found ever increasing popularity and are suited to perform the limited processing of the smaller shipboard system. These systems have the advantages of being semi-portable and require limited environmental support (e.g., air conditioning).

The computer component requirements fall into two major categories--hardware and the operating system, a software program which provides the required user interface between his courseware and the hardware.

1. Hardware Components

a. Central Processing Unit (CPU)

The central processing unit is made up of the arithmetic and logic unit which does all of the computation work (addition, subtraction, multiplication and division and the comparison of values) and the control unit which can be thought of as the "traffic cop" of the computer which directs the flow and timing of all the operations of the computer. CPUs have evolved from room-size cabinets filled with large vacuum tubes to thumbnail-sized chips using very large-scale integration (VLSI) printed circuits. With this reduction in size and technological advances in manufacturing, the price of a comparable CPU has decreased significantly over the years. These trends are apt to continue in the foreseeable future. Although a manager may be tempted to delay the

purchase of a system to wait for further cost performance improvements, this type of attitude may cause that organization to become a spectator in a world of participants.

b. Input and Output Devices (I/O)

Input and output devices are used to get information in computer acceptable format into the CPU and to get computer processed information out of the computer in some format that can be used by the system user.

The most commonly used input device in CBE systems is the typewriter styled keyboard. The keyboard allows the user to input responses or commands interactively into the computer. Other CBE input forms include optical character reading (OCR--used for test scoring), which is being phased out in most systems, and voice recognition, where the user "talks" with the computer, but large technical barriers must be overcome before this method becomes widespread and cost effective.

Most CBE output goes to a cathode ray tube (CRT) in either a printed format or graphic format, or is outputed as voice from a tape recorder or, with the most current devices like video tape recorder or video disc, a television-like display.

One other format of output which is used extensively, is the printed page which can be produced for future reference or for evaluation purposes.

c. Memory Devices

Memory devices perform only to store programs and data. Most CBE systems will use some form of disk storage which provides for ease of use and large quantities of storage capacity. The storage capacity of a memory device is normally referred to as kilobyte (KB), which is approximately one thousand characters. With today's microcomputers, a storage capacity of a floppy disk is in the range of 180-720 KB which up to ten years ago could only be obtained by the largest mainframe computer.

2. Operating System

The computer's operating system is a set of programs which interrelates user desires and application programs with the hardware system that can only understand machine language (a series of 1's and 0's). The operating system is the key factor which will determine interorganizational compatability which will allow for program sharing. If done in a coordinated fashion, sharing can multiply the benefits of CBE many times over. To illustrate this point, any type command can ensure up-to-date and consistent damage control procedures are presented to each of its units if their educational computers use the same operating system and disk format by developing one control program and delivering copies of it to his units. This process will require some

management overhead to ensure that the revisions and updates are traceable to each ship.

The increase in power and the decrease in cost of the microcomputer has made it practical for most small commands to use at least some form of CBE. Figure V-1 is included as a summarization of the Navy Regional Data Automation Center, Norfolk, Virginia, requirements and recommendations for microcomputer system components [Ref. 10].

Component	Requirements	Recommendations
Operating System	System must be CP/M 2.2 compatible	
Microprocessor	Must execute 8080 CPU instruction set	Z-80 compatible CPU 4MHZ speed
System Memory	Minimum 48K TPA (TRANSIENT Program Area)	Minimum 56K TPA
Video Terminal		
Display	80 character width by 24 lines. Upper and lower case	12" screen, green or amber characters on black background
Keyboard	"QWERTY" with shift and control keys	Alpha lock and control keys
Disk Drives		Dual, double-sided, double-density, 8", soft sectored, CP/M format
System Bus		IEEE-696 (S-100)

Figure V-1 Microcomputer System Components

VI. CONCLUSION AND RECOMMENDATIONS

A. CONCLUSIONS

It is obvious that the instigation and planning of a computer based educational system is a complex and demanding task. It requires that the command's leadership identify the need for such a system to either replace existing traditional training systems or to augment those systems already available.

Once the need is identified, a study should be conducted to ascertain what possible applications could be incorporated into the system, and to what level of sophistication the system should be implemented, ranging from text presentation to using the computer system to providing simulation studies and computer managed instruction. This study should aim to match the command's goals for the system with the elements that make up the matrix of possible system applications and the resources that the command has at its disposal (funds, personnel, physical environment). This study is a non-trivial step which should be afforded the best possible guidance and management attention to ensure that all users, including students, instructors, and managers are represented. These people have a responsibility to provide their individualized input to the study. It can't be over-emphasized how important user input is to the determination of the proper system, for

if the system is developed without the user's frame of reference being considered, the system stands a high probability of failure, regardless of its technical attributes. Included in this step is a feasibility study and a cost/benefit study to ensure that what the study group is recommending is financially, technically, or organizationally practical and within reach of the command it is intended for.

Once the planning and feasibility study has been completed, system requirements must be determined. System requirements fall into four categories: the physical environment, the authoring system, personnel, and the computer system. To ensure that the total computer based educational system will succeed and attain the results desired by the command, all of the system requirements must be determined in an integrated fashion and not separately as if they were totally independent of each other. To show this relationship one only has to consider the capabilities of the command's personnel and match this against the resulting capability requirements of the authoring system. Obviously, the command that has a proficient and talented programming staff will require a much less capable authoring system than the command that doesn't have a trained staff. Care must be exercised to determine future system demands and command resources. Customizing the system to only current resources has caused many

commands to learn the hard way when their "expert" is transferred and no one is left to manage the computer system.

The determination of the authoring system is perhaps the most vital decision that must be made in the system requirement phase. The authoring system will determine the extent of the entire system's capabilities and most likely its ultimate success. Authoring systems range in complexity from high level programming languages like FORTRAN, Pascal or BASIC to complete systems such as TUTOR. Many commands that have been dependent upon outside organizations to provide their software products have found that these products have been delivered late, over budget, and sometimes never delivered at all. To prevent this from occurring, the command must weigh the corresponding benefits and costs of being dependent on other organizations and that of procuring an authoring system that allows the command to generate its own courseware (software that is used in the educational process).

The continual integration of the computer into all aspects of our lives can only lead us to more and more imaginative and practical uses of the computer. The educational process is not exempt. Since personnel time management is so important to the Naval organization, the computer looms large as a potential tool to be used by most commands to provide for better and more efficient education.

B. RECOMMENDATIONS

1. Because of the vast potential for improved training, the Chief of Naval Training should become the centralized command that coordinates the following aspects of small CBE systems: (a) procurement, (b) hardware selection, (c) courseware exchange and availability, (d) personnel training. Small Naval commands should be able to go to one organization to receive information and guidance about CBE.

The computer industry is so dynamic in its technological development, as represented by the advancements in video disc, that staying abreast with this technology will require much more effort than can be given by a small command. CNET could fill this void by staffing a few experts that could keep up with the advancements and assist the requesting command with technical advice.

2. NAVSEA is currently implementing a project (SNAP II) of placing microcomputers onboard ships. NAVSEA should investigate the use of CBE. If the capacity exists for added applications such as CBE on this hardware, they will provide yet another benefit to this innovative project.

3. Staffing, at perhaps the TYCOM level, of training personnel who are knowledgeable in CBE applications and use of computer systems in training and education. This will enhance the capability of providing consistent and quality courseware to the fleet.

APPENDIX A

COST/BENEFIT STUDY EXAMPLE

Scenario

A Fleet Ballistic Missile submarine squadron staff has noticed a downward trend in fleet readiness of its deployable units apparently blamed on the lack of time available for training. The squadron commander has tasked all of his department heads to work together to produce a cost/benefit study aimed at evaluating the possible use of a computer in solving the squadron's training problem.

Study Goals

1. Produce an educational system for under $250,000.
2. The system must be usable by all squadron personnel.
3. The system will not impose any additional burden on the crews.
4. Each unit will be identical to ensure hardware and software compatability.

Assumptions and Facts

1. The squadron is made up of ten submarines, each of which has two complete crews.
2. Each crew has 120 enlisted and fifteen officers (total of 2700 men).

3. All courseware will be programmed by the squadron staff to ensure satisfaction of goal three and to ensure total consistency among all units.
4. Each ship will have one CPU and two terminals as will the squadron staff which will be used for courseware production and available as a ready spare if needed.
5. A conservative 40% time efficiency improvement will be used in all calculations.
6. All training will be given on the required rate of twice a year to each crew except Checkin Procedures (once) and Escape Procedures (once a year).
7. The study will cover a three year period.
8. The average hourly compensation will be estimated at $12 per hour.

Cost/Benefit Study

COSTS:

1.	Personnel:	
	20 ship coordinators x 20 hours x $12/hour	$ 4,800
	Authoring effort, 13 courses x 200 hours/course x $12/hour	31,200
	TOTAL PERSONNEL COST	$ 36,000
2.	Environment:	
	Voltage Filters: $100 x 11 units	$ 1,100
	Terminal Station Preparation (including shock mounting) $250 x 22	5,500
	TOTAL ENVIRONMENT COSTS	$ 6,600
3.	Authoring System	
	Lease $325/month x 36 months	$ 11,700

4.	Computer System:	
	CPU (MPM compatible $3500 x 11 ea.	$ 38,500
	Color graphic terminal $1200 * 22 ea.	26,400
	10 MBYTE Disk Storage $2000 x 11 ea.	22,000
	Printer $1000 x 11 ea.	11,000
	Maintenance contract $300/month x 36 months	10,800
	Furniture and Supplies $500 x 11 ea.	5,500
	TOTAL COMPUTER COSTS	$114,200
	TOTAL SYSTEM COSTS	$168,500

BENEFITS:

	Course	Hours/3 yrs.	Savings (40% @ $12/hr)
1.	G.M.T		
	a. Check in Procedures	2,700	
	b. Damage Control	16,200	
	c. Escape Procedures	8,100	
	TOTAL G.M.T.	27,000	$129,600
2.	Operations Department		
	a. Rules of the Road	360	
	b. Ship Characteristics	700	
	c. Underwater Navigation	700	
	TOTAL OPERATIONS	1,760	$ 8,448
3.	Weapons Department		
	a. Missile Launch Procedures	1,200	
	b. Missile Loading Procedures	1,200	
	TOTAL WEAPONS	2,400	$ 11,520
4.	Supply Department		
	a. CASREPT Procedures	625	
	b. Upkeep Procedures	500	
	c. Food Service Records and Returns	1,100	
	TOTAL SUPPLY	2,225	$ 10,680
5.	Engineering Department		
	a. Reactor Start Up	3,600	
	b. IMA Requirements	3,600	
	TOTAL ENGINEERING	7,200	$ 34,560
	TOTAL SYSTEM SAVINGS		$194,808
	NET BENEFIT		$ 26,308

Conclusions and Recommendations

From this analysis, the Computer-Based Educational system should be funded and implemented. Emphasis on further courseware development should be directed towards those areas (G.M.T. and engineering) that contain the largest groups and hence produce the greatest return per dollar.

APPENDIX B

NEVADA PILOT: GENERAL INFORMATION

INTRODUCTION

PILOT is a programming language for interactive programs, i.e., for those programs in which the user participates in a kind of conversation with the computer by typing responses to questions posed by the computer. PILOT stands for Programmed Inquiry, Learning or Teaching, and has been used most commonly as a language for computer-assisted instruction. It was first developed by John A. Starkweather at the University of California in San Francisco and has been implemented on a variety of large and small computers.

This guide provides a description and operating procedures for a version of PILOT that runs on an 8080, Z-80, or 8085 microcomputer equipped with diskette storage and a visual display terminal. The latter can be either a memory-mapped display or the more common terminal (CRT) with serial connection to the computer.

PILOT, Version 1.1 was first prepared for the National Library of Medicine, Bethesda, Maryland. Other portions were developed for PILOT Version 2.2, a cassette tape version for the Processor Technology Sol Computer.

WHAT CAN BE DONE WITH PILOT?

PILOT enables a person without any prior computer experience to develop and test dialogue programs for use in an intructional or training context. The simplicity of the instruction format, as well as the conversational structure of the system, make it easy for a teacher to prepare a program and easy for a student to use it, with a minimum of training.

PILOT makes it possible, for example, to present the student with a reading passage, allow time to study it, and then ask a series of questions to check on comprehension. The program might include computer responses keyed to the answer a student has given, or it might ask for the student's reaction to the passage, scan his response, and comment or provide suggestions based on that response.

The teacher can prepare a vocabulary quiz that keeps track of a student's score and then moves on or repeats a lesson, depending on the student's performance or choice. A PILOT program can introduce a mathematical word-problem and offer the solution, step by step, or it can give the student the opportunity to discover as many of the steps as possible, with the computer hinting along or even revealing a step, when necessary.

PILOT is also a vehicle for learning about computers. You can write a program that teaches how to write a PILOT

program and let the student save the program, so that it can be executed or revised on another occasion. (Or the student can write, edit, and run the program in the same sitting.)

A user can have considerable control over the order of events in a program, and is therefore not likely to find the experience intimidating. Users can select what they want to read, or decide whether to repeat an exercise or execute another program. They can even determine where responses will appear on the screen or make them appear with reverse video (i.e., black letters on white, for a screen set to white letters on black, or vice-versa) to emphasize a particular word in the answer. Users can keep their answers, list them, and review the exercises with which they had difficulty. PILOT is also suitable for writing conversational games.

Just as in a spoken language, you can express many ideas and accomplish many tasks by combining a handful of simple statement types.

WHY NOT BASIC, OR ANOTHER PROGRAMMING LANGUAGE?

It is possible to write interactive programs in a general purpose programming language such as BASIC, APL, FORTRAN, or PL/1 instead of in PILOT. The reverse is certainly not true, for PILOT is a specialized language oriented toward dialogues, drills, tests, etc., rather than toward some kinds of computation handled well by general purpose languages.

The advantage of PILOT over general purpose languages such as BASIC is that interactive programs are easier to write in PILOT. If a BASIC program is to handle free-response dialogue, the programmer must often make unweildy arrangements for processing input and comparing words or portions of words that the program must recognize. In PILOT this kind of processing is easy, and the programs are more readable by human beings than they might be if they were written in some other computer language.

```
CREATEF:B:TEST1
OPENF:B:TEST1,C
     R:  WRITTEN JANUARY, 1983
RW:C, THIS IS A COPY OF RETAINED ANSWERS FOR:
T:  PLEASE ENTER YOUR NAME
A:  $NAME
RW:C,$NAME
* PAGE1
CH:
T:       YOU ARE THE SALES OFFICER ON USS DUARTE (DD-901).
T:  RECENTLY THERE HAVE BEEN MANY REQUESTS FOR
T:  EMBLEMATIC ITEMS FROM THE CO TO USE AS GIFTS FOR
T:  VISITORS.  YOUR SHIP HAS BEEN GRANTED COMMUNITY
T:  RELATIONS FUNDS FROM THE FLEET OINC TO PAY FOR
T:  THESE ITEMS.  ALL THESE ITEMS FALL IN THE UNDER
T:  $25 PRICE RANGE.  EITHER YOUR BOSS (LT. FROST), THE
T:  XO, OR THE CO ARE THE ONES WHO HAVE ASKED YOU FOR
T:  THEM.  LT. FROST AND THE SSC ALWAYS FOLLOW-UP WITH THE
T:  PROPER PAPERWORK BUT IT IS ALWAYS AFTER THE FACT.
FOOT:
CH:
T:       YOUR SH LPO (SH1 WILLIS) HAS COME TO YOU
T:  SAYING HE FEELS THAT THE CURRENT PRACTICE IS A
T:  BAD BUSINESS EXAMPLE FOR THE SHIP STORE OPERATOR
T:  AND MAKES IT HARD TO ANTICIPATE AND COMPUTE
T:  STOCKING REQUIREMENTS FOR EMBLEMATIC ITEMS.  HE
T:  ASKS YOU IF THERE IS A WAY TO HANDLE THIS ON A
T:  MORE PROFESSIONAL LEVEL.  YOU TELL SH1 WILLIS
T:  YOU AGREE WITH HIS ANALYSIS.  WHAT DO YOU DO NOW?
T:  TYPE YES IF YOU WANT THE PROBLEM REPEATED, ELSE
T:  HIT THE RETURN.
A:
M:  YES
JY:*PAGE1
FOOT:
CH:
T:  1.  GO TALK TO LT. FROST ABOUT THE PROBLEM.
T:  2.  ASK SH1 WILLIS WHAT HE WOULD DO.
T:  3.  GO STRAIGHT TO THE ROOT OF THE PROBLEM AND
T:  4.  CALL THE LOCAL FLEET ASSIST TEAM FOR HELP.
T:  5.  TELL SH1 WILLIS YOU WILL CONTINUE THE
T:      PRESENT PRACTICE.
A:
WR:C
M:1,2,3,4,5
JM:*PAGE2,*PAGE3,*PAGE4,*PAGE5,*PAGE6
*PAGE2
CH:
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T:  AFTER YOU EXPLAIN YOUR PROBLEM, LT. FROST AGREES THAT
T:  THE CRISIS MANAGEMENT STEMMING FROM EMBLEMATIC
T:  ITEMS IS NOT A GOOD SITUATION.  HE TELLS YOU THAT
T:  HE WANTs YOU TO MANAGE THIS PROBLEM SO (1) THE CO
T:  HAS WHAT HE NEEDS/DESIRES AND (2) THAT THE CREW HAS
T:  THOSE SAME OPPORTUNITIES.  HE SUGGESTS THAT THE ITEM
T:  THE CO WANTS BE BROKEN OUT AHEAD OF TIME AND ALL THE
T:  ASSOCIATED PAPERWORK BE COMPLETED.  HE CONCLUDES
T:  BY TELLING YOU TO COME UP WITH THE PLAN.  WHAT DO
T:  YOU DO NOW?  (TYPE 'Y' TO HAVE PROBLEM REPEATED,
T:  OR HIT RETURN)
A:
M:Y
JY:*PAGE2
FOOT:
CH:
T:  1.  GO TALK TO THE SK'S ABOUT THE REQUIRED
T:      PAPERWORK FOR ADVANCED BREAK OUTS.
T:  2.  GO TALK TO SH1 WILLIS ABOUT FORMULATING AN
T:      ACTION PLAN.
T:  3.  TELL LT. FROST YOU ARE GOING TO DISCUSS WITH
T:      THE CO HIS REQUIREMENTS.
T:  4.  IMMEDIATELY INCREASE STOCK IN SHIPS STORE OF
T:      ALL EMBLEMATIC ITEMS.
T:  5.  CALL THE FLEET ASSISTANCE TEAM FOR HELP.
A:
WR:C
M:1,2,3,4,5
JM:*PAGE7,*PAGE3,*PAGE8,*PAGE9,*PAGE15
E:
*PAGE3A
CH:
T:      SH1 WILLIS SAYS HE HAS SEEN THIS PROBLEM HANDLED
T:  IN SEVERAL WAYS.  THE BEST WAY FOR THE SALES DIVISION
T:  WAS THE WAY IT WAS HANDLED ON HIS  LAST SHIP.  HE
T:  EXPLAINED THAT THE ITEMS THE CO USED FOR GIFTS WERE
T:  BROKEN OUT AHEAD OF TIME AND MANAGED BY THE SK'S
T:  AS A STOCKED ITEM   TWO SEPARATE STOCK CARDS WERE
T:  KEPT.  ONE ON THE CREW'S REQUIREMENTS AND THE OTHER
T:  ON THE CAPTAIN'S USAGE.  SH1 WILLIS SAID THE KEY IS
T:  TO ADD ORDERING AND SHIPPING TIME OF 6 MONTHS TO
T:  THE 90 DAY AUTHORIZED LIMIT.  THIS WAS BECAUSE OF
T:  THE LONG DELAYS IN THE COMPANY'S TURN AROUND TIME
T:  ON ALL PERSONALIZED ITEMS.  WHAT NEXT?  (ENTER 'Y'
T:  IF YOU WANT THE PROBLEM REPEATED, ELSE HIT RETURN).
A:
M:Y
JY:*PAGE3A
FOOT:
CH:
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E:
*PAGE3
U:PAGE3A
T:  1.  FORMULATE A PLAN OF ACTION AND PRESENT IT TO
T:      LT. FROST.
T:  2.  GO TALK TO THE CO ON HIS REQUIREMENTS.
T:  3.  GO TRY OUT THE SKC SH1 WILLIS' PLAN.
T:  4.  CALL THE FLEET ASSISTANCE TEAM FOR HELP.
T:  5.  TELL SH1 WILLIS YOU WILL CONTINUE PRESENT
T:      PROCEDURES.
A:
WR:C
M:1,2,3,4,5
JM:*PAGE10,*PAGE4,*PAGE7,*PAGE5,*PAGE6
E:
*PAGE4
CH:
T:      THE CO SEEMS MORE THAN RECEPTIVE TO DISCUSS HIS
T:  STOCKING REQUIREMENTS FOR EMBLEMATIC ITEMS.  HE
T:  LETS YOU KNOW HE IS CONCERNED OVER THE LENGTH OF
T:  TIME IT TAKES FOR THE ITEMS TO GET TO HIM ONCE HE'S
T:  ASKED FOR ONE.  WHEN YOU OFFER TO GIVE HIM SOME
T:  SPARES TO HOLD FOR AN EMERGENCY, HE LETS YOU KNOW
T:  THAT HE IS NOT A "STOCK POINT".  HE EXPECTS YOU TO
T:  MAINTAIN EMBLEMATIC STOCKS.  THE CO ENDS THE
T:  MEETING BY TELLING YOU THAT HE REQUIRES ABOUT 15
T:  BALL CAPS, 15 LIGHTERS, AND 20 SHIPS PATCHES A
T:  MONTH AND THAT MANY AGAIN AT EVERY LIBERTY PORT.
FOOT:
CH:
T:  HE TELLS YOU TO WORK OUT THE DETAILS WITH LT. FROST.
T:  AS YOU HEAD BACK TO THE SALES OFFICE, WHAT IS
T:  YOUR NEXT STEP?  (TYPE 'Y' IF YOU WISH THE PROBLEM
T:  REPEATED, ELSE HIT THE RETURN).
A:
M:Y
JY:*PAGE4
FOOT:
CH:
T:  1.  ORDER ENOUGH STOCK TO LAST THE CO FOR A YEAR.
T:  2.  TALK TO SH1 WILLIS ABOUT WHAT HE HAS SEEN DONE.
T:  3.  GO TALK TO LT. FROST ABOUT THE PROBLEM.
T:  4.  CHECK ON STOCK TO SEE IF YOU HAVE ENOUGH FOR
T:      THE CREW AND CO TO LAST THE NEXT 90 DAYS.
T:  5.  CALL FLEET ASSISTANCE TEAM FOR HELP.
A:
WR:C
M:1,2,3,4,5
JM:*PAGE9,*PAGE11,*PAGE12,*PAGE22,*PAGE14
E:
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*PAGE5
CH:
T:      THE FLEET ASSISTANCE TEAM TELLS YOU THAT A BETTER
T:  SYSTEM IS DEFINITELY NECESSARY.  THE SHCM THAT YOU
T:  SPEAK TO TELLS YOU THAT BEFORE ITEMS ARE REMOVED,
T:  AT A MINIMUM, AN 1149 BE HAND WRITTEN FOR THE
T:  STORE OPERATOR AND ALL ITEMS BE SIGNED RECEIPTED
T:  FOR BY YOU OR A DESIGNATED ASSISTANT.  THE STOCKING
T:  REQUIREMENTS SHOULD NOT BE A PROBLEM.  HE SUGGESTS
T:  THAT YOU GET THE CO TO ESTIMATE HIS USAGE AND
T:  SIMPLY ADD THAT TO THE HISTORICAL DATA YOU ALREADY
T:  HAVE FROM THE SHIPS STORE OPERATION.  HE WISHES
T:  YOU GOOD LUCK AND OFFERS YOU ASSISTANCE ON ANY
T:  FUTURE PROBLEMS.  WHAT'S NEXT CHOP?  (TYPE 'Y'
T:  IF YOU DESIRE THE PROBLEM REPEATED, ELSE HIT
T:  THE RETURN).
A:
M:Y
JY:*PAGE5
FOOT:
CH:
T:  1.  GO TALK TO THE CO FOR AN ESTIMATE OF HIS
        EMBLEMATIC ITEM REQUIREMENTS.
T:  2.  GO TALK TO YOUR BOSS, LT. FROST, ABOUT THE PROBLEM.
T:  3.  ASK SH1 WILLIS FROM HIS PAST EXPERIENCE HOW
T:      HAS THIS BEEN  HANDLED.
T:  4.  IMPLEMENT PROGRAM WITH SHCM SGGESTIONS.
T:  5.  ASK SKC FOR HITORICAL DATA HE HAS ON RETAINED
T:      1149'S PERTAINING TO EMBLEMATIC ITEMS CHARGED TO
T:      OPTAR.
A:
WR:C
M:1,2,3,4,5
JM:*PAGE4,*PAGE2,*PAGE3,*PAGE16*,*PAGE7
E:
*PAGE6
CH:
T:      YOU CAN TELL SH1 WILLIS DISAGREES WITH YOUR DECISION
T:  BUT DOES NOT CHALLENGE YOU.   THE PRACTICE CONTINUES
T:  UNTIL THE DAY BEFORE DUARTE DEPARTS FOR A 5 WEEK
T:  FLEET EXERCISE.  WHILE THE CO WAS ENTERTAINING THE
T:  BASE CHAPLAIN'S FAMILY AFTER SUNDAY SERVICES, HE
T:  PROMISED THE CHAPLAIN'S SON A BALL CAP.  WHEN THE
T:  CO CONTACTS THE DUTY SUPPLY, HE IS TOLD NOBODY
T:  ONBOARD CAN GET INTO THE SHIPS STORE.  LT. FROST
T:  IS CALLED AND HE CONTACTS YOU AT HOME.  HE TELLS
T:  YOU TO GET THE CO THE BALL CAP NOW EVEN IF YOU
T:  HAVE TO BREAK INTO THE STORE.
FOOT:
CH:
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T:      AFTER UNSUCCESSFUL ATTEMPTS TO REACH THE SHIP'S
T:  STORE OPERATOR AND TYPE BULK STOREROOM OPERATOR
T:  YOU TAKE THE KEY AND COMBINATION TO THE STORE
T:  FROM THE SEALED ENVELOPE IN YOUR SAFE AND
T:  EMERGENCY ENTER THE STORE.  THE NEXT DAY WHILE
T:  INVENTORYING THE SHIPS STORE YOU REALIZE THAT
T:  NOT TAKING ACTIONS TO ADDRESS PROBLEMS IS GOING
T:  TO RUIN YOUR CAREER.
T:  YOU WILL NOW BE RETURNED TO THE STARTING POINT.
FOOT:
CH:
J:*PAGE1
E:
*PAGE7
CH:
T:      THE SKC TELLS YOU HE PREFERS ONE 1149 A MONTH
T:  TO ACCOUNT FOR COMMUNITY RELATION FUND EXPEND-
T:  ITURES.  HE SAYS THAT THE NUMBER OF ITEMS AND
T:  DOLLAR AMOUNT WOULD BE OBTAINED FROM HANDWRITTEN
T:  1149'S SIGNED BY YOU AND COLLECTED BY THE STORE
T:  OPERATOR.  HE ALSO SUGGESTS THE ALTERNATIVE OF
T:  ONCE A MONTH MAKING AN ADVANCED BREAK OUT TO COVER
T:  THE CO'S PROJECTED NEEDS AND MANAGED BY YOU AND
T:  LT. FROST.
FOOT:
CH:
T:      SK1 BEERS OFFERS TO MANAGE THE BALL CAPS AND
T:  LIGHTERS AS A STOCKED ITEM IN HIS CONSUMABLE
T:  STOREROOM.  HE EXPLAINS THAT IT IS ALWAYS LOCKED
T:  AND DUTY SUPPLY WOULD HAVE A CENTRAL KEY FOR
T:  EMERGENCIES.  WITH THIS INFO YOU LEAVE.
T:  WHAT NEXT?.....  (IF YOU WOULD LIKE TO HAVE
T:  THE PROBLEM REPEATED, TYPE 'Y', ELSE HIT THE
T:  RETURN).
A:
M:Y
JY:*PAGE7
FOOT:
CH:
T:  1.  SET UP A PLAN AND SUBMIT TO LT. FROST.
T:  2.  CALL FLEET ASSISTANCE TEAM.
T:  3.  GO TALK TO THE CO ON HIS REQUIREMENTS.
T:  4.  CONTINUE PRESENT POLICY TO SEE IF THE KINKS
T:      CAN WORK THEMSELVES OUT.
A:
WR:C
M:1,2,3,4
JM:*PAGE17,*PAGE18,*PAGE19,*PAGE6
E:
*PAGE8
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CH:
T:      THE CO SEEMS MORE THAN RECEPTIVE TO DISCUSS
T:  HIS STOCKING REQUIREMENTS FOR EMBLEMATIC ITEMS.
T:  HE LETS YOU KNOW HE IS CONCERNED OVER THE LENGTH
T:  OF TIME IT TAKES FOR THE ITEMS TO GET TO HIM ONCE
T:  HE HAS ASKED FOR ONE.  WHEN YOU OFFER TO GIVE HIM
T:  SOME SPARES TO HOLD FOR AN EMERGENCY, HE LETS YOU
T:  KNOW THAT HE IS NOT A "STOCK POINT".  HE EXPECTS
T:  YOU TO MAINTAIN EMBLEMATIC STOCKS.  THE CO ENDS
T:  THE MEETING BY TELLING YOU THAT HE REQUIRES ABOUT
T:  15 BALL CAPS, 15 LIGHTERS, AND 20 SHIPS PATCHES A
T:  MONTH AND THAT MANY AGAIN AT EVERY LIBERTY PORT.
FOOT:
CH:
T:      HE TELLS YOU TO WORK OUT THE DETAILS WITH LT.  FROST.
T:  AS YOU HEAD BACK TO THE SALES OFFICE, WHAT IS YOUR
T:  NEXT STEP?  (IF YOU WOULD LIKE THE PROBLEM REPEATED
T:  TYPE 'Y' ELSE HIT THE RETURN).
A:
M:Y
JY:*PAGE8
FOOT:
CH:
T:  1.  ORDER ENOUGH STOCK TO LAST THE CO FOR A YEAR.
T:  2.  GO TALK TO SKC ABOUT REQUIRED PAPERWORK FOR
T:      ADVANCED BREAK OUTS.
T:  3.  GO TALK TO LT. FROST ABOUT THE PROBLEM.
T:  4.  CHECK ON STOCK TO SEE IF YOU HAVE ENOUGH FOR
T:      THE CREW AND CO TO LAST THE NEXT 90 DAYS.
A:
WR:C
M:1,2,3,4
JM:*PAGE9,*PAGE23,*PAGE12,*PAGE35
E:
*PAGE9
CH:
T:      SH1 WILLIS TELLS YOU THAT ORDERING AND SHIPPING
T:  TIME FOR EMBLEMATIC ITEMS, ESPECIALLY BALL CAPS,
T:  IS ABOUT 6 MONTHS.  YOU'RE GLAD THAT YOU'VE DECIDED
T:  TO INCREASE STOCK.  HOWEVER, SH1 WILLIS TELLS YOU
T:  THAT RIGHT NOW YOU HAVE ENOUGH EMBLEMATIC ITEMS TO
T:  LAST AT LEAST A YEAR.  HE ALSO ASKS YOU IF ANYTHING
T:  IS GOING TO BE DONE ABOUT THE WAY THE ITEMS ARE
T:  TAKEN OUT OF THE STORE.  HE SAYS HE IS STILL
T:  WORRIED ABOUT ACCOUNTABILITY.  SH1 WILLIS THEN ASKS
T:  IF YOU WANT HIM TO FORGE THE STOCK RECORD CARDS ONLY
T:  90 DAYS EMBLEMATIC STOCK.
T:  SMI.  LET'S GO BACK TO AN EARLIER SECTION.
FOOT:
J:*PAGE2
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E:
*PAGE10
CH:
T:      LT. FROST SAYS HE WANTS THE EMBLEMATIC ITEMS
5:  MANAGED IN THE SALES DIVISION AND NOT BY SK'S.
T:  HE AGREES THAT THE CRISIS MANAGEMENT STEMMING
T:  FROM EMBLEMATIC ITEMS IS NOT A GOOD SITUATION.
T:  HE TELLS YOU THAT HE WANTS YOU TO MANAGE THIS
T:  PROBLEM SO (1) THE CO ALWAYS HAS WHAT HE NEEDS/
T:  REQUIRES AND (2) THAT THE CREW HAS THOSE SAME
T2  OPPORTUNITIES.  HE SUGGESTS THAT THE ITEMS THE
T:  CO WANTS TO BE BROKEN OUT AHEAD OF TIME AND ALL
T:  THE ASSOCIATED PAPERWORK COMPLETED.  HE CONCLUDES
T:  BY TELLING YOU TO PRESS ON AND WORK OUT THE
T:  DETAILS.  WHAT DO YOU DO NOW?  (ENTER 'Y' IF
T:  YOU WANT THE PROBLEM REPEATED, ELSE HIT RETURN).
A:
M:Y
JY:*PAGE10
FOOT:
CH:
T:  1.  GO TALK TO THE SK'S ABOUT REQUIRED PAPERWORK FOR
T:      ADVANCED BREAK OUTS.
T:  2.  TELL LT. FROST YOU ARE GOING TO DISCUSS WITH THE CO
T:      HIS REQUIREMENTS.
T:  3.  IMMEDIATELY INCREASE STOCK IN SHIPS STORE OF
T:      ALL EMBLEMATIC ITEMS.
T:  4.  CALL THE FLEET ASSISTANCE TEAM FOR HELP.
A:
WR:C
M:1,2,3,4
JM:*PAGE7,*PAGE8,*PAGE9,*PAGE21
E:
*PAGE11
U:*PAGE3A
CH:
T:  1.  FORMULATE A PLAN OF ACTION AND PRESENT IT
T:      TO LT. FROST.
T:  2.  GO TRY OUT ON THE SKC, SH1 WILLIS', PLAN.
T:  3.  CALL THE FLEET ASSISTANCE TEAM FOR HELP.
T:  4.  TELL SH1 WILLIS YOU WILL CONTINUE PRESENT
T:      PROCEDURES.
A:
WR:C
M:1,2,3,4
JM:*PAGE12,*PAGE23,*PAGE13,*PAGE6
E:
*PAGE12
CH:
T:      AFTER YOU EXPLAIN YOUR PROBLEM, LT. FROST AGREES
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T:  THAT THE CRISIS MANAGEMENT STEMMING FROM EMBLEMATIC
T:  ITEMS IS NOT A GOOD SITUATION.  HE TELLS YOU THAT
T:  HE WANTS YOU TO MANAGE THIS PROBLEM SO (1) THE
T:  CO HAS WHAT HE NEEDS/DESIRES AND (2) THAT THE
T:  CREW HAS THOSE SAME OPPORTUNITIES.  HE SUGGESTS
T:  THAT THE ITEMS THE CO WANTS BE BROKEN OUT AHEAD
T:  OF TIME AND ALL THE ASSOCIATED PAPERWORK
T:  COMPLETED.  HE CONCLUDES BY TELLING YOU TO COME
T:  UP WITH A PLAN.  WHAT DO YOU DO NOW?  (ENTER 'Y'
T:  IF YOU WANT THE PROBLEM REPEATED, ELSE HIT RETURN)
A:
M:Y
JY:*PAGE12
FOOT:
CH:
T:  1.  GO TALK TO THE SK'S ABOUT THE REQUIRED
T:      PAPERWORK FOR ADVANCED BREAK OUTS.
T:  2.  GO TALK TO SH1 WILLIS ABOUT FORMULATING
T:      AN ACTION PLAN.
T:  3.  IMMEDIATELY INCREASE STOCK IN SHIPS STORE
T:      OF ALL EMBLEMATIC ITEMS.
T:  4.  CALL FLEET ASSISTANCE TEAM FOR HELP.
A:
WR:C
M:1,2,3,4
JM:*PAGE24,*PAGE25,*PAGE9,*PAGE26
E:
*PAGE13A
CH:
T:      THE FLEET ASSISTANCE TEAM TELLS YOU THAT A BETTER
T:  SYSTEM IS DEFINITELY NECESSARY.  THE SHCM THAT YOU
T:  SPEAK TO TELLS YOU THAT BEFORE ITEMS ARE REMOVED,
T:  AT A MINIMUM, AN 1149 BE HANDWRITTEN FOR STORE
T:  OPERATOR AND ALL ITEMS BE SIGNED RECEIPTED FOR
T:  BY YOU OR A DESIGNATED ASSISTANT.  THE STOCKING
T:  REQUIREMENTS SHOULD NOT BE A PROBLEM.
FOOT:
CH:
T:      HE SUGGESTS THAT YOU GET THE CO TO ESTIMATE HIS
T:  USAGE AND SIMPLY ADD THAT TO THE HISTORICAL DATA
T:  YOU ALREADY HAVE FROM THE SHIP'S STORE OPERATION.
T:  HE WISHES YOU GOOD LUCK AND OFFERS YOU ASSIS-
T:  TANCE ON ANY FUTURE PROBLEMS.  WHAT'S NEXT CHOP?
T:  (ENTER 'Y' IF YOU WANT THE PROBLEM REPEATED,
T:  ELSE HIT RETURN)
A:
M:Y
JY:*PAGE13A
FOOT:
CH:
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E:
*PAGE13
U:*PAGE13A
T:  1.  SET UP A PROGRAM USING HANDWRITTEN 1149'S.
T:  2.  ASK SKC FOR HISTORICAL DATA HE HAS ON RETAINED
T:      1149'S PERTAINING TO EMBLEMATIC ITEMS
T:      CHARGED TO OPTAR.
T:  3.  GO SEE LT. FROST FOR SOME GUIDANCE.
T:  4.  YOU DECIDE TO LEAVE THIS PROBLEM ALONE FOR
T:      NOW.  YOU TELL SH1 WILLIS THAT THE ONLY PROBLEM
T:      IS RESPONSE TIME TO THE CO AND YOU PERSONALLY
T:      WILL INSURE THAT IMPROVES.
A:
WR:C
M:1,2,3,4
JM:*PAGE16,*PAGE23,*PAGE30,*PAGE6
E:
*PAGE14
U:*PAGE13A
T:  1.  GO TALK TO YOUR BOSS, LT, FROST, ABOUT THE
T:      PROBLEM.
T:  2.  ASK SH1 WILLIS FROM HIS PAST EXPERIENCES
T:      HOW HAS THIS BEEN HANDLED.
T:  3.  IMPLEMENT PROGRAM WITH SHCM SUGGESTIONS.
T:  4.  ASK SKC FOR HISTORICAL DATA HE HAS ON RETAINED
T:      1149'S PERTAINING TO EMBLEMATIC ITEMS
T:      CHARGED TO OPTAR.
A:
WR:C
M:1,2,3,4
JM:*PAGE12,*PAGE11,*PAGE16,*PAGE24
E:
*PAGE15
U:*PAGE13A
T:  1.  GO TALK TO THE CO FOR AN ESTIMATE OF HIS
T:      EMBLEMATIC ITEM REQUIREMENTS.
T:  2.  ASK SH1 WILLIS FROM HIS PAST EXPERIENCES
T:      HOW HAS THIS BEEN HANDLED.
T:  3.  GO TALK TO SKC ABOUT COMPLETING ASSOCIATED
T:      PAPERWORK AHEAD OF TIME.
T:  4.  TELL SH1 WILLIS YOU ARE GOING TO LEAVE THE
T:      PROBLEM ALONE FOR AWHILE TO SEE IF YOU'RE NOT
T:      CHANGING FOR CHANGES SAKE.
A:
WR:C
M:1,2,3,4
JM:*PAGE8,*PAGE20,*PAGE7 *PAGE6
E:
*PAGE26
U:*PAGE13A
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T:  1.  YOU HAVEN'T HEARD ANY NEW IDEAS AND FEEL THAT
T:      YOU MIGHT HAVE OVERRECTED TO THE PROBLEM.
T:      YOU DECIDE TO LEAVE THE PROBLEM ALONE FOR NOW.
T:  2.  ASK SH1 WILLIS FROM HIS PAST EXPERIENCES HOW
T:      THIS HAS BEEN HANDLED.
T:  3.  IMPLEMENT PROGRAM WITH SHCM SUGGESTIONS.
T:  4.  ASK SKC FOR HISTORICAL DATA HE HAS ON RETAINED
T:      1149'S PERTAINING TO EMBLEMATIC ITEMS CHARGED
T:      TO OPTAR.
A:
MR:C
M:1,2,3,4
JM:*PAGE6,*PAGE38,*PAGE29,*PAGE24
E:
*PAGE18
U:*PAGE13A
T:  1.  SET UP A PROGRAM USING HANDWRITTEN 1149'S.
T:  2.  GO SEE THE CO ABOUT HIS REQUIREMENTS.
T:  3.  GO TALK TO SH1 WILLIS ABOUT HIS PAST
T:      EXPERIENCES WITH THIS PROBLEM.
T:  4.  YOU DECIDE TO LEAVE THIS PROBLEM ALONE FOR
T:      NOW.  YOU TELL SH1 WILLIS THAT THE ONLY PROBLEM
T:      IS RESPONSE TIME TO THE CO AND YOU PERSONALLY
T:      WILL INSURE THAT IMPROVES.
A:
WR:C
M:1,2,3,4
JM:*PAGE27,*PAGE19,*PAGE28,IPAGE6
E:
*PAGE21
U:*PAGE13A
T:  1.  GO TALK TO THE CO FOR AN ESTIMATE OF HIS
T:      EMBLEMATIC ITEM REQUIREMENTS.
T:  2.  TALK TO SK1 BEERS TO WORK OUT A PLAN OF ACTION.
T:  3.  GO TALK TO SKO ABOUT COMPLETING ASSOCIATED
T:      PAPERWORK AHEAD OF TIME.
T:  4.  TELL SH1 WILLIS YOU ARE GOING TO LEAVE THE
T:      PROBLEM ALONE FOR AWHILE TO SEE IF YOU'RE
T:      NOT CHANGING FOR CHANGES SAKE.
A:
WR:C
M:1,2,3,4
JM:*PAGE8,*PAGE37,*PAGE7,*PAGE6
E:
*PAGE16
CH:
T:      YOU IMPLEMENT A NEW SYSTEM WITH HAND SIGNED
T:  1149'S FOR STOCK FROM THE SHIP'S STORE.
T:  THIS SEEMS TO PUT SH1 WILLIS AND THE STORE
T:  OPERATOR AT EASE OVER ACCOUNTABILITY WITHIN
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T:  THE SHIP'S STORE OPERATION.  THE PROBLEM IS THE
T:  CO IS STILL UPSET WHEN YOU ARE NOT PROMPT IN
T:  FILLING HIS REQUESTS.  ONE WEEKEND YOU AND YOUR
T:  STORE OPERATOR GET CALLED IN FOR A SILLY BALL
T:  CAP.  YOU TALK TO YOUR BUDDY THE NAVIGATOR AND
T:  HE SUGGEST YOU TALK TO YOUR BOSS, LT. FROST.
T:  THAT'S NOT A BAD IDEA.
FOOT:
J:*PAGE2
*PAGE17
CH:
T:       YOUR PLAN INVOLVES ADVANCED BREAK OUTS TO BE
T:  MANAGED BY THE SK'S AND YOURSELF.  LT. FROST
T:  DOESN'T LIKE THE IDEA OF YOU GIVING EMBLEMATIC
T:  STOCK TO THE SK'S.  HE ASKS YOU IF THE CO
T:  WOULD TAKE THE ADVANCED BREAK OUTS SO HE WOULDN'T
T:  HAVE TO CHASE ANYONE DOWN.  YOU TELL HIM YOU
T:  HAVEN'T TALKED TO THE CO YET.  AS LT. FROST DOES
T:  A SLOW BURN -- YOU DECIDE SINCE HE HAD TOLD YOU
T:  TO GO TALK TO THE CO YOU PROBABLY SHOULD.
FOOT:
J:*PAGE4
*PAGE19
T:       THE CO SEEMS MORE THAN RECEPTIVE TO DISCUSS
T:  HIS STOCKING REQUIREMENTS FOR EMBLEMATIC ITEMS.
T:  HE LETS YOU KNOW HE IS CONCERNED OVER THE LENGTH
T:  OF TIME IT TAKES FOR THE ITEMS TO GET TO HIM
T:  ONCE HE HAS ASKED FOR ONE.  WHEN YOU OFFER TO
T:  GIVE HIM SOME SPARES TO HOLD FOR AN EMERGENCY,
T:  HE LETS YOU KNOW THAT HE IS NOT A "STOCK POINT".
T:  HE EXPECTS YOU TO MAINTAIN EMBLEMATIC STOCKS.
T:  THE CO ENDS THE MEETING BY TELLING YOU THAT HE
FOOT:
CH:
T:  REQUIRES ABOUT 15 BALL CAPS, 15 LIGHTERS, AND
T:  20 SHIPS PATCHES A MONTH AND THAT MANY AGAIN
T:  AT EVERY LIBERTY PORT.  AS YOU HEAD BACK TO THE
T:  SALES OFFICE YOU GO OVER ALL THE INFORMATION
T:  GIVEN TO YOU BY THE SKC, LT. FROST, AND CO.  YOU
T:  SIT DOWN AND FORMULATE THE FOLLOWING PLANS FOR
T:  LT. FROST.  PICK YOUR BEST TO PRESENT TO LT. FROST.
T:  (ENTER 'Y' IF YOU WANT THE PROBLEM REPEATED, ELSE
T:  HIT RETURN)
A:
M:Y
JY:*PAGE19
FOOT:
CH:
T:  1.  YOU DECIDE TO LEAVE THINGS ALONE AND SEE IF
T:      THE PROBLEMS WILL WORK THEMSELVES OUT.
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T:   2.  YOU REALLY LIKE THE IDEA GIVEN YOU BY SK1
T:       BEERS AND WOULD LIKE TO DELEGATE TO DUTY
T:       SUPPLY AND THE SK'S THE RESPONSIBILITIES
T:       OF MANAGING THE CO'S EMBLEMATIC ITEMS.
T:       YOUR PLAN THEREFORE INCLUDES MONTHLY ADVANCE
T:       BREAK OUTS TO THE CONSUMABLES STOREROOM WITH
T:       ALL PAPERWORK COMPLETED IN ADVANCE.   YOU PLAN
T:       TO START THIS PROCEDURE AS SOON AS YOU CAN
T:       GET A MEMO OUTLINING PROCEDURES TO ALL DUTY
T:       SUPPLY WATCHSTANDERS.
T:   3.  YOUR MAIN CONCERN IS THE SHIP'S STORE OPERATORS
T:       ACOUNTABILITY AS FIRST BROUGHT OUT BY SH1
         WILLIS.  THE SKC'S IDEA OF HANDWRITING 1149'S
T:       AND THEN TAKING CARE OF THE PAPERWORK AT THE
T:       END OF THE MONTH SOUNDS GOOD.  YOU TELL SH1
T:       WILLIS TO ORDER ENOUGH STOCK FOR BOTH THE CO
FOOT:
CH:
T:       THE SHIP STORE OPERATOR ON THE NEW PROCEDURES.
T:   4.  YOU WANT TO IMPLEMENT THE BEST SYTEM TO
T:       INSURE YOU MEET LT. FROST'S REQUIREMENTS AND TO
T:       IMPROVE ON THE RESPONSE TIME TO THE CO.  YOU
T:       DECIDE TO BREAK OUT THE ITEMS AHEAD OF TIME
T:       FROM THE SHIP'S STORE AND KEEP THEM YOURSELF
T:       UNDER LOCK AND KEY.  SINCE THE CO WILL NOT
T:       STORE ANY OF THE ITEMS YOU DECIDE THAT YOUR
T:       FIRST STEP WILL BE TO GIVE BOTH LT. FROST AND,
T:       WITH HIS CONCURRENCE, THE DUTY SUPPLY OFFICER
T:       ACCESS TO YOUR PERSONAL CACHE.
A:
WR:C
M:1,2,3,4
JM:*PAGE6 *PAGE34,*PAGE31,*PAGE32
E:
*PAGE20
U:*PAGE3A
FOOT:
CH:
T:   1.  FORMULATE A PLAN OF ACTION AND PRESENT IT
T:       TO LT. FROST.
T:   2.  GO TRY OUT THE SKC, SH1 WILLIS', PLAN.
T:   3.  GO SEE THE CO ABOUT HIS REQUIREMENTS.
T:   4.  TELL SH1 WILLIS YOU WILL CONTINUE PRESENT
T:       PROCEDURES.
A:
WR:C
M:1,2,3,4
JM:*PAGE17,*PAGE7,*PAGE8,*PAGE6
E:
*PAGE22
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CH:
T:  YOU DO.  NOW WHAT?
T:  1.  ORDER ENOUGH FOR A YEAR.
T:  2.  DECIDE TO LET PROBLEM ALONE FOR AWHILE.
T:  3.  GO TALK TO LT. FROST ABOUT THE PROBLEM.
T:  4.  TALK TO SH1 WILLIS ON WHAT HE HAS SEEN DONE.
A:
WR:C
M:1,2,3,4
JM:*PAGE36,*PAGE13,*PAGE12,*PAGE11
E:
*PAGE23A
CH:
T:      THE SKC TELLS YOU HE PREFERS ONE 1149 A MONTH
T:  FOR COMMUNITY RELATIONS FUND REPORTING PURPOSES.
T:  HE SAYS THAT THE NUMBER OF ITEMS AND DOLLAR
T:  AMOUNT WOULD BE OBTAINED FROM HANDWRITTEN 1149'S
T:  SIGNED BY YOU AND COLLECTED BY THE STORE OPERATOR.
T:  HE ALSO SUGGESTS THE ALTERNATIVE OF ONCE A MONTH
T:  MAKING AN ADVANCED BREAK OUT TO COVER THE CO'S
T:  PROJECTED NEEDS AND MANAGED BY YOU AND LT. FROST.
FOOT:
CH:
T:      SK1 BEERS OFFERS TO MANAGE THE BALL CAPS AND
T:  LIGHTERS AS A STOCKED ITEM IN THE CONSUMABLES
T:  STOREROOM.  HE EXPLAINS THAT IT IS ALWAYS LOCKED
T:  AND DUTY SUPPLY WOULD HAVE A CENTRAL KEY FOR
T:  EMERGENCIES.  WITH THIS INFO YOU LEAVE.  WHAT
T:  NEXT?...  (ENTER 'Y' IF YOU WANT THE PROBLEM
T:  REPEATED, ELSE HIT RETURN).
A:
M:Y
JY:*PAGE23A
FOOT:
CH:
E:
*PAGE23
U:*PAGE23A
T:  1.  SET UP A PLAN AND SUBMIT TO LT. FROST.
T:  2.  CALL FLEET ASSISTANCE TEAM.
T:  3.  IMPLEMENT A PLAN USING HANDWRITTEN 1149'S.
T:  4.  CONTINUE PRESENT POLICY TO SEE IF THE KINKS
T:      CAN WORK THEMSELVES OUT.
A:
WR:C
M:1,2,3,4
JM:*PAGE29,*PAGE26,*PAGE16,*PAGE6
E:
*PAGE24
U:*PAGE23A
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T:  1.  CALL FLEET ASSISTANCE TEAM.
T:  2.  CONTINUE PRESENT POLICY TO SEE IF THE KINKS
T:      CAN WORK THEMSELVES OUT.
T:  3.  GO AND HAMMER OUT A PLAN USING THE INFO YOU
T:      HAVE AND PRESENT IT TO LT. FROST.
T:  4.  TAKE SK1 BEERS UP ON HIS OFFER TO MANAGE WHAT
T:      SO FAR HAS BEEN YOUR BIGGEST HEDACHE.
A:
WR:C
M:1,2,3,4
JM:*PAGE26,*PAGE6,*PAGE29,*PAGE34
*PAGE25
U:*PAGE3A
T:  1.  FORMULATE A PLAN OF ACTION AND PRESENT IT
T:      TO LT. FROST.
T:  2.  GO TRY OUT ON THE SKC SH1 WILLIS' PLAN.
T:  3.  CALL THE FLEET ASSISTANCE TEAM FOR HELP.
T:  4.  TELL SH1 WILLIS YOU WILL CONTINUE PRESENT
T:      PROCEDURES.
A:
WR:C
M:1,2,3,4
JM:*PAGE33,*PAGE23,*PAGE26,*PAGE6
E:
*PAGE27
CH:
T:  1149'S.  THIS PROCEDURE HAS YOU FILLING OUT AN
T:  1149 AND GIVING IT TO THE STORE OPERATOR BEFORE
T:  THE EMBLEMATIC ITEM ISSUED.  AT THE END OF THE
T:  MONTH THE 1149'S ARE TOTALED AND SENT TO THE
T:  SK'S.  THIS SYSTEM SEEMS TO BE WORKING FINE UNTIL
T:  THE CO ASKS YOU FOR 15 LIGHTERS AT ONE TIME.
T:  THIS NEARLY WIPES OUT YOUR SHIP'S STORE SUPPLY.
T:  WHEN YOU TELL THIS TO LT. FROST HE ASKS YOU WHAT
T:  WAS THE CO'S ORIGINAL ESTIMATED NEED.  AS YOU
FOOT:
CH:
T:  EXPLAIN WHY YOU HADN'T SEEN THE CO YET,
T:  LT. FROST COMES UNGLUED.  LET'S PICK UP THE PIECES
T:  AND GO BACK TO SEE WHAT LT. FROST'S ORIGINAL
T:  DIRECTIONS WERE.....
FOOT:
CH:
J:*PAGE2
*PAGE28
U:*PAGE3A
CH:
T:  1.  FORMULATE A PLAN OF ACTION AND PRESENT
T:      IT TO LT. FROST.
T:  2.  IMPLEMENT PLAN OF BREAKING OUT ITEMS AHEAD
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T:      OF TIME AND ALLOWING SK1 BEERS TO MANAGE
T:      IN THE CONSUMABLES STOREROOM.
T:  3.  GO SEE THE CO ABOUT HIS REQUIREMENTS.
T:  4.  TELL SH1 WILLIS YOU WILL CONTINUE PRESENT
R:      PROCEDURES.
A:
WR:C
M:1,2,3,4
JM:*PAGE27,*PAGE34,*PAGE19,*PAGE6
E:
*PAGE29
CH:
T:      AS YOU SIT DOWN AND THINK ABOUT YOUR OPTIONS,
T:  YOU FORMULATE THE PLANS BELOW.  WHICH ONE
T:  IS BEST?
T:  1.  YOU DECIDE TO LEVE THINGS ALONE AND SEE IF
T:      THE PROBLEMS WILL WORK THEMSELVES OUT.
T:  2.  YOU REALLY LIKE THE IDEA GIVEN YOU BY SK1
T:      BEERS AND WOULD LIKE TO DELEGATE TO DUTY
T:      SUPPLY AND THE SK'S THE RESPONSIBILITY OF
T:      MANAGING THE CO'S EMBLEMATIC NEEDS.  YOUR
T:      PLAN THEREFORE INCLUDES MONTHLY ADVANCE
T:      BREAK OUTS TO THE CONSUMABLES STOREROOM WITH
T:      ALL PAPERWORK COMPLETED IN ADVANCE.  YOU PLAN
T:      TO START THIS PROCEDURE AS SOON AS YOU CAN
T:      GET A MEMO OUTLINING PROCEDURES TO ALL DUTY
T:      SUPPLY WATCHSTANDERS.
FOOT:
CH:
T:  3.  YOUR MAIN CONCERN IS THE SHIP'S STORE
T:      OPERATORS ACCOUNTABILITY AS FIRST BROUGHT
T:      OUT BY SH1 WILLIS.  THE SKC'S IDEA OF
T:      HANDWRITING 1149'S AND THEN TAKING CARE OF THE
T:      PAPERWORK AT THE END OF THE MONTH SOUNDS GOOD.
T:      YOU TELL SH1 WILLIS TO ORDER ENOUGH STOCK FOR
T:      BOTH THE CO AND THE CREW.  YOUR FIRST STEP WILL
T:      BE TO TRAIN THE SHIP STORE OPERATOR ON THE
T:      NEW PROCEDURES.
T:  4.  YOU WANT TO IMPLEMENT THE BEST SYSTEM TO INSURE
T:      YOU MEET LT. FROST'S REQUIREMENTS AND TO
T:      IMPROVE ON THE RESPONSE TIME TO THE CO.  YOU
T:      DECIDE TO BREAK OUT THE ITEMS AHEAD OF TIME
T:      FROM THE SHIP'S STORE AND KEEP THEM YOURSELF
T:      UNDER LOCK AND KEY.  SINCE THE CO WILL NOT STORE
T:      ANY OF THE ITEMS YOU DECIDE THAT YOUR FIRST
T:      STEP WILL BE TO GIVE BOTH LT. FROST AND, WITH
T:      HIS CONCURRENCE, THE DUTY SUPPLY OFFICER ACCESS TO
T:      YOUR PERSONAL CACHE.
A:
WR:C
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M:1,2,3,4
JM:*PAGE6,*PAGE34,*PAGE31,*PAGE32
E:
*PAGE30
CH:
T:      LT. FROST ASKS YOU IF YOU HVE CHECKED OUT THE
T:  PROCEDURES FOR COMPLETING ADVANCED PAPERWORK.
T:  ACCOUNTING FOR COMMUNITY RELATIONS FUNDS ARE
T:  MANAGED BY SK'S.  LT. FROST HAS CONFIDENCE IN
T:  YOUR DECISION MAKING ABILITIES.  SO LET'S GO
T:  TALK TO THE SKC.
FOOT;
J:*PAGE23
E:
*PAGE31
CH:
T:      YOUR INTENTIONS ARE ALL COMMENDABLE.  HOWEVER,
T:  YOU HAVE NOT ADDRESSED THE CO'S CONCERN OF
T:  IMPROVING RESPONSE TIME.  A SENIOR OFFICER'S
T:  WISH IS THE SAME AS A COMMAND.  ALSO, WHAT HAPPENS
T:  IF THE STORE OPERATOR AND BULK CUSTODIAN ARE
T:  NOT AROUND?
FOOT:
J:*PAGE29
E:
*PAGE32
CH:
T:      YOU HAVE MADE THE RIGHT DECISION.  ALONG THE WAY
T:  YOU NEEDED TO TALK TO THE SKC, YOUR BOSS, LT.
T:  FROST, AND THE COMMANDING OFFICER.  GO TO LUNCH.
RW:C,  THIS BOY'S GOT THE RIGHT IDEA!!!!!
CLOSEF:C
E:
*PAGE33
CH:
        LT. FROST TELLS YOU THAT HE REALLY EXPECTED YOU
T:  TO HANDLE THIS PROBLEM.  AS YOU GO OVER THE STEPS
T:  YOU HAVE TAKEN, LT. FROST SUGGESTS AGAIN THAT ONE
T:  OF THE STEPS SHOULD BE TO TALK TO THE SK'S ABOUT
T:  PAPERWORK THEY REQUIRE FOR ADVANCED BREAK OUTS.
T:  THIS IS YOUR CHANCE TO MAKE A DECISION.  THAT'S
T:  RIGHT!  LET'S GO TALK TO THE SKC.
FOOT:
J:*PAGE24
E:
*PAGE34
CH:
T:      SK1 BEERS SEEMS MORE THAN HAPPY TO MANAGE THE
T:  ITEMS IN HIS STOREROOM.  EVERYTHING RUNS SMOOTHLY --
T:  ONCE ON A WEEKEND THE CO IS GIVEN 2 BALL CAPS
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T:  FOR SURPIRSE GUESTS BY DUTY SUPPLY.  THEN AFTER
T:  3 MONTHS DISASTER STRIKES.  THE CO PROMISES 25
T:  SCHOOL CHILDREN FROM FRANCE, WHILE TOURING DUARTE,
T:  THEIR VERY OWN DUARTE BALL CAP.  YOUR RECORDS
T:  INDICATE SK1 BEERS HAS 32 IN THE CONSUMABLE
T:  STOREROOM.  IT'S A GOOD THING BECAUSE THE SHIP'S
FOOT:
CH:
T:  STORE OPERATOR IS ON LIBERTY.  AS YOU OPEN UP THE
T:  LOCKER YOU FIND ONLY 18 HATS.  YOU PASS THE WORD
T:  FOR SK1 BEERS TO LAY TO THE CONSUMABLES STOREROOM.
T:  AS SK1 BEERS EXPLAINS THAT THOSE ARE ALL THE HATS,
T:  YOU GET A SINKING FEELING.  EVIDENTLY THE SK'S
T:  AND DUTY SUPPLY HAVE BEEN MAKING THEIR OWN ISSUES
T:  OF EMBLEMATIC ITEMS.  LUCKILY, THIS IS PRETEND.
FOOT:
J:*PAGE1
E:
*PAGE35
CH:
T:      YOU DO!!!!!  NOW WHAT?
T:  1.  ORDER ENOUGH FOR A YEAR.
T:  2.  DECIDE TO LET THE PROBLEM ALONE FOR AWHILE.
T:  3.  GO TALK TO LT. FROST ABOUT THE PROBLEM.
T:  4.  TALK TO SH1 WILLIS ON WHAT HE HAS SEEN DONE.
WR:C
M:1,2,3,4
JM:*PAGE36,*PAGE6,*PAGE33.*PAGE25
E:
*PAGE36
CH:
T:      STOCK IS ORDERED TO LAST A YEAR.  YOU ALREADY
T:  HAD 12 MONTHS NEEDS SO EVEN WITH ORDERING AND
T:  SHIPPING TIME OF 6 MONTHS, TOO MUCH EMBLEMATIC
T:  STOCK WILL BE ON HAND FOR THE SMI.
T:  THAT IS MINOR COMPARED TO OTHER PROBLEMS.  THE
T:  RESPONSE TIME TO THE CO HAS REALLY NOT BEEN
T:  IMPROVED, ESPECIALLY ON WEEKENDS OR IF THE STORE
T:  OPERATOR IS NOT AROUND.  YOUR BOSS SHOULD ALSO
T:  HAVE BEEN INFORMED.  IF THAT WAS YOUR NEXT STEP
T:  HE WOULD TELL YOU TO GO BACK TO THE BEGINNING.
FOOT:
J:*PAGE1
*PAGE37
CH:
T:      THE SK'S SAY SURE THEY'LL KEEP TRACK OF YOUR
T:  EMBLEMATIC ITEMS.  SK1 BEERS TAKES THEM AND
T   PUTS THEM IN THE CONSUMABLE STOREROOM.  THE
    PROBLEM HAS NOT BEEN SOLVED OR ORDERS FOLLOWED.
T:  SK1 BEERS ENDS UP WITH LOOSE, AT BEST, CONTROL
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T:  OF THESE ITEMS.  LT. FROST'S ORDERS OF DISCUSSING
T:  WITH CO AND SKC THEIR REQUIREMENTS HAVE BOTH BEEN
T:  DISREGARDED.  GO BACK AND REFRESH YOUR MEMORY.
FOOT:
J:*PAGE10\*PAGE38
CH:
T:       NO MORE PROGRESS CAN POSSIBLY BE MADE BY
T:  PUTTING OFF MAKING A DECISION AND TALKING TO
T:  YOUR SH1 A THIRD TIME.  SH1 WILLIS HAS THE SAME
T:  THINGS TO SAY AS IN THE BEGINNING.  REFRESH
T:  YOUR MEMORY.
FOOT:
J:*PAGE3
E:
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