

CONTRACTOR OPERATION AND MAINTENANCE OF SIMULATORS

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ABSTRACT

In its continued effort to streamline and make its operations more efficient and cost effective, the Navy investigated various methods of obtaining operation and maintenance support for simulation equipment. After extensive research, the concept of contractor support was formalized into an active program titled Contractor Operation and Maintenance of Simulators (COMS). This new initiative was implemented in October 1982. This paper takes a constructive look at the short history of COMS to assess effectiveness and explore the following areas: (1) the training device support program under the Navy's organic support posture, (2) immediate changes which resulted from the initial implementation of the COMS program and related problems encountered, and (3) areas for future study. The paper predicts future changes in procurement strategies and concepts that will reshape the training device support concept for years to come.

INTRODUCTION

Evaluation of operation and maintenance of simulators with various alternatives led to the SECNAV decision to disestablish the Navy's Training Device Repairman, (TRADEVMAN, or TD) rate.

The TD is a highly trained electronic/computer military technician who possesses expertise and experience in a unique, highly specialized field known as simulation technology. Since simulation techniques are applied to develop training systems to support so many different weapons systems, most TD's possess a thorough understanding of a large number of varied equipments. As such, these personnel can readily and effectively transition their capability from the field of simulation to any of a number of various technical electronic maintenance and operator specialties or rates.

The TD disestablishment happened at a time when the demand for TD services was increasing rapidly. The expanded requirement was brought about for a number of reasons: (1) The training device inventory had been increasing at an average rate of 7 percent per year for the past 10 years. This can be determined from Figure 1 which indicates the number of new training devices introduced each year, the number of devices declared obsolete during the year and the resulting end-of-year increased inventory for the 10 year period beginning in 1974. The increase for the past 3 years averaged approximately 25 additional devices per year (95 devices brought into the inventory while 22 devices were retired). (2) Technological obsolescence continued to cause an increased demand for TD resources. For example, as an embedded computer goes out of production, the manufacturer reduces his Logistic Support. The longer an item is out of production, the less support it gets. Because of this, that portion of the maintenance task previously designated as Depot level maintenance becomes Intermediate level maintenance simply because such services cannot be obtained elsewhere. (3) Finally, because of the aging of hardware, simulator equipment mean time between failure (MTBF)

decreased, thereby demanding additional maintenance time.

YR	NO. OBSOLETE	NO. NEW	DELTA INVENTORY	TOTAL INVENTORY	PERCENT CHANGE
73	End of year inventory.			151	
74	3	12	+ 9	160	+ 6
75	2	27	+25	185	+15.6
76	9	25	+16	201	+ 8.6
77	3	21	+18	219	+ 9
78	3	10	+ 7	226	+ 3
79	6	19	+13	239	+ 5.8
80	6	16	+10	259	+ 4.2
81	11	28	+17	266	+ 6.8
82	6	46	+40	306	+15
83	5	21	+16	322	+ 5.2
				MEAN	+ 6.9

Figure (1): INVENTORY STATISTICS FOR DEVICES OVER \$500,000

The disestablishment of the TD rate allowed the conversion of billets (personnel) for use in more critical areas of Navy support at a time when the Office of Management and Budget (OMB) was encouraging the military to contract for services not unique to the Government. Since the Aviation COMS program was initiated in FY 83, and the Surface program scheduled to commence in FY 85, we will discuss primarily the aviation portion of the COMS effort.

This paper takes an in-depth look at past and present device support programs and provides discussion in the following five areas:

- (1) Device support prior to COMS,
- (2) Device support under the COMS program,
- (3) Changes resulting from COMS implementation,
- (4) COMS successes, and
- (5) Recommendations and Conclusions

TRAINING DEVICE SUPPORT BEFORE COMS

Prior to COMS, the Navy supported its training devices with an in-house capability commonly referred to as "organic" support. Following is a brief summary of this support:

Training

Training programs developed to support the many TD's at varying levels of expertise were, of necessity, supported by highly detailed documents that covered procedures to the minute detail. Such materials were required to satisfy the needs of recently graduated Training Devices Airmen (TDAN's) (entry level TD's) as well as the experienced TD who was simply transitioning from one device assignment to a new or unfamiliar device. Such training programs were used by assigned support crew personnel as initial, refresher and replacement training. In order to support the new, inexperienced technician, (TDAN), training programs were required to place greater emphasis toward "hands-on" training.

Technical Publications

Publications, like the training program were designed to support the same type and levels of personnel consistent with the maintenance concept of the trainer. They were designed to lead the inexperienced, junior level technician through procedures and processes, in a step-by-step fashion, necessary to cause him to recognize even those malfunctions which resulted in a complex array of interrelated symptoms.

In order to insure that procured technical publications would meet this requirement, an extremely detailed highly structured Specification was developed. This specification, MIL-M-82376A, manuals, technical: Operation and Maintenance Instructions for Training Devices was so highly structured that it overruled consideration by handbook developers of innovative approaches to presentation of the technical data which had been made possible because of technological advances since publication of the Specification.

Operator Services

Training device operator services for TD personnel were initially provided by Contractor Engineering Technical Services (CETS) during the period while they were in training. Upon completion of training courses, TD personnel assumed the device operator duties as well as maintenance duties.

Organizational and Intermediate level maintenance on the training device, its computers and peripherals were provided by Navy TD's or Civil Service technicians (for items of operational aviation equipment, only Organizational level maintenance was performed by the device maintenance staff). These technicians were provided advanced technical backup by Naval Training Equipment Center Field

Engineering Representatives (FER's). This maintenance was provided on a not-to-interfere basis with training.

In some cases, where a number of training devices were located on the same site (regardless of the weapon system being simulated), such as NAS Miramar, San Diego, CA, parts of the intermediate level maintenance organization was centralized. This enabled the cross-utilization of items such as test and support equipment, major assemblies, spare and repair parts, thus reducing the total quantity required of each. This centralized intermediate level maintenance facility is authorized by the Naval Aviation Maintenance Program (NAMP), OPNAV Instruction 4790.2B, as a Module Repair Shop and is normally called the "690 Shop".

Supply/Support

A designated quantity of certain Spare/Repair parts were provided through an initial supply as a part of the initial delivery of the training device. These items were replenished through the Navy Supply System. Other necessary items were to be made available through the Navy Supply System also.

The Navy Supply System used to support training equipment was established primarily to provide supply support for the Navy's aircraft. Procedures established and in use supported the aircraft well. However, distinct differences exist between the Navy's aircraft program and its training equipment program. Whereas a typical weapon system may include from 30 to 300 aircraft, it may have only one or two Weapon System Trainers (WST's) to support the training of its operator personnel. Because of this quantity difference, the supply system did not work very well in the support of training equipment. Procedures and policies used in support of hundreds of units do not work well for units with quantities of 1 or 2. Frequently we find training equipment inoperative because of the lack of parts. When the problem is traced to its origin, the part is found to be delayed because personnel of the supply system are adhering to procedures established for equipments of larger quantity.

Engineering Support

Engineering support was provided by the Naval Training Equipment Center, using its Field Engineering Representatives. Additional engineering support services were provided by the Naval Training Equipment Center's Regional Representative offices, through the cadre of engineering personnel employed by the Naval Training Equipment Center's home office in Orlando, FL, or through the use of CETS contract personnel.

This network provided daily operational support, engineering design, Modification Engineering, Contract Field Service, and other areas of need in supporting the simulation equipment. Such support included the study of aircraft avionics and airframe changes to determine the impact and possible requirement for incorporation into the simulation equipment.

When modification was deemed necessary by user personnel, the device manufacturer, Field Engineering Representatives, Quality Assurance personnel, Program Management personnel, etc., the Engineering Support Services Branch either contracted for services and parts necessary to design and install the modification, contracted for the design and fabrication of the modification kit or they designed the modification kit themselves. Modification kits were usually installed by TD personnel; however, for larger modifications, either the modification contractor or the Engineering Support Branch made the installation.

THE COMS PROGRAM

Following is a detailed view of Aviation Contractor Operation and Maintenance of Simulators, as it is implemented by the Naval Training Equipment Center.

The Organization

The SECNAV memo of 18 June 1982, directed the disestablishment of the TD rating. The COMS program considered alternate sources for manpower required to operate and maintain simulators. As a result, Chief of Naval Operations (CNO) tasked Naval Air Systems Command (COMNAVAIRSYSCOM) and the Chief of Naval Education and Training (CNET) to implement a program and consider utilizing the vast resources of the industrial community to accomplish the task. In October 1982, the COMS group of the Naval Training Equipment Center (NAVTRAEQUIPCEN) was formed for the express purpose of refining and implementing a program to contract for the operation and maintenance of Navy simulators. This organization was designated Code 4A1.

Transition to the full COMS program for existing aviation simulators was initiated in FY 83. New aviation simulators will be brought under the COMS program as logistic support stability on each device is achieved.

The Team

Overall planning for the COMS program is promulgated by the Chief of Naval Operations (CNO), (OP-05). The Deputy CNO for Air Warfare (OP-596) is responsible for planning and establishing the aviation COMS program, policies, and priorities. The aviation COMS program is planned, programmed, budgeted, and routinely managed by COMNAVAIRSYSCOM (AIR-4131A). Commencing with POM-86, COMS programming and budgeting responsibilities will begin to shift to the cognizant major claimant or Type Commanders (TYCOMS) for training equipment initially transitioned to COMS by COMNAVAIRSYSCOM. The Naval Training Equipment Center will continue to provide COMS program technical and management support as well as contract administration.

The Naval Training Equipment Center COMS group (Code 4A1) in conjunction with personnel from the contracts department (Code 6) are charged with the responsibility of obtaining competitive contracts for training systems.

However, the implementing team consists of more than Naval Training Equipment Center personnel. In fact, success in the COMS program has resulted primarily because of the high level of cooperation between team member representatives of the COMS group including contract specialists, User and Command personnel, Fleet Aviation Specialized Training Group (FASOTRAGRU's), Contracting Officer's Technical Representatives (COTR's), Field Engineering Representatives (FER's), Program Manager's and members of the Logistics team for the device.

This COMS implementing team is primarily responsible for defining the task, committing this definition to writing, developing Statements of Work (grouping of Performance Work Statements) and obtaining proposals, evaluating such proposals, and awarding the contract for accomplishment of the defined tasks.

Program Strategy

Because of the large number of devices already in the field and the various stages of procurement of many other devices, it was necessary to develop a COMS contracting strategy for each category of device. For this purpose, devices were divided into two categories; existing and new.

Existing

This category includes training devices which are already in the field and currently under full Navy support as well as devices which were under procurement at the time Aviation COMS implementation began. For devices currently in the field, the Technical Data Support Package (TDSP) has been validated and verified and can be relied upon to be reasonably accurate.

Devices being procured at the time COMS implementation began usually have prime contractor support (CETS) for an initial period after delivery. This is to provide sufficient time for a complete validation of the total Integrated Logistic Support Package.

Since proven support packages exist for this category device, the Navy is using competitive procurement of COMS for support.

New

It is desired that future devices, those devices not yet under procurement, will have an initial period of contractor support included within the device acquisition. As soon as this initial support period is completed, the support portion of the contract will be competitively awarded under the COMS concept. At this time, we will either merge it with the current Weapon System COMS contract or structure the COMS contract for the new device such that it will end simultaneously with COMS contracts for other devices which are part of the Weapon System complex of training equipment.

Approach to Contracting

Devices which support major weapon systems are usually located miles apart, yet it is imperative that each type device receive the same type care, provide the same degree of simulation fidelity, and retain compatibility with configuration control documentation. This is an advantage to contracting for COMS by major weapon systems.

Other advantages realized by this approach lie in the easy exchange of parts, components, and technical assistance between personnel of the different sites.

Type Contract

COMS contracts are awarded competitively under the Two-Step Formally Advertised procurement method. Based on cost studies completed by Headquarters, COMNAVAIRSYSCOM, this method has proven itself to offer the lowest procurement prices. This method remains attractive to industry. This method has resulted in a reduction of "Derived Man-Year Rates" for COMS procurement from a high of \$42,800 per man-year to an average of \$23,500.

The term "Derived Man-Year" is defined as the total fixed cost of the contract divided by the total number of man-years projected for fulfillment of the contract. Though not totally meaningful because it encompasses expenses as well as salary and burden, this provides an acceptable means of evaluating our contract costs to other contracts and to organic maintenance costs.

Under the Two-Step, Formally Advertised type of procurement, each offeror is required to first submit a technical proposal. The evaluation team which is comprised of technical representatives of the TYCOMS, Users, NAVTRAEQUIPCEN and designated Contracting Officer's Technical Representatives review each submitted technical proposal and determines if it is technically acceptable. If not, the offeror is so notified. The NAVTRAEQUIPCEN then issues an Invitation for Bid (IFB) to those offerors who received acceptable ratings.

Another feature of this contracting method is that the winning offeror's Technical Proposal is incorporated by reference as a part of the contract.

Under the provisions of the contract performance is based on equipment availability for scheduled training as opposed to a number of personnel. Aviation COMS contracts require a Performance Factor (CPF) of 95 percent.

The COMS program is funded by Operation and Maintenance, Navy (O&M,N) type appropriations. These funds must be used within the fiscal year for which they were appropriated. Because of this funding constraint, the Navy can only obligate itself for periods of one year. For this reason, the COMS contract will be for the number of months necessary to complete the fiscal year in which the contract is awarded, followed by several consecutive one-year options.

Objectives

Training is essential to insure a continued stream of replacement weapon system operators, to maintain aircrew proficiencies, and to maintain a desirable fleet readiness posture. Major portions of this training can only be realistically obtained through use of simulation equipment. Consequently, it is essential that the Navy have training equipment and maintain it in a status to insure its availability to meet training schedules.

COMS was designed to provide this. The prime objective of COMS is to meet user requirements and improve readiness. In addition to this, COMS will insure that user personnel receive uninterrupted service during the phased disestablishment of the TD rating and that all is achieved at an affordable cost.

COMS Responsibilities

Prime responsibility for COMS implementation is the CNO. NAVTRAEQUIPCEN, as its role, has responsibility to coordinate with user commands for getting the contractor on site at the scheduled time. This consists of developing the task defining document, awarding the contract, and administering the contract in coordination with other COMS team members.

Custodian/User commands are responsible for scheduling desired trainer utilization time, developing the Mission Essential Subsystem Matrix (MESM), maintaining the Configuration Baseline, insuring fidelity of simulation through the conduct of Quality Assurance and Revalidation inspections, assigning a Contracting Officer's Technical Representative (COTR) to monitor the contract, report utilization, and account for the device and its component parts.

COMS Sequence of Events

In order to accomplish the requirements of the COMS program, a series of events must occur in the proper sequence. The major events are:

- (1) Planning,
- (2) Site Survey,
- (3) Development of the Statement of Work (SOW),
- (4) The Request for Technical Proposal,
- (5) The Pre-Proposal Conference,
- (6) Proposal Evaluation,
- (7) Contract Award,
- (8) Mobilization, and
- (9) Contractor Support.

Planning

Planning activities include the scheduling of devices to be inducted into the COMS program as directed by CNO and sponsors, scheduling of events required to award a contract, and development of a Plan of Action and Milestones (POA&M).

Site Survey

The site survey is conducted in order to obtain sufficient, accurate, and adequate data to construct the required solicitation package. During the Site Survey, a number of functions are completed, including an assessment of the status and condition of the device support package, the condition of the device and any other equipment for which the COMS contractor will be assigned responsibility, determining training schedule requirements, obtaining or assisting in development of the MESM, constructing a floor plan to accurately indicate what areas/buildings the contractor will have responsibility for, obtaining/constructing lists of equipment, tools, furnishings, Technical Data Materials, Software Support Materials, and a listing of janitorial requirements.

Developing the Statement of Work

One of the most important functions in the development of a COMS contract is the construction of the Statement of Work (SOW). It is important that each Performance Work Statement in this document be accurate and definitive. This becomes the primary document against which contractor performance will be evaluated.

Assembling the Request for Technical Proposal (RFTP)

Once the Statement of Work has been developed to meet the requirements of the specific Weapon System or site, the RFTP can be assembled. This entails the draft contract schedule, Contract Data Requirements List (CDRL), the Data Item Descriptions for any data desired, and miscellaneous documents.

Pre-Proposal Conference

Once the RFTP has been distributed to the prospective offerors, the Pre-Proposal conference is scheduled. This conference allows prospective offerors to assemble on site for the purpose of inspecting and assessing status of equipment and evaluating the Material Support Package to determine required resources for performance of the proposed contract.

Technical Proposal Evaluations

Technical Proposals are evaluated by the COMS team to insure that only those contractors who have provided a technically acceptable plan to meet the COMS requirement and have proven themselves fully capable of doing the job are invited to participate in the second procurement step. These offerors are then invited to submit their cost proposals.

Contract Award

After Invitation for Bids (IFB's) have been received and opened, the low bidder is considered for award of the contract. Upon the Navy's determination that the offeror is responsive and responsible, the final award is made.

Mobilization

During this period, the successful offeror acquires personnel, conducts training operations, and performs other mobilization tasks as may be required prior to assuming full responsibility for COMS.

Contractor Support

A Pre-Contractor Support Date (CSD) conference is chaired by the NAVTRAEQUIPCEN COMS manager to insure that all parties fully understand performance requirements under the terms of the contract. On the established CSD, the contractor assumes full responsibility for accomplishment of all operator and maintenance tasks covered by the contract.

Evaluating Contractor Performance

Evaluation of contractor performance is accomplished primarily through a measurement of the operational ready time (ORT) and Chargeable Downtime (CD). These values are used as factors to establish a ratio called Contractor Performance Factor (CPF). The formula for determining CPF is:

$$\text{CPF (\%)} = \frac{\text{ORT}}{\text{ORT} + \text{CD}} \times 100$$

To achieve a goal of 95 percent, the contractor must provide the trainer, in an operating status, to the user for training at least 95 percent of the scheduled time less any factor not found under the control of the contractor by user personnel through the COTR. Factors which result in downtime that are not under control of the contractor are defined as Non-Chargeable Downtime (NCD). Examples of such factors are power outages, fire, Government negligence, natural disasters, etc. Contractor performance measurement is discussed in detail in a paper titled "Measuring Contractor Performance Under the Navy Program for COMS", by Gordon Steven Dow.

Though CPF is the prime quantitative measure of contractor performance, it is not the only measure. Other items providing performance indicators are accountability records, area access control, cleanliness of assigned areas and equipment, quality of completed maintenance work; adherence to local policies and regulations, quality of operator services, etc.

Government personnel, through user evaluations of equipment performance, special inspections, observation and monitoring of the overall performance insures that the COMS contractor performs quality work.

Detailed Content of the COMS Statement of Work (SOW)

A major portion of the COMS program and Request for Technical Proposal (RFTP) is the COMS Statement of Work (SOW). A summary of the contents of this Statement of Work is contained in Figure 2.

SUMMARY OF COMS STATEMENT OF WORK CONTENT

<u>SOW ITEM</u>	<u>RESPONSIBILITIES</u>	
	<u>GOVERNMENT</u>	<u>CONTRACTOR</u>
1. SPACE	PROVIDE EXISTING	PROVIDE ADDITIONAL IF NEEDED
2. OFFICE FURNITURE/EQUIPMENT	PROVIDE EXISTING	PROVIDE ADDITIONAL IF NEEDED
3. UTILITIES	PROVIDES	PROVIDES OFF-BASE PHONES
4. JANITORIAL SERVICES	PROVIDES IN COMMON AREAS	PROVIDES FOR ASSIGNED AREAS
5. FACILITIES MAINTENANCE	PROVIDES	
6. EXTERNAL SECURITY	PROVIDES	
7. PARKING	PROVIDES	
8. ID OF PERSONNEL	PROVIDES	ASSISTS ENFORCEMENT/ACCESS CONTROL
9. MAINTENANCE		
A-AIRCRAFT COMMON	PROVIDES I&D	PROVIDES D LEVEL
B-PREVENTIVE		PMS & MSP
C-D LEVEL TRNR PEC		PROVIDES ALL
D-I LEVEL TRNR PECULIAR		PROVIDES
E-DEPOT LEVEL	NORMALLY PROVIDES	MAY BE TASKED TO PROVIDE
F-SOFTWARE		
(1) MEDIA		MAINTAINS
(2) PROGRAM DATA	PROVIDES	STORES/PROTECTS/USES
(3) TROUBLE ISOLATION		PERFORMS
10. MSP		
A-T&SE	PROVIDES PECULIAR T&SE	CONTROLS/USES/CALIBRATES/MAINT. PROVIDES COMMON TOOLS
B-S&RP		
(1) TRNR PECULIAR	PROVIDES	STORES/REPLENISHES/KEEPS RFI
(2) A/C COMMON	PROVIDES	
C-TDSP	PROVIDES	STORES/MAINTAINS/UPDATES
D-CONSUMABLES/EXPENDABLES	PROVIDES FROM FSS	PROVIDES VIA FSS EXCEPT ON COTR APPROVAL
(3) RECOMMENDS ADJ.		RECOMMENDS/JUSTIFIES
11. FORMS	PROVIDES	
12. TRANSPORTATION		PROVIDES
13. TRAINER OPERATION		PROVIDES
14. MAINTAIN STANDARDS		ADHERES TO STANDARDS, INCLUDING SAFETY AND QUALITY
15. MODIFICATIONS		
A-CONTRACTOR INST.		16 HRS OR LESS W/O TRNG IMPACT OVER 16 HRS WITH TRNG IMPACT REQUESTS/RECOMMENDS
16. R/M CHANGES		
17. RECORDS & REPORTS		
A-MAINTENANCE		DELIVERS NAMP REPORTS
B-TD LOG BOOK	KEEPS	PROVIDES INPUTS
18. TRAINING	PROVIDES FOR FORMS	PROVIDES FOR O&M
19. TRAINING SCHEDULE	GOV'T PROVIDES MIN OF 24 HOUR NOTICE	CONTRACTOR SUPPORTS

FIGURE 2
STATEMENT OF WORK SUMMARY

COMS Technical Proposal Requirements (TPR)

The TPR is designed to motivate industry participants toward the development of a plan whereby the defined work will be accomplished in the most efficient manner.

Requirements are divided into three categories: (1) the contractor's work force; (2) the tasks to be accomplished; and (3) estimated man-hour effort.

The Contractor's Work Force

The total work force consists of the on-site organization and backup personnel resources. Requirements are levied upon the offeror to include facts pertaining to each of the following areas in his technical proposal:

The On-Site Organization

The offeror is required to provide information describing the proposed organizational structure including the number of personnel, shift scheduling, experience levels, skills and qualifications required of the incumbent for each identified position of the work force. Skills and qualifications are to be provided by major areas, systems and sub-systems as they relate to specific devices.

Backup Resources

Each offeror must describe his planned use of backup personnel and resources, levels of responsibility planned for each position and his methods, procedures, and plans for insuring that each member of his work force will produce quality work.

Tasks to be Accomplished

These requirements were previously listed as Performance Work Statements contained in the Statement of Work.

Estimated Man-Hours

The offeror is required to provide man-hours estimated to support the work force as defined in the proposal.

CHANGES RESULTING FROM COMS IMPLEMENTATION

Logistics Support

Prime changes in the area of Logistic Support lie in the Training and Publications areas. As mentioned previously, extensive, formalized training programs were provided for the Navy's simulator support technicians. Stabilization of the work force under contractor support can possibly eliminate the requirement for such formalized training. Since formalized training programs may not be required for contractor personnel, training and maintenance publications will be their only technical source as they assume maintenance responsibility for devices. Since training and maintenance publications become sole technical reference and since the requirement exists for the contractor technicians to transition their expertise to the device within the mobilization period, there is a greater requirement for such publications to be extremely thorough.

Another change that has occurred is in the procurement of CETS. Previously, a limited CETS support was procured to support the Navy's organic maintenance/operator crew. Since the Navy no longer has this crew, CETS procurement must be expanded to obtain full support for the initial period.

SUCCESSSES OF THE PROGRAM

Performance

Statistics relative to equipment availability during scheduled training time indicate that COMS goals are being realized. However, before getting too far, we must review the goal. As stated above, the prime goal of COMS is to meet user requirements and improve readiness, to insure that users received uninterrupted service during the phased disestablishment of the TD rating, and to achieve this at an affordable price.

The following statistics indicate that the COMS goal has been realized:

(1) The cumulative CPF of all COMS supported devices average is 97.1%.

(2) The Derived Man-Year cost for the entire program has averaged \$23,500. This represents a savings in excess of \$46,000,000 over the cost had the Navy retained its previous, organic support of these devices. This figure represents a 55% savings to the Government.

(3) COMNAVAIRPAC compiled statistical data on 10 of its simulators which have been placed under COMS. Results indicate that the Full Mission Capability (FMC) status of these devices increased from a previous value of 61.2% to a current value of 95.7%.

As a result of this, we can say that COMS has more than adequately satisfied user requirements, improved the Navy's readiness posture, provided uninterrupted equipment availability during the phased disestablishment of the TD rating and has saved the taxpayer an average of 55% of normal cost.

Most Efficient Organization (MEO)

The COMS program motivates offerors to propose their most efficient organization for accomplishment of the task as defined in the SOW. This is accomplished through the structure of the RFTP and the contracting method.

The Technical Proposal Requirement (TPR), a prime portion of the RFTP, plays a most important role in this accomplishment. Each offeror conducts a thorough analysis of the job, individual tasks to be accomplished, and skills required for their accomplishment. From this analysis, the offeror establishes a specialty mix and defines each specific position which comprises his total work force.

The offeror then establishes the skills, knowledge, and qualifications required for each work force position.

Finally, the offeror is required to present convincing rationale that the organization he proposes can accomplish all tasks defined in the SOW. To do this, he is required to identify specific work shifts for each position, the type work to be accomplished during each shift for each position, shift schedules for each work force position, equipment to be used in accomplishment of the work, and backup labor and resources.

As previously mentioned, those offerors receiving technical ratings of acceptable are invited to participate in the second contracting step by submitting their cost proposal.

Since all offerors invited to participate in the second step submitted an acceptable technical proposal, and since the responsive, responsible offeror providing the lowest cost proposal is selected as the COMS contractor, the authors have concluded that the offeror who designed the Most Efficient Organization becomes the successful offeror or COMS contractor.

Industry Response

The COMS program has been greeted by an unexpected positive response from the simulator support industry. Traditional training device manufacturers have demonstrated a willingness to streamline operations and reduce overhead to provide quality services at competitive rates. Major companies have organized simulator support divisions in an effort to compete effectively for simulator support contracts. The Navy has been the beneficiary of this welcomed competitiveness between traditional simulator support and the new simulator support divisions. Competition has driven down the cost for the COMS program while broadening the base of companies developing innovative methods to effectively support the Navy's simulator program.

CONCLUSIONS

Contractor Performance

As indicated earlier, contractor performance is rated quantitatively through use of a CPF formula. Average COMS Cumulative CPF for the short life of the program is 97.1%. Consequently, we can unequivocally state that the equipment was made available to users, in a fully operable condition to meet schedule training 98.9% of the time. Furthermore, if results of the COMNAVAIRPAC study relative to Full Mission Capability (FMC) can be projected over the entire COMS program, that equipment was maintained in a condition ready to meet any training mission demand 95.7% of the time. This latter figure representing an increase from 61.2 percent over pre-COMS FMC.

Based on these figures, the authors conclude that COMS contractor performance is averaging beyond that which was initially anticipated.

Vanishing Supply of Qualified Technicians

The authors find that COMS contractors currently rely heavily upon the supply of technicians who were trained and gained their experience in one of the branches of military service. Now that directly applicable military schools are being eliminated, what will happen in the future? Already we have indications that certain specialties are scarce. For example, recent contract proposals indicated a lack of work crew experience in the area of ASW simulator operator and maintenance experience. Other examples include unique computer requirements, EW tactics, etc.

However, it is believed that portions of the industrial complex will recognize this situation as an opportunity and establish training programs to fill the void.

RECOMMENDATIONS

From the above conclusions, the authors recommend the following:

Mission Operators

As simulation equipment becomes more complex and as the weapon systems they simulate become larger, we have reached a point where it is requiring a full-time, specialized Weapon System instructor to operate the simulation equipment in the conduct of training. Though experienced aircrew instructor personnel are capable of operating the device during the conduct of training missions, the aircrew instructors primary interest should be in the critical monitoring of trainee performance and the provision of constructive feedback necessary to build or enhance proficiency. In order that the instructor may most effectively fulfill this role, he must be provided specialized assistance in the operation of the simulator unique portions of the device. This assistance can best be provided by personnel who are fully knowledgeable of the specific weapon system and its various type missions.

Management has recognized this situation and is currently using a new specialty in some cases. That individual is called the Mission Operator.

Though Mission Operators are not now covered under the COMS program, it is recommended that the program be enlarged to encompass this service.

Full Contract Support

Rates of technological obsolescence of many items of equipment found embedded in simulation equipment is causing the military to take a new look toward the currently existing Logistics Support Package. Currently it appears that savings could be realized and response time for supply support items increased if the Navy were to contract directly to the industrial complex for such services/supplies.

We recommend that devices of the future should not be supported by spare and repair parts through conventional Government supply channels. Instead, the Navy should find it easier, cheaper, and faster to task the COMS contractor to supply such items as part of his service.

SUMMARY

The COMS program was designed and implemented primarily to find a better way of meeting fleet training equipment availability requirements and improve readiness. Secondary goals were to provide uninterrupted service during the disestablishment of the TD rating and to implement the program at a reasonable cost.

An assessment of the program at this point indicates that all objectives have been realized. User training equipment utilization requirements are being met, an orderly transition from organic to contractor operation and maintenance has been achieved, and the Navy has realized an unanticipated 55 percent savings.

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