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A Study to Determine the Relationship Between Formal TAC-3/TAC-4 Computer Operations Training and TAC-3/TAC-4 Computer System Trouble Calls

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**A STUDY TO DETERMINE THE RELATIONSHIP BETWEEN FORMAL
TAC-3 / TAC-4 COMPUTER OPERATIONS TRAINING AND
TAC-3 / TAC-4 COMPUTER SYSTEM TROUBLE CALLS**

A RESEARCH PAPER

**PRESENTED TO THE GRADUATE FACULTY
OF THE DEPARTMENT OF OCCUPATIONAL AND TECHNICAL STUDIES
AT OLD DOMINION UNIVERSITY**

**IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE MASTERS OF SCIENCE IN
OCCUPATIONAL AND TECHNICAL STUDIES DEGREE**

BY

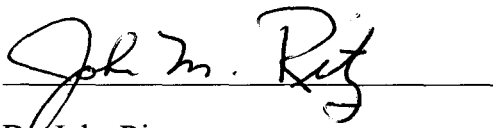
THOMAS B. MEEHAN, JR

AUGUST, 2000

APPROVAL PAGE

This research paper was prepared by Thomas B. Meehan under the direction of Dr. John M. Ritz in OTED 636, Problems in Occupational and Technical Studies. It was submitted to the Graduate Program Director as partial fulfillment of the requirements for the Degree of Masters of Science in Occupational and Technical Studies.

APPROVED BY:

A handwritten signature in black ink that reads "John M. Ritz". The signature is written in a cursive style and is positioned above a horizontal line.

Dr. John Ritz
Advisor and Graduate
Program Director
Occupational and Technical Education

Date: 7-31-00

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CHAPTER I INTRODUCTION

In 1997, the Department of the Navy elected to eliminate the Data Processing (DP) rating and merge it with the Radioman (RM) rating. This merger placed the formal training on the RM schools. All RMs would receive the same basic training to be radiomen and some generic formal training on computers and computer operations. At the end of 1999, the combined DP and RM rating was changed to Information Technologist (IT). In addition to the formal training, specialized training would be done by on-the-job training (OJT) for most computer operators and specific training granted by the specific job classification or Naval Enlisted Classification code (NEC) that the sailor was being assigned. The NEC billet the sailor has been assigned controls quotas for additional school training. When new people are assigned to commands, any training that they will receive in route to the command is based on the NEC billet they are assigned to fill. Once new sailors arrive at their command, they go through a period of OJT to familiarize themselves with the workings of the new command. Once attached to the new command, formal training quotas can be requested for individual people, but because of manning and billet assignments, not all requests are approved.

With the merge and the subsequent change to IT, the Navy has seen a need for additional training and has started to change the topics taught by the Navy's Schools Commands for the IT rating. These classes train the seamen that will be manning the computer shops ashore and afloat. Formal training is also taught in Navy area programs

set up by Functional Area Commanders. At Naval Station Norfolk, the Commander Naval Air Forces Atlantic Fleet (CNAL) has tasked their contractors with the Management Training and Assist Team (MTAT) to conduct training and assistance for the aircraft carriers stationed on the Atlantic Coast. With the changes in the manning of the computer shops and the speed with which computer technology is changing, the MTAT personnel developed a formal training class on Basic TAC-3 / TAC-4 Computer Operations. This training started in the fall of 1998 and is still in the development stage. The training is open to all commands on the Atlantic Coast and not based on NEC. Because funding is given from CNAL, priority training is given to the personnel assigned to aircraft carriers.

The Basic Operator Course was designed to give the operator basic guidelines and skills to allow him or her to function in the fleet while at sea. The Basic Operator Course gives an overview of the hardware that makes up the basic computer components and computer peripheral equipment. Basic system startup and shutdown procedures are covered, as well as user and group management procedures. To give the operators an understanding of the data that is kept on the computer, the file structure of the Shipboard Uniform Automated Data Processing System (SUADPS) is discussed as well as the main file directory structure. Operating procedures are covered to insure operators have knowledge of basic UNIX commands, knowledge of the Generation Facility software (GEN), knowledge of the Operator Batch Executive (OBE) that allows jobs to be processed, and knowledge of the different ways to save data from the hard disk drives and how to restore the data files. The operators are given training on how to troubleshoot

program aborts, to find out why the job stopped and how to fix the problem to allow the jobs to be restarted and finished. The course combines lecture, multi-media presentations and hands on applications for the students. As a tool to insure that the Basic Operator Course meets the needs of the fleet, this study was designed to give feedback by examining the trouble calls received by CNAL MTAT personnel manning the computer help desks in the Data Processing section.

Statement of the Problem

The problem of this study was to determine the relationship between formal TAC-3 / TAC-4 computer operations training and computer system trouble calls.

Research Goals

The following goals were established to guide this problem:

1. Identify the types of computer problems that are called into the trouble desk by the five aircraft carriers home ported in Norfolk, Virginia.
2. Identify if the operator having the computer problem had attended the formal TAC-3 / TAC-4 operator course.
3. Identify if the trouble call is related to the subject matter taught in the formal TAC-3 / TAC-4 operator course.
4. Determine if there is any relationship between the training and the trouble calls.

5. Determine if the trouble call topic is covered in the Basic Operator Course, covered by a different course, or the topic needs to be added to the Basic Operator Course.

Background and Significance

CNAL MTAT has taught specific classes on individual computer equipment or individual operational procedures with the equipment. Most of the training is designed around completing the job requirements of the person assigned to the shipboard task. The emphasis on formal training is for the Supply Department and the people attached to that department. Assistance for the daily operations and problem solving includes helping the storekeepers as well as the computer operators. The storekeepers in the supply department are tasked with maintaining financial and material requirements and document history for the command. The majority of the information is maintained in the computer system in the computer operations shop. Prior to the merger of the DPs with the RMs and subsequent change to IT, most non-tactical computer operations involving aviation and supply and operations were done by the DPs and under the control of the Supply Department. With the merger as well as the rating change, the non-tactical computer operations became the responsibility of the Operations Department because they controlled the Radio Division, and now RMs or ITs were manning the computer operations shop. With the continued change of personnel and the change in technology in the computer field, additional training was set up to assist personnel in maintaining their knowledge of basic computer operations.

To keep the Basic Computer Operations class a viable tool for the fleet, it was necessary to know if the training was working. The study was based on trouble calls coming into MTAT for assistance with the computer system and matching the information received with the topics taught in the Basic Operator Course.

Limitations

This study was limited to the trouble calls coming in from the five aircraft carriers home ported in Norfolk, Virginia. The study does not take into consideration any training or Standard Operation Procedures (SOPs) performed on the ships. Additionally, this study does not take into consideration the previous work assignments of the crew assigned to the Data Processing Shop.

In addition, this study does not take into consideration any training that each sailor may have taken from military, private, or public training facilities. MTAT personnel do not have access to service records that would contain training records as well as their standard military entrance aptitude examination scores. Information pertaining to the sailors command history was not available for this study.

Assumptions

It is assumed that most personnel assigned to the Computer Operations Department have had the current basic RM / IT training course or the older basic DP training course. Additionally, it is assumed that the ships carry out their own OJT and prepare their own Standard Operating Procedures (SOPs). It is further assumed that

there is a possibility that due to ships operational commitments, members of the Computer Operations Department may not have had the opportunity to attend the MTAT Basic Computer Operations Course.

Procedures

As trouble calls came into the MTAT Data Processing section, a trouble call information log was filled out. Information on the log was designed to collect information to assist in determining how the trouble call related to the training provided. Questions asked to solicit information for the log were as follows:

1. What ship was calling?
2. Who was calling?
3. Was the person calling experiencing the problem, and if not, who was?
4. Did the person experiencing the problem attend the Basic Computer Operator Course?
5. What was the problem encountered and was the problem covered by a topic in the Basic Operator Course?

Once all needed information was obtained from the trouble call, a Data Processing Analyst was assigned to assist in correcting the problem situation. Upon completion of the trouble call assisting in correcting the problem, the Analyst filled out a report for the record. This report for the record described in detail the problem listed on the trouble log, the solution to the problem, as well as recommendations to be followed.

After the report for the record was completed, both the report for the record and the trouble log were analyzed to determine the relationship to the Basic Operator Course.

Definition of Terms

The following list of definitions is given to assist the reader in following the study:

- RM Navy rating of Radioman. Most RMs handle communications and communications equipment, with the newer Radiomen handling computers and computer operations.
- DP Navy rating of Data Processing Technician. DPs handle computer operations and computer programming.
- IT Navy rating of Information Technologist. The IT rating was created from the merger of the DP and RM ratings, thereby eliminating the RM rating. ITs handle both communication as well as data processing functions.
- TAC-3 Tactical Advanced Computer, a shipboard computer system that uses a UNIX operating system to maintain and process supply and repair data base files for Naval facilities.

TAC-4	Similar to the TAC-3 system, but newer and use larger and faster data storage hard drives.
SOP	Standard Operating Procedures.
NEC	Naval Enlisted Classification Code.
MTAT	Management Training and Assistance Team.
SUADPS	Shipboard Unified Automated Data Processing System.
OBE	Operator Batch Executive.
GEN	Generation Facility or system generator, this drives the processing of an application information system and is controlled by the Systems Administrator or Computer Operator.
OJT	On-the-Job Training.
FAS	Functional Area Supervisor, for the SUADPS portion of the operations, this is the person that schedules, approves and sometimes runs the jobs required by the supply department to do their day to day operations. The position is usually filled by a senior SK.

SK Navy rating of Storekeeper, responsible for storeroom management, receipt and issue of supplies, and the financial database for the ship.

CNAL Commander Naval Air Force Atlantic Fleet.

Overview of Chapters

Chapter I outlined the purpose and goals of the study which were to determine the relationship of the MTAT Basic Computer Operations Course and computer trouble calls. It provided background of the merger of the DP rating with the RM rating, and subsequent change to the IT rating. These changes established the need for this study. The chapter described the limitations and the assumptions used during the study to allow others to duplicate the study. A listing of terms was provided to insure that the reader would be able to understand the study and not be confused by the acronyms used. The chapter described the trouble log and the report for the record used to collect information for the study.

Chapter II is a review of the literature that was found during this research as well as supporting material. Chapter III is a review of the methods and procedures used to collect data in this research. Chapter IV is a discussion of the findings of this research. Chapter V is a summary of the research, conclusions drawn from the research and recommendations for the future based on this study.

CHAPTER II REVIEW OF LITERATURE

This chapter of the study was to review the literature that has been written that relates to the problem and the goals of this study. The review was divided between obtaining information on training and information on MTAT computer trouble help desks. Help desk information was reviewed because the MTAT computer trouble help desk is similar to traditional help desk operations.

Training

Education and training is an ongoing event. It does not stop when we graduate, but continues throughout life. Learning is a life long endeavor (Knowles, 1980, p. 19). Over the ages, the human life span has increased from under 25 years to over 70 years, and the time for technology and social changes to take place has decreased. Today, we can see several changes in society during our life span, while in ancient times, several life spans passed before society changed (Knowles, 1980, p. 41). Due to the fast pace of change, there is a greater need for quality life long training. Effective training needs must be met and it is very helpful to do a “needs assessment” before training is designed. These needs cover the individual, the institution and the society (Knowles, 1980, p. 27, 93). Maslow’s hierarchy of human needs is a model that explains that individual needs must be met at the lowest level of the pyramid before upper level needs can be met.

Why we train involves both the employees and employers. Employers have always trained employees and they expect it. Training improves performance, updates skills, and promotes job competency and preparation for promotion, to name a few

reasons (Sims, 1990, pp. 22-25). Training takes many forms, from formal training to On the Job Training (OJT). OJT is used by many companies and has been on the increase (McCord, 1987, p. 363).

Help Desk

Help desks aid in training. They are central points of contact for assistance. They are beneficial to the employee as well as the employer. For the employee, they offer quick assistance with problems and offer reinforcement for previous training. By having a central point to receive calls, the employee receives faster help and the employer benefits by improved operations at a lower cost.

The city of Philadelphia found that by having a central point of contact, trouble call problems were resolved quickly and the system could be used in other areas (King, 1996, pp. 64 and 65). Companies like Wal-Mart are spending more money on help desk functions and find that the help function saves them money and down time (Girard, 1998, pp. 61 and 62). Some cities and companies are expanding the usefulness of their help desks with the use of small hand held computers (Girard, 1998, pp. 53 and 54). With the use of these computers, help desk functions have been streamlined. Help desk staff now can move with ease between sites and provide better and more prompt assistance.

MTAT Function

MTAT is a training and assistance unit attached to Commander Naval Air Forces Atlantic Fleet (CNAL). The unit is made up of fifteen military personnel, eight civilian government service workers, and forty contractors. The military portion of the unit is tasked with conducting formal material and financial management inspections of the Supply Department on the Atlantic Fleet Aircraft Carriers. In addition to the inspections, the MTAT unit provides assist visits and formal and informal training to improve the efficiency of operations. The civilian component of the unit assists with the inspections and assist visits.

The formal classroom training is developed and administered by the civilian component of the unit. The training covers individual job functions within the Supply Department, as well as the computer division of the Combat Systems Information Department. The training covers the use of computer hardware, computer software, and the clerical duties and functions associated with the different job specialties. To reinforce and assist the training, MTAT provides two help desks- one for computer related problems, and a second one for clerical related problems. Carrier personnel can call these help desks and receive help over the phone, as well as having assistance scheduled if the problem needs on site assistance.

The Basic Operator Course is designed to give the computer operators an overview and knowledge in the operations of the UNIX based computer operations hardware and software used with the Navy's SUADPS system. The course covers

equipment configuration with proper startup and shutdown procedures. Students are trained to properly maintain the computer programs and the computer database structure. Basic and advanced UNIX commands are covered to insure that students can navigate within the computer system and execute the programs properly. The GEN and OBE applications are covered to explain procedures for normal operations, abnormal termination procedures and troubleshooting aborts. File and system backup and restore procedures are covered to insure the students gain the knowledge they will need to recover the system in the event of a disaster. The students are taught the proper procedures for installing and upgrading system and program upgrades and initial installation procedures. This training will aid the students in learning to be a successful computer operator.

The members that monitor the computer help desk also test and evaluate new software and hardware to be used on the carriers. When new software and hardware is certified for implementation, the team assists the ship in its installation and delivers initial training with the assistance of other members of the MTAT team.

The MTAT team is a stable repository of skills and information. CNAL can draw upon this to constantly improve the operations of the fleet. There is a constant turnover of personnel in the fleet as well as a continued change in the tools used for operations. The MTAT team provides the assistance to insure that the fleet is always ready to meet its operational commitments.

Basic Operator Course

The Basic Operator Course was established to give the computer operators a basic understanding of the overall TAC-3 / TAC-4 computer system and its operation. The course is open to the fleet computer operators (DP, RM, and IT ratings) as well as the Functional Area Supervisor (FAS), who is usually a Storekeeper (SK). The course consists of overviews of the computer hardware and software, system power up and power down procedures, User/Group management, Network Information Systems, File Systems and Disks, Managing Disk Space and the SUADPS file structure. The course gives in-depth training on the functions and procedures for the Generation Facility (GEN), Operator Batch Executive (OBE) Aborts, as well as File Backup and Recovery procedures.

Summary

Chapter II was a review of the literature that was found during this research. It shows that people want to learn and there is a need for continued training. A summary of MTAT's functions was provided in order to assist in understanding the need for this study. If training is provided, people will continue to learn. Help desks can complement and reinforce training as well as improve job work efficiency. From this review of literature, it is the opinion of the researcher that the study should show that the training has helped the users, and the help desk calls covering training subjects should be fewer from people that attended classes as those from non-attendees.

CHAPTER III METHODS AND PROCEDURES

The purpose of this chapter was to describe the methods and procedures used in gathering the data for this study. To gain relevant data, it was essential to identify the population, determine the instrument and method used to gather the data, as well as the method used to analyze the data.

Population

The population of this study consisted of the 150 military IT personnel attached to several Atlantic Fleet aircraft carriers. Each carrier has between 20 and 30 ITs attached to the ADP Division that operate and maintain the computer systems. It is their job to operate and install computer hardware and software aboard the carriers. When shipboard users have problems, it is their responsibility to assist the user and resolve the problem. If the ITs cannot resolve the problem by themselves, the MTAT trouble desk is called and an MTAT Analyst is assigned to resolve the problem. All members of this population had an equal opportunity to attend the Basic Operator Course. Enrollment in the Basic Operator Course is open to the fleet, but only the carrier personnel were used in this study. Information from the population was gathered from the calls to the help desk.

Instrument Design

The method selected for data collection was a questionnaire that was completed by the help desk personnel when they received trouble calls. Closed-ended questions were used that allowed callers to respond to questions that required specific answers, such as ship, division, were they the one experiencing the problem, and have they been

through the Basic Operator Course. An open-ended question was used to allow the caller to describe the problem. This questionnaire provided a closed-ended question for the help desk provider to determine if the problem was covered in the Basic Operator Course, as well as an open-ended question to determine the solution to the problem. The answers to the questions of whether the caller had been to training and whether the problem was covered by the course were used in the analysis phase of the project.

The instrument used in this study was a help desk Trouble Report Questionnaire (COMNAVAILRANT MTAT COMPUTER TROUBLE CALL REPORT). It was designed to obtain basic information about the trouble call and about the person calling with the problem. The questions asked were based on the statement of problem and research goals of the research project and included the following: 1. What ship was having the problem, 2. Was the person calling the one having the problem, 3. If the person calling was not the one having the problem, who was that person, 4. Has the person with the problem been to the Basic Operator Course, 5. What is the problem, 6. Is the problem covered by the Basic Operator Course, 7. A brief description of how the problem was resolved, and 8. If the problem is not covered by the Basic Operator Course, should it be added to the Course? A copy of the instrument is found in Appendix A.

Method of Data Collection

When a ship has problems with their software or hardware that they cannot resolve, they call the MTAT trouble desk for assistance. For most software problems and some hardware problems, the MTAT DP section is assigned to assist. For the purpose of

this study, the COMNAVAILRANT MTAT COMPUTER TROUBLE CALL REPORT was used to document the information received. As calls came in to the trouble desk, the questionnaire was initially filled out by the person taking the call and passed to the assigned MTAT DP for completion. The name of the person having the problem was compared to the roster of class attendees for the Basic Operator Course to determine if they had attended the training. Once the problem was resolved, the assigned MTAT DP completed the portion on how the problem was resolved and whether the problem needed to be added to the Basic Operator Course. At the end of the research study, the data were tabulated and statistically analyzed. Data was collected from the trouble calls received from the five- (5) aircraft carriers home ported in Norfolk, Virginia.

Statistical Analysis

Upon receipt of all data, a statistical analysis took place in order to provide meaning to the data. The researcher compiled the responses to determine the frequency of the responses in the following four categories: 1. Calls by people that had attended training and the problem was covered by a topic in the course, 2. Calls by people that had attended training and the problem was not covered by a topic in the course, 3. Calls by people that had not attended training and the problem was covered by a topic in the course, and 4. Calls by people that had not attended training and the problem was not covered by a topic in the course. The data were tabulated, converted to a frequency of responses, and presented in the next chapter. The statistical tool used in this analysis was Chi-Square.

Summary

Chapter III described the methods and procedures that were used for the study. The population group was described. The instrument used to collect data was addressed and described. The researcher explained the method for data collection and the method used for statistical analysis.

CHAPTER IV FINDINGS

This chapter showed the representation of the statistical data collected from the computer trouble report questionnaire in the form of a table. The data were analyzed using the Chi-Square statistical method. Tables were presented to clarify the steps in the statistical method. The purpose of this study was: 1) To identify the types of computer trouble calls coming in from the five aircraft carriers home ported in Norfolk, Virginia, 2) To identify if the operator having the computer problem had attended the formal TAC-3 / TAC-4 operator course, 3) To identify if the trouble call is related to the subject matter taught in the formal TAC-3 / TAC-4 operator course, 4) To determine if there is any relationship between the training and the trouble calls, and 5) Determine if the trouble call topic is covered in the Basic Operator Course, covered by a different course, or the topic needs to be added to the Basic Operator Course.

Statistical Analysis

The 89 trouble call report questionnaires were examined and a table of the raw observed data was created. The table organized the data by trouble call and the responses to the question on whether the person having the problem had attended a training course and the responses to the question whether the problem was covered by a topic in the training course (see Table 1). Of the 89 callers, 17 had attended the Basic Operator Training Course and 72 callers had not attended. Of the 89 trouble call problems, 36 were topics covered by the training course and 53 were not topics covered. The raw data

were then organized in a two-way table based on the questions and represented the total number of calls received in each of the areas (see Table 2.). This table showed the

Table 1. Raw Data Collection by Trouble Call

Call #	Call Count	Trained		Topic Taught		Add Topic	Adv Assist	Topic Covered Other Course	Trained Taught
		Yes	No	Yes	NO				
1	1	0	1	1	0	0	0	0	NY
2	1	0	1	1	0	0	0	0	NY
3	1	0	1	0	1	0	1	0	
4	1	0	1	0	1	0	1	0	
5	1	0	1	0	1	0	1	0	
6	1	0	1	0	1	0	1	0	
7	1	0	1	0	1	0	0	1	
8	1	0	1	0	1	0	0	1	
9	1	0	1	0	1	0	0	1	
10	1	0	1	0	1	0	0	1	
11	1	0	1	0	1	0	1	0	
12	1	1	0	0	1	0	0	1	YN
13	1	0	1	1	0	0	0	0	NY
14	1	0	1	0	1	0	0	1	
15	1	0	1	0	1	0	0	1	
16	1	0	1	0	1	0	1	0	
17	1	0	1	0	1	0	1	0	
18	1	0	1	1	0	0	0	0	NY
19	1	0	1	0	1	0	0	1	
20	1	0	1	0	1	0	1	0	
21	1	0	1	0	1	0	0	1	
22	1	0	1	0	1	0	0	1	
23	1	0	1	1	0	0	0	0	NY
24	1	0	1	0	1	0	1	0	
25	1	0	1	0	1	0	1	0	
26	1	0	1	0	1	0	0	1	
27	1	0	1	0	1	0	0	1	
28	1	0	1	0	1	0	0	1	
29	1	0	1	0	1	0	0	1	
30	1	0	1	1	0	0	0	0	NY
31	1	0	1	0	1	0	0	1	
32	1	0	1	0	1	0	0	1	
33	1	0	1	1	0	0	0	0	NY
34	1	0	1	1	0	0	0	0	NY
Sub	34	1	33	8	26	0	10	16	

(NOTE: YY = Trained and Topic Taught, YN = Trained and Topic Not Taught
 NY = Not Trained and Topic Taught, and NN = Not Trained and Topic Not Taught)

Table 1. Cont. Raw Data Collection by Trouble Call

Call #	Call Count	Trained		Topic Taught		Add Topic	Adv Assist	Topic Covered Other Course	Trained Taught
		Yes	No	Yes	No				
35	1	0	1	1	0	0	0	0	NY
36	1	0	1	0	1	0	1	0	
37	1	0	1	1	0	0	0	0	NY
38	1	0	1	0	1	0	1	0	
39	1	0	1	0	1	0	0	1	
40	1	0	1	1	0	0	0	0	NY
41	1	0	1	1	0	0	0	0	NY
42	1	0	1	0	1	0	0	1	
43	1	0	1	0	1	0	0	1	
44	1	1	0	1	0	0	0	0	YY
45	1	0	1	0	1	0	0	1	
46	1	0	1	0	1	0	0	1	
47	1	0	1	0	1	0	0	1	
48	1	1	0	1	0	0	0	0	YY
49	1	0	1	1	0	0	0	0	NY
50	1	0	1	0	1	0	1	0	
51	1	0	1	0	1	0	0	1	
52	1	1	0	1	0	0	0	0	YY
53	1	1	0	1	0	0	0	0	YY
54	1	1	0	1	0	0	0	0	YY
55	1	0	1	1	0	0	0	0	NY
56	1	0	1	0	1	0	0	1	
57	1	0	1	0	1	0	0	1	
58	1	0	1	0	1	0	1	0	
59	1	1	0	1	0	0	0	0	YY
60	1	0	1	0	1	0	0	1	
61	1	1	0	1	0	0	0	0	YY
62	1	0	1	1	0	0	0	0	NY
63	1	1	0	1	0	0	0	0	YY
64	1	0	1	1	0	0	0	0	NY
65	1	0	1	1	0	0	0	0	NY
66	1	0	1	0	1	0	0	1	
67	1	1	0	1	0	0	0	0	YY
68	1	0	1	1	0	0	0	0	NY
Sub	34	9	25	19	15	0	4	11	

(NOTE: YY = Trained and Topic Taught, YN = Trained and Topic Not Taught
 NY = Not Trained and Topic Taught, and NN = Not Trained and Topic Not Taught)

Table 1. Cont. Raw Data Collection by Trouble Call

Call #	Call Count	Trained		Topic Taught		Add Topic	Adv Assist	Topic Covered Other Course	Trained Taught
		Yes	No	Yes	No				
69	1	0	1	1	0	0	0	0	NY
70	1	0	1	1	0	0	0	0	NY
71	1	0	1	0	1	0	0	1	
72	1	0	1	0	1	0	0	1	
73	1	1	0	0	1	0	1	0	YN
74	1	1	0	1	0	0	0	0	YY
75	1	0	1	1	0	0	0	0	NY
76	1	1	0	0	1	0	0	1	YN
77	1	0	1	0	1	0	1	0	
78	1	0	1	1	0	0	0	0	NY
79	1	0	1	1	0	0	0	0	NY
80	1	0	1	1	0	0	0	0	NY
81	1	1	0	0	1	0	1	0	YN
82	1	1	0	1	0	0	0	0	YY
83	1	1	0	1	0	0	0	0	YY
84	1	1	0	0	1	0	1	0	YN
85	1	0	1	0	1	0	0	1	
86	1	0	1	0	1	0	0	1	
87	1	0	1	0	1	0	0	1	
88	1	0	1	0	1	0	0	1	
89	1	0	1	0	1	0	0	1	
Sub	21	7	14	9	12	0	4	8	
TOTAL	89	17	72	36	53	0	18	35	

(NOTE: YY = Trained and Topic Taught, YN = Trained and Topic Not Taught
 NY = Not Trained and Topic Taught, and NN = Not Trained and Topic Not Taught)

YY	= Caller Trained and Topic Taught
NY	= Caller Not Trained and Topic Taught
YN	= Caller Trained and Topic Not Taught
	= Caller Not Trained and Topic Not Taught

12
24
5
48

Topics to be Added
 Topics Requiring Advanced Assistance
 Topics Covered by Other Courses

0
18
35

Table 2. Caller Trained by Topic Taught (Observed Frequency)

CALLER TRAINED	TOPIC TAUGHT		TOTAL
	YES	NO	
YES	12	5	17
NO	24	48	72
TOTAL	36	53	89

observed data in the form of the frequency of the answers by the caller. There were four possible combinations of answers per trouble call, and they are as follows: 1. There were 12 callers that had been trained and the topic is covered (YY), 2. There were 5 callers that had been trained and the topic is not covered (YN), 3. There were 24 callers that had not been trained and the topic is covered (NY), and 4. There were 48 callers that had not been trained and the topic is not covered (NN). From Table 2, a matrix is created to compute Chi-Square (see Table 3). Computing Chi-Square from the table results in a Chi-Square of 7.924.

Table 3. Matrix for Computing Chi-Square

12	5
B A	
24	48
D C	

Summary

This chapter presented the data collected from the trouble call desk survey forms. The analyst taking the call completed the forms and the answers to the questions were determined at the time of the call. The analyst asked if the caller had been through the Basic Operator Training Course and then determined if the trouble call was covered by a topic in the course.

Using the Chi-Square method of statistical analysis, the data were tabulated and analyzed. The resulting Chi-Square value was 7.924. Chapter V will address the data analysis in terms of a summary, conclusions and recommendations.

CHAPTER V SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Chapter V summarizes the findings of this research study. It reports the summary, conclusions, and makes recommendations regarding the research problem and goals.

Summary

The problem of this study was to determine the relationship between the formal TAC-3/TAC-4 computer operations training and computer system trouble calls. Since the merger of the Radioman (RM) and Data Processing Technician (DP) ratings and the subsequent change in the designated name to Information Technologist (IT), the need for additional training has become evident. Information relating to the problem statement and the research goals was collected using the Management Training and Assistance Team (MTAT) trouble call desk and the use of a survey form filled out from the trouble call and the report for the record.

The survey form was reviewed to determine if the people having problems had attended the MTAT Basic Operator Course, whether the class covered the trouble call problem, and if the topic was not covered, if it should be added to the course. The survey sheets were reviewed with the report for the record to ensure that data were collected properly. Any duplicate survey forms were discarded and statistical data were processed using the Chi-Square method for statistical analysis.

Conclusions

The following conclusions were based upon the study's researched goals.

1. Identified the types of computer trouble calls coming in from the five aircraft carriers home ported in Norfolk, Virginia. The data collected identified different areas that the computer users were having problems. There were 89 different trouble call problems reviewed in this study, 36 of which were topics taught in the Basic Operator Course and 53 were not topics taught in the Basic Operator Course. Of the 53 trouble calls not covered in the Basic Operator Course, 35 were covered in training in different courses and the remaining 18 required assistance outside the normal training of basic operations
2. Identified if the operator having the computer problem had attended the formal TAC-3 / TAC-4 operator course. The study of 89 trouble calls showed that the caller attended the training course in only 17 of the trouble calls received. The remaining 72 calls came from people that did not attend the Basic Operator Training Course.
3. Identify if the trouble call is related to the subject matter taught in the formal TAC-3 / TAC-4 basic operator course. With 89 trouble calls studied, 36 were topics covered by the training, 35 were covered by other training, and 18 required assistance at a level higher than the basic operator level.

4. Determine if there is any relationship between the training and the trouble calls. The study analyzed 89 trouble calls. In 17 of the trouble calls, the caller had attended the Basic Operator Course. Of the 17 trouble calls, 12 were topics taught in the Basic Operator Course and 5 were not taught. In 72 of the trouble calls, the caller had not attended the Basic Operator Course. Of the 72 calls, 24 were topics taught in the Basic Operator Course and 48 were not taught. This results in 36 trouble calls on topics taught in the Basic Operator Course and 53 not taught. Chi-Square is computed to be 7.924. To interpret Chi-Square, the degree of freedom (df) and Alpha level (chance of error) must be determined. The degree of freedom (df) = 1. In addition to the degree of freedom (df), the significance (p-value or level of alpha) or the chance of error used in the study must be known. The Chi-Square analysis of the study shows Chi-Square = 7.924. The critical values of the Chi-Square table reveal Chi-Square for this study to be 7.924 with df=1 for $p > 0.01$. In accepting Chi-Square, the study reveals that there is a significant relationship between the trouble calls and the topics taught in the Basic Operator Course.

5. Determine if the trouble call topic is covered in the Basic Operator Course, covered by a different course, or the topic needs to be added to the Basic Operator Course. Of the 89 trouble calls, 53 trouble calls were for topics not covered by the Basic Operator Course. There were no topics to be added to the Basic Operator Course, 18 topics required advanced assistance that was

beyond the scope of the Basic Operator Course, and 35 topics were taught by other courses.

Recommendations

The findings and conclusions of the study support the following recommendations regarding the Basic Operator Training Course and the MTAT Trouble Desk:

1. The Basic Operator Course should continue to teach overviews of the computer hardware and software, system power up and power down procedures, User/Group management, Network Information Systems, File Systems and Disks, Managing Disk Space and the SUADPS file structure. The number of trouble calls from callers that had attended the Basic Operator Course for topics taught were fifty percent less than the trouble calls from callers that had not attended the Basic Operator Course for topics taught. With the benefit of training, there should be less calls for topics covered by the Basic Operator Course.
2. It is recommended that all of the Atlantic Fleet Carriers send as many of their IT personnel to the training that they can. With more people trained, down time can be shortened when problems arise and the ship has people on board that can solve the problem. Additionally, there would be financial savings by not having to pay travel expenses for the MTAT civilian contractors to come

out to correct the problem. With more personnel trained, the fleet should have more opportunities to use them to train others and act as mentors.

3. It is recommended that MTAT continue to collect data on the trouble calls on a regular basis. It is further recommended that this data should be analyzed yearly. By doing this, MTAT can determine if there are any topics that need to be added to the Basic Operator Training Course in the future.
4. It is recommended that as training, equipment and software changes, this study be repeated as needed. This will allow the Basic Operator Course to be updated with the latest changes.

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APPENDIX A
COMNAVAILRANT MTAT COMPUTER TROUBLE CALL REPORT

COMNAVIAIRLANT MTAT COMPUTER TROUBLE CALL REPORT

DATE: _____

SHIP: ___ USS ENTERPRISE CVN-65

___ USS EISENHOWER CVN-69

___ USS ROOSEVELT CVN-71

___ USS WASHINGTON CVN-73

___ USS TRUMAN CVN-75

PERSON CALLING: _____

DIVISION: _____

MTAT ANALYST: _____

1. Is person calling the one with the problem? YES NO

2. If NO, who is having the problem? _____

3. Has the person with the problem been through the Basic Operator Class? YES NO

4. What is the problem? _____

5. Is the problem covered in the Basic Operator Class? YES NO

6. Brief description of how the problem was resolved. (Extract from REPORT for the RECORD)

7. Should this problem be added to the Basic Operator Class? YES NO