STUDENT STUDY GUIDE



AIR TRAINING COMMAND

MISSILE LAUNCH/MISSILE OFFICER

WEAPON SYSTEM INTRODUCTION (BLOCK I)

November 1961

COURSE OBR1821B/3121-3 TECHNICAL TRAINING

FOR INSTRUCTIONAL PURPOSES ONLY

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STUDENT STUDY GUIDES AND WORKBOOKS, are designed by the Air Training Command as student training publications for use in the training courses of this command. Each publication is prepared for a subject or Unit of Instruction as reflected in the course syllabus.

THE STUDENT STUDY GUIDE, contains the specific information required in the Unit of Instruction or it will refer to other publications which the student is required to read. It contains the necessary information which is not adaptable for student study in other available sources. The material included or referred to is normally studied either outside the classroom or during supervised study periods in the classroom. Also included are thought provoking questions which permit self-evaluation by the student and which will stimulate classroom discussion.

THE STUDENT WORKBOOK, contains specialized job procedures, important information about the job, questions to be answered, problems to be solved and/or work to be accomplished by the student during the classroom/ laboratory, airplane/equipment activity. It serves as a job sheet, operations sheet, mission card, checklist, or exercise to be performed during classroom or laboratory periods. Also included are questions which will aid the student in summarizing the main points of the subject or Unit of Instruction.

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Missile Launch/Missile Officer Missile Fundamentals Branch Department of Missile Training Sheppard Air Force Base, Texas

OBR1821B/3121-3-I-1 Student Study Guide 20 November 1961

Day 1

ORIENTATION AND INTRODUCTION TO BALLISTIC MISSILES

OBJECTIVES:

To become familiar with:

Course orientation

Missile history

Familiarization with typical missiles and missile systems.

INTRODUCTION:

The first day of instruction will be an introduction to this Missile Fundamental course and its content. There will normally be a briefing by the Director of the Department of Missile Training or his representative, and a welcoming by the course director. There will also be a tour of the missile facilities and an introduction to the theory of USAF missile site operation.

As you know, the Air Force mission is NATIONAL DEFENSE THROUGH DETERENT AEROSPACE POWER. The role of this course is then obvious in its relationship to the Air Force mission. By producing qualified men for the missile field, this course is maintaining a supply of competent officers to man the deterent force. Benefits to the individual are possession of a valuable AFSC and a position in a rapidly developing field.

In this course there are three blocks of instruction. Each block is approximately four weeks long. The following list shows the areas of instruction and the number of hours devoted to each.

Block I Weapon Systems Introduction	HOURS
Orientation and Introduction to Ballistic Missiles	. 6
Introduction to Missile Management	. 6
Missile Career Program and Missile Organizations	. 6
Duties and Responsibilities of Missile Personnel	. 6
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Air Force Weapons Supply	2
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Fundamental Operations of Algebra	. 9
Trigonometry and Vector Analysis	6
Binary and Octal Arithmetic	3
Forces and Their Results	6
Gyroscopes	3
Missile Safety, First Aid, and Security	6
Pneudraulics	9
Measurement	3

Block II Electronics for Missiles	HOURS
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Introduction to Alternating Current	6
Introduction to AC Test Equipment	4
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Diode Vacuum Tube and Power Supplies	9
Measurement	3
Vacuum Tubes and Amplifiers	9
Semiconductor Fundamentals	3
Transistor Amplifiers and Oscillators	9
Transmitters and Receivers	9
Magnetic Amplifiers	3
Synchros and Servo Loops	6
Radar Fundamentals	3
Computer Principles and Circuits	12
Measurement	6

Block III Missile Systems and Equipment	HO	URS
Missile Airframe	••	6
Re-entry Vehicle	••	3
Propellant Transfer System	••	3
Missile Rocket Propulsion	•••	12
Principles of Missile Trajectories	••	3
Position and Rate Sensors	• • •	3
Flight controls		12

Inertial Guidance	12
Radio Guidance	3
Measurement	3
Power Generation and Distribution	7
Environmental Control	5
Aerospace Ground Equipment and Checkout and Test Equipment .	6
Launch Control and Countdown	6
Measurement	6

MISSILE HISTORY

The rocket has been known to man for centuries, longer than either the steam engine or the internal combustion engine. This makes the rocket the oldest propulsion engine known, which the Chinese probably discovered around 1041 AD. The first recorded use of the rocket as a weapon is 1232 AD, when the Chinese attached arrows to rockets and used them to defend the city of K'ai-Fung-Foo against the invading Mongols.

There is historical proof that the Greeks knew of the rocket. The Saracens, who traded with the Chinese, are credited with introducing the rocket to Europe in the thirteenth century. In Europe it was only used sporadically as a weapon, but found great use in fireworks, especially in Italy. Although there have been other types of gunpowder, it was not until the twentieth century that something other than black powder was used to power rockets.

During the Renaissance, rockets were used extensively as replacements for the smooth-bore firearms of the day due to their longer ranges. Each nation in Europe had a rocket corps in their armies. This popularity soon faded because greater ranges and accuracy were built into the "conventional" firearms. Two Englishmen, William Congreve and William Hale worked independently to improve the range, accuracy, and manufacture of the rocket in the early nineteenth century. Hale is credited with stabilizing rocket travel by having the rocket spin while it was in flight. Congreve's rockets were used by the British during the War of 1812. "Rockets red glare" in the Star Spangled Banner is a reference to the Congreve rockets used against Fort McHenry in Baltimore. The same type of rocket was used at the Battle of Bladensburg where the American troops were routed leading to the fall of the city of Washington.

Sir Issac Newton and Jules Verne's romantic writings of space travel led to renewed interest in rocketry in the twentieth century. Three westerners, Russia's Konstantin E. Ziolkovsky (1851-1935), Transylvanian-German Hermann Oberth (1894-), and the American Robert H. Goddard (1882-1945) were largely responsible for this rebirth of interest in the rocket. These scientists worked without knowing what the others were doing. They developed the basic principles of rocket action and applied them to the escape from the earth's gravitational pull. In 1903, the Russian school teacher Ziolkovsky proposed space flight by reactionpropulsion in a paper titled "Investigation of Cosmic Space by Reactive Machines". Ziolkovsky is considered the father of space travel. Goddard is considered the father of the modern liquid fueled rocket. He demonstrated on the day before the Armistice, November 10, 1918, the first antitank rocket which was the forerunner of the present "Bazooka". The Army and the public in general considered this rocket an interesting "gadget" until the beginning of World War II. In the fall of 1919 the Smithsonian Institution published Goddard's booklet entitled "A Method of Reaching Extreme Altitudes" which proposed the use of rocket powered vehicles to send instruments to the stratosphere and further. This paper was the first proposal of the "high-altitude rocket sonde". Goddard concluded this paper by saying that with larger rockets it would be possible to place instruments on the moon. Americans heaped abuse on Goddard for suggesting such a fantastic notion.

In 1923, Hermann Oberth published his booklet called "The Rocket into Interplanetary Space" which was the first complete mathematical paper on the mechanics of flight beyond the atmosphere.

Goddard continued his research with more powerful reaction motors using liquid chemicals. These experiments reached a climax on March 16, 1926 when Goddard flew the world's first liquid propelled rocket from the Ward Farm near Auburn, Massachusetts. After this milestone, further experiments in rocket development were banned by the local fire marshall. The resultant newspaper publicity interested Colonel Charles A. Lindbergh, who succeeded in obtaining a grant from the Daniel and Florence Guggenheim Foundation enabling Goddard to move his experiments to Roswell, New Mexico. Working with limited resources (the largest grant he ever received was \$18,000), Goddard continued his experiments, launching the first liquid fueled rocket controlled by a gyroscopically controlled guidance system. With the outbreak of World War II he offered his services to the Navy. He worked at Annapolis developing rocket powered take-off units for aircraft, and died there in 1945.

The American Rocket Society during the early 1930's carried on a series of amateur experiments near New York City. James H. Wyld, one of these early experimenters, developed the principle of regenerative cooling which is used universally today in liquid fueled rockets. Regenerative cooling is the process of cooling the thrust chamber by circulating the propellant through the walls of the thrust chamber.

Germany's experiments were far from amatuerish in the early 1930's. Because of Oberth's inspired ideas and mathematical analysis along with a nationalistic state bent upon war, great strides were made in rocket development. Research earnestly began in 1925 with the SOCIETY FOR SPACE TRAVEL, a group of rocketeers who eventually went to work for the German army at Kummersdorf near Berlin in 1932. The German Army's primary interest was the development of a longrange rocket to circumvent the Versailles Treaty which prevented them from developing artillery. In 1937, this group founded the research center at Peenemunde. With sporadic funds available, this group developed a series of liquid fueled rockets ending with the famous V-2 (A-4) ballistic missile. This was the beginning.

SUMMARY

You now have background information on the development of missiles. You also have information pertaining to this course so you may follow your own progress. Welcome to Sheppard Air Force Base, and the Officer Fundamentals Course.

QUESTIONS

- 1. Who is the father of space travel?
- 2. Who is the father of the liquid fueled rocket?
- 3. Who discovered regenerative cooling?
- 4. Who discovered the rocket?

FAMILIARIZATION WITH TYPICAL MISSILES

Emphasis in missile development began after World War II. Examples of early development are the Mace, Matador and Navaho. In the early development of inter-continental ballistic missiles (ICBM) there were problems that made further development unrealistic. The lack of an effective and efficient payload was one. Due to the large size and tremendous weight of the Atomic Bomb, the development of an adequate booster was unfeasible from the standpoint of economy and practicality. Another area that presented many unanswerable problems was that of re-entering the earth's atmosphere. Work on ICBM's came to a standstill until these problems could be answered.

The turning point of ICBM development occured in 1953 with the Thermonuclear break-through. This gave us a higher yield weapon and it was also miniturized. Renewed development of ICBM's began in 1953 with a contract awarded to Convair. This lead to the Atlas ICBM (SM-65). In 1955 a contract was awarded to Martin for the development to the Titan (SM-68) and in 1957 Boeing began work on the Minuteman (SM-80).

A typical missile will be broken down into four major components:

Re-entry Vehicle

Guidance

a. Radio Inertial

b. Inertial

Air Frame

Propulsion

a. Liquid

b. Solid

QUESTIONS:

- 1. What were the major problems that stopped development of ICBM's in the late 1940's?
- 2. What was the major break through that helped solve the problems of ICBM development?

Missile Launch/Missile Officer Missile Fundamentals Branch Department of Missile Training Sheppard Air Force Base, Texas OBR1821B/3121-3-I-2 Student Study Guide 20 November 1961

Day 2 3

INTRODUCTION TO MISSILE MANAGEMENT

OBJECTIVES:

To become familiar with:

Air Force Philosophies concerning management

Command Phase of Management

Staff Phase of Management

INTRODUCTION:

Since the field you are entering is new, and management concepts and material resources are changing, it is to your advantange to have a quick review of management. This day of instruction is devoted to a discussion of the Staff and Command Phases of Management.

AIR FORCE PHILOSOPHIES CONCERNING MANAGEMENT

The progressive achievement of overall Air Force objectives provides the basis for determination of management policy.

Maximum effectiveness consistent with available resources must be attained and maintained.

Decentralization of operations is essential to optimum use of resources.

Management is an inherent responsibility of command.

Recognition and respect for individuals is essential to effectiveness.

Confidence in the Air Force must be maintained through demonstrated managerial ability and individual integrity.

AIR FORCE POLICIES CONCERNING MANAGEMENT

The Air Force will maintain the most effective force possible, incorporating maximum efficiency and economy in all operations consistent with planned missions.

All Air Force commanders will insure the effective management of human, material, and financial resources.

Centralized control of decentralized operations will be exercised to the degree required:

By higher authority

To establish priorities

To allocate critical resources

To identify and correct deficiencies

The allocation of resources will be continually evaluated in the light of changing requirements.

Technical and scientific advancements will be used where applicable within the Air Force.

Organizations, methods, and procedures developed for use within the Air Force will be readily adaptable to changing conditions.

THE COMMAND PHASE OF MANAGEMENT

Management is defined as "a process of organizing and employing resources to accomplish predetermined objectives". The overall objective of Air Force management is to achieve maximum operational effectiveness in accomplishing the essential missions assigned. The proof of success of management is operational effectiveness. Thus it follows that a commander is measured against the success or failure of the mission of his command.

PLANNING

Although the commander has a staff to assist him, he bears sole

responsibility for his mission. He alone is responsible for the movement, support, protection, coordination and control of his forces. He must, therefore, plan all tasks dictated by his mission, and he must make the final decisions concerning the employment of his forces.

Because he is responsible for planning, the commander must exercise the utmost care in anticipating developments and in timing. The commander makes planning possible and effective in the follows ways:

By scheduling its phases and determining its mission objectives;

By timing his planning to the requirements of higher headquarters and the operational situation;

By coordinating the planning done in his command with that done in other commands and, if necessary, with that of subordinate commands;

By guiding his subordinates in questions of policy.

The first step and requirement in planning is a thorough understanding of the mission. What is command supposed to do? Where? When? and if such information is available, Why?

In the second step, the situation in which the mission is to be performed must be thoroughly evaluated, and all factors that affect the mission must be considered. When facts are missing, assumptions must be made.

The third step is to list and study all possible courses of action. Although one solution may in itself present only a partial means for resolving the problem, it may, in combination with another solution, furnish the best means for accomplishing the mission.

Logically, the fourth and final step in planning is to select the best course of action to follow. Once selected, this course of action becomes the basis for detailed planning, in which many facts are gathered and fitted together in order to produce a feasible and acceptable plan.

Planning is the very basis of all military action. It begins at the lowest level and increases in importance and scope as one proceeds up the chain of command. Planning is dynamic in nature, never static. It is the first function of command, both in sequence and in importance. The value of a good plan is stated by General Omar Bradley in "A Soldier's Story". Referring to the invasion of Sicily, he wrote: "During the first few hours of assault I could exercise no control whatsoever over what was happening ashore. Until the division commanders landed and put in communications, we had to bunk aboard the Ancon, trusting in God and the plan."

Planning requires the integrated effort of the commander and his entire staff. It is best accomplished when a set procedure or technique is adopted as in the following planning steps:

Understand the mission

Evaluate the situation

Consider ALL possible courses of action

Select the best solution

ORGANIZING

Closely related to command planning is the function of organizing. In organizing, the commander relates, in a systematic and practical manner, the factors involved in carrying out the course of action selected. These factors include the mission with its component tasks, available resources of men, material, and time.

Most missions, even in the case of very small units, contain a series of tasks which may be successive or simultaneous, one-time or continuous. A combat mission, for example, may require a series of component operations which must be conducted before the actual strike, during the strike, and after the strike. The completion of one or more of these operations does not mean that the mission itself is completed. The unit conducting an operation has a long-term or overall mission with several component tasks, one of which may be maintaining operational readiness.

The commander's FIRST STEP in organizing is to determine what these component tasks are and how the mission can be broken down logically and functionally. In small units this may be no problem. The mission may be clear-cut and concern only one function. A highly complex mission for a large unit may present quite another problem. In the mission of the North American Defense Command, for example, many tasks are implied and many functions are involved. Such a command might be organized in many ways.

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The SECOND STEP in organizing is to set up the structure needed to accomplish the mission or carry out the course of action selected. If an organization already exists,

- (a) is its present structure satisfactory, or must it be changed?
- (b) is augmentation necessary?
- (c) what is the most efficient way for using resources?

The new organization must be developed to operate efficiently and effectively. Means must be provided for spreading the workload, fixing responsibility, and insuring an interchange of information and instruction. In short, certain basic principles of organization must be observed:

- (a) The unity of command must be maintained.
- (b) The commander should not exceed a reasonable span of control.
- (c) He should group parts of the organization according to function.
- (d) He should assign responsibility and delegate adequate authority.

The visable product of this step is the well-known functional and organizational chart.

The THIRD STEP in organizing is to set up the procedures. Technical directives such as Technical Orders relating to maintaining and operating missiles are in effect Air Force wide. Air Force regulations, administrative procedures, and institutionalized policies also guide the commander in developing procedures. The commander supplements guidance from higher headquarters with his own regulations, policies, and office instructions. When the third step is completed, all procedures have been established that are needed for accomplishing the mission.

The FOURTH STEP in organizing, allocation of resources, depends to a large degree upon the organization which has been set up. On the other hand, facilities and resources affect the organization. For example, the Commander in Chief of the Strategic Air Command could not arbitrarily decide to have three numbered Air Forces of equal size located in three equal segments of the United States. Facilities do not exist that would make such a decision acceptable. There must be a constant adjustment between the organizational structure and the procedures to be followed.

The function of organizing, like planning, is never really finished. Varying situations and changing missions make organizing a continuous process. As new equipment is developed and new techniques are devised, new organizations are necessary to utilize them. Methods of conducting warfare change rapidly in the aerospace age. Air Force organizations must maintain the flexibility necessary to change just as rapidly. O Supplement

COORDINATING

Coordinating is the process of communicating with elements outside the manager's jurisdication to secure their cooperation wherever they influence or are influenced by the manager's operation. The action consists of securing agreement to, understanding of, or active aid in the pursuit of a common purpose.

The significance of coordinating stems from the fact that any given operational system in the Air Force, from a squadron to a major air command, is not and must not be thought of as an isolated Any operational system has a system, working by and for itself. higher echelon into which it must fit. Furthermore, such an operational system must establish definite relations with similar operations at the same echelon.

This fitting in, the establishing of definite relations, is dependent upon a number of factors, among which is knowing about the other echelons and operating systems and understanding what is going on in them.

The term "coordination" is frequently understood to refer specifically to those elements under the manager's control. Coordination in this sense is the process of both arranging for and getting the right people to do the right things in the right places at the right times and in the right amount - the achievement of unity of effort within the manager's activity. True, this is coordinative activity; but for our purposes it is conceived as a type of activity inherent in other listed managerial functions. Therefore, for our purposes, the term "coordinating" as it refers to a managerial function will be used only with reference to communication with those activities outside the manager's jurisdiction.

As thus conceived, the coordinating function is comprised of these essentials:

Determine whether and to what extent operations influence, or are influenced by external activities.

When external activities are involved, communicate with them:

a. To inform or to get information.

b. To secure understanding of common purpose.

c. To secure agreement where required.

d. To secure active aid when required.

Establish means of resolving conflicts.

Continue to maintain satisfactory relations to facilitate future coordinative requirements.

The need for coordination is obvious, yet many missions have failed and tragic errors have been made because of a lack of coordination. Troup carrier aircraft of the U.S. Army Air Force were shot down by our forces during the invasion of Sicily in World War II because action was not coordinated as it should have been.

Coordination must be honest and complete. Only the interested agencies must be informed; the others should not be bothered. Over coordination can be troublesome and a total lack of it may pave the way to disaster.

DIRECTING

The commander implements his plan through his directing function. By virtue of his position, he has been delegated the legal right to direct his subordinates so that the mission can be accomplished.

In this area there is a vast gap between civilian and military management. The commander carries a tremendous responsibility in that he can order men away from their homes and families, he can order them to hazardous duty, and in extreme cases he can order them to what may appear to be certain death. When the order is issued out of military necessity, the individual has no course but to obey. If satisfactory results are not obtained through implication or example, the commander can always resort to cold, hard command. Many great commanders of the past achieved tremendous success through the use of their power of command even though they were unpopular and misunderstood by their men. Accomplishment of the mission may have to come before, rather than along with popularity and recognition.

But the function of directing means more than issuing orders; it also means giving guidance or explaning concepts. The commander whose only direction is the order may be failing miserably. Direction should be given in the form of explanation as well as orders so that the staff and subordinate units can plan and operate within the boundaries set by the commander. When a commander explains the course of action to be taken, he encourages initiative; a continuous series of outright commands may well stifle it. The staff can aid the commander in giving direction not only by relaying the commander's orders to subordinate units but by also aiding in the development of the commander's concepts.

Regardless of the nature of the directive, whether written or oral, an order or a concept, it must be disseminated in concise, unmistakable clear language.

Above all remember that a commander must direct with authority, clarity, and purpose.

CONTROLLING:

It is not enough for the commander to plan and program for mission accomplishment. He must determine whether the actual operation is proceeding as planned, and he must evaluate progress. Slippages occur, changes become necessary and unforeseen developments arise. To meet these factors the commander must have a system for exercising control.

In its broadest sense, control refers to the supervision and direction a commander exercises over his organization. It refers to the positive action he takes, such as in issuing orders and directives and in setting up standing operating procedures with the purpose of keeping the various efforts of the organization harmonized and synchronized toward meeting one set of objectives. In this sense, the control function overlaps the function of directing. In order to know where and when to exercise direction or supervision, a commander must have a vast amount of information. Obtaining knowledge about an organization to use as the basis for executive action is really part of the function of control.

In small organizations the job of control is simple. Usually it can be accomplished by personal contact and observation. As the scope of operations is extended and the activities under the jurisdication of the commander become more varied, there is a greater need to assign responsibility and delegate authority. With each supervisory level added between the operating level and the commander, the task of exercising control and evaluating results becomes more complex. At the higher echelons a commander does not have the time to examine each activity in the detail required for effective control. Therefore, it becomes necessary for him to establish a control system.

A control system can make use of numerous techniques and methods but in any case it must provide the following information:

The degree of progress that has been made toward attaining the objective.

The degree of efficiency with which resources are being utilized.

The places where problems exist and the reasons why.

A control system is set up in four steps:

The commander identifies the key points of control. The points where he wants to exercise supervision, and the indicators, or essential elements of information that are necessary to show the status of the key points.

The commander must establish standards. Without standards, the information that he has might be useless.

Data must be collected and evaluated so that the commander knows what is happening.

The results must be interpreted. This is the decisive step. Here the commander determines the degree to which his organization has accomplished its objectives and how well the command has utilized its resources. A control system does not insure success. It is merely another tool to help the commander in accomplishing his mission. No control system, however well designed, can operate without some executive control. The commander must still make every major decision. The control system can only help him make a higher percentage of correct and timely decisions.

STAFF PHASE OF MANAGEMENT

Basic Staff Responsibilities

The responsibilities assigned to each element of a staff must be stated in terms of specific tasks to be accomplished. Similarly, the overall responsibilities of the staff must be clearly prescribed. In addition, each directorate or division of the staff is responsible for certain functions in common with all other staff directorates and divisions. These common, or basic, staff functions are directly related to the job of being the eyes, ears, brains and mouthpiece of the commander. There are six:

Advise and provide information

Develop plans

Achieve coordination

Make decisions

Prepare and transmit directives

Maintain control

STAFF MANAGEMENT FUNCTIONS

When in a staff position remember that the commander will give his staff leadership, guidance, policy and decision. The following is an outline of the Staff Management Functions. (It is shown here because the basic functions of management are the same for a commander, and for his staff, but there are some differences.)

Planning

- a. Collect information
- b. Prepare studies, estimates and plans
- c. Advise the commander

Organizing

- a. Provide ideas
- b. Understand the principles of organizing
- c. Advise the commander

Coordinating

- a. Cooperate and communicate
- b. Maintain records
- c. Advise the commander

Directing

- a. Make decisions
- b. Prepare and transmit directives
- c. Advise the commander

Controlling

- a. Compile and summarize reports
- b. Conduct base visitations
- c. Follow up
- d. Advise the commander

SUMMARY:

It should be realized that the management concepts presented here are <u>only guides</u>. There are not and can never be any hard or permanent guide for good management. Each management situation is different. There are never two situations which are exactly alike. The best manager knows the principles of good management, but he uses them with a good dose of common "horse" sense.

QUESTIONS:

- 1. What is the meaning of the first philosophy of Air Force Management? Must put mission before anything dise
- 2. What is the meaning of the sixth philosophy of Air Force management?

3. What are the five basic functions of management?

- 4. Against what standard is a commander measured?
- 5. What is the goal of the planning function?
- 6. What should all Air Force organizations have in common?
- 7. What is the first step a commander must take in planning?
- 8. What should be considered in setting up the structure while organizing?
- 9. When does organizing end?
- 10. What does the commander do when he begins directing?
- 11. What is the greatest aid to directing?

12. What is common to all Staff functions of management?

REFERENCES

Air Force Manual 25-1, The Management Process

Squadron Officer School SOS-9, Command and Staff

Missile Launch/Missile Officer Missile Fundamentals Branch Department of Missile Training Sheppard Air Force Base, Texas OBR1821B/3121-3-I-3 Student Study Guide 20 November 1961

Day \$ 2

MISSILE CAREER PROGRAM AND MISSILE ORGANIZATIONS

OBJECTIVES:

The missile career program

Training

Authorization systems

Missile Organizations

INTRODUCTION:

Many Air Force personnel are unfamiliar with the USAF Career Program and the Technical Training programs used to qualify Air Force personnel. This study guide will be devoted to the Air Force Career Program as it applies to the missile fields, the training of missile personnel, the authorization of personnel and their equipment and Air Force command.

THE MISSILE CAREER PROGRAM

The Air Force Career Program is the management tool used to control the manpower resource. The quality of any organization is measured by its success. The only way any organization can succeed is by having qualified prople in all positions. The purpose of the Career Program is to "identify accurately the abilities of officers, warrant officers, and airmen in relation to the QUALIFICATION required to PERFORM IN POSITIONS".

Personnel Classification Concepts

Functional Grouping - The military personnel classification system of the Air Force groups related positions on the basis of similarity of education, training, experience, and other abilities required to perform

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them. Such a grouping of positions is called a functional grouping.

Practical Specialization - An AFS includes all positions which require essentially the same basic abilities. Thus, no one officer can perform all of the duties and assume all of the responsibilities of the AFS at any one time. However, selected officers can be developed to perform all of the duties and assume all of the responsibilities of the AFS at different times. Demonstration of proficiency in only one position is adequate to indicate that the officer is capable of performing all of the positions of the AFS, provided that he fulfills the mandatory qualifications outlined in the specialty description.

Equal Pay for Equal Work - Each AFS covers two or more military pay grades as indicate in the specialty description. Equal pay for equal work provides that positions of the same level of difficulty and responsibility receive the same pay.

Specialty Qualification - The qualifications of an AFS are expressed in terms of education, experience, training and other factors which indicate the knowledges, skills and other abilities needed to perform the duties of any of the positions within a specialty. The qualifications are further designated as Mandatory or Desirable. Each qualification designated as Mandatory has been judged to be crucial to success in any position of the specialty and must be satisfied for award of an AFS at a fully qualified level. Each qualification designated as Desirable has been judged to increase the individual's chances for success in the specialty and serves as a blueprint for his further development.

REFERENCE:

Commander and Director Specialties	pages	00-1 & 00-2
Missile Commander	pages	00-19 & 00-20
Missile Operations Utilization Field	pages	18-1 - 18-8
Missile Utilization Field	pages	31-1 - 31-8
Missile Safety Officer	pages	19-11 & 19-12

AIR FORCE TRAINING

There are six basic types of training available to personnel in the Air Force. This includes five types of technical training available to all personnel, and OJT available to Airmen

What is OJT?

Air Force Regulation 52-2, On-the-Job Training, defines OJT as "a planned training program designed to qualify a person, through supervised instruction, to perform in a given AFS while he is actually working in a duty assignment of the AFS." On-the-Job training essentially embodies the principle of "learning by doing," under the guidance of an experienced person.

AUTHORIZATION SYSTEMS

As a commander or a staff member you will find it necessary to carefully evaluate requirements for both men and material. Before you can obtain more or different people and equipment, you will have to ask for changes to your authorization documents.

Documents which authorize a unit its manpower and equipment are a part of two well-defined and complex systems. These systems contain many unfamiliar terms which will be identified and described in this study guide. Understand them before you attend the day of instruction.

DEFINITIONS:

Activation Order - An order which activates a unit, and tells the unit which Organization Table to use.

Organization Table (O/T) - Tells what personnel might be needed. It does not authorize these people, but is a guide for planning and programming.

Manpower Authorization Voucher (MAV) - A control document that is published by Headquarters USAF annually for each major air command. It prescribes the maximum manpower authorized for each major air command.

Unit Manning Document (UMD) - Shows authorization or the authority to assign personnel to a unit. Used at the operational level.

Tables of Allowances (T/A) - There are about 15 TA's, some are used by all Air Force units-- others used only by specific types of units. Each item, or sometimes a "set" of related items (see ECL), is listed with a basis of issue; that is, the circumstances under which the item might be needed. Special Allowances (SA's) - An approval from Headquarters USAF which allows a major air command to authorize a specific unit any items or quantities of items in excess of the allowances normally prescribed for that type of unit by the TA's. They are normally used for unusual, temporary, or new functions not considered in TA's.

Equipment Components Lists (ECL's) - There are several hundred ECL's. Each one lists the contents of a "Kit" or "set" is used primarily to extract a group of related items from a T/A for the sake of convenience.

AUTHORIZATION DOCUMENT:

Unit Authorization List (UAL) - As with the UMD, each unit has its own UAL. It shows the qualtity of each item authorized. It is published by the major air command but the unit commander must initiate requests for changes. The UAL does not include

- 1. Items of individual equipment for permanent retention
- 2. Any expendable item
- 3. Any item which costs less than \$10. Cat. 3

The following list shows the breakdown on the assignment of personnel.

MANPOWER AUTHORIZATION SYSTEM

Headquarters USAF Bulk allocation of Manpower spaces via

Manpower Authorization Voucher

and

Organization Table for Guidance

Major air Commands

Major Air Commands allocate manpower spaces to units



EQUIPMENT AUTHORIZATION SYSTEM

HEADQUARTERS USAF

Publishes guidance documents (Allowances):

Major Air Command

Publishes Authorizations

Via Unit Authorization List (UAL) Unit

MISSILE ORGANIZATIONS:

The following diagram shows the organization of the Department of Defense.





DEFINITIONS:

Operational Command - Has full authority to outline objectives, to control resources, to decide force composition and task assignment.

Unified Command - To qualify as a unified command an organization must:

- 1. Have a broad continuing mission.
- 2. Be under a single commander.
- 3. Contain significant elements of two or more services.
- 4. Be established by the President.

Specified Command - The only difference between a unified command and a specified command is that the latter contains elements of ONE Service only.

REFERENCE: READ AND KNOW

SAC REG. 20 - 20

SUMMARY:

As managers in the missile field you should have an understanding of the personnel which you will supervise. By knowing what people you will need and the training they have received, you will be able to better determine the needs of your organization. The personnel requirements of an organization will vary as will the equipment needs. Your job will likely include the up-dating of an organization in both personnel and equipment which is necessary to insure progressive achievement of the Air Force Mission.

QUESTIONS:

- Are the commander and director specialties grouped into a Utilization Field? No
- 2. What is the grade spread for the 0086 AFSC? It Col + Col

- 3. What is the minimum mandatory time before a person may become fully qualified in the AFSC of
 - a. 1816 18 mo. unqual. (12 mo. 1824 3124 gual)
 - b. 1824 -12 mo.
 - c. 3116 18 mo.
 - d. 3124 18 mo.
- 4. Operation orders to the Strategic Air Command will be in the name of See of feferice
- 5. Operations orders to the Strategic Air Command come directly from fourt cheif of Staff
- 6. The Strategic Air Command is a (Unified, Specified) Command. Specified
- 7. The Secretary of the Air Force has authority over the Strategic Air Command for what functions? admin and support
- 8. When there are more than one SMS assigned to the same base how is missile maintenance organized? Consolidated into a MiMS with main Controlded at Wing by a D.M (Director of Main)
- 9. If you were the C.O. of an SMS list the steps you would go through to get more equipment.

2. ask forchange in UAL after Stand T/A) Check & figure

10. What is the difference between the specialty qualifications of a 3124 and a 1824?

2. Sob knowledge

11. What organization takes care of the re-entry vehicle when a SMS is assigned to a strategic bombardment wing? MMS Munitum maintenent Syden.

12. List the staff to the chief of maintenance.

1 O val control 2 main Control 3 stry control 4 Reports and analysis

13. List the chain of command from an LCO to Air Division when the SMS is assigned to a strategic bombardment wing?

1. Site Commander 2. Wing " 3. division "

Missile Launch/Missile Officer Missile Fundamentals Branch Department of Missile Training Sheppard Air Force Base, Texas OBR1821B/3121-3-I-4 Student Study Guide 20 November 1961

Day 4

DUTIES AND RESPONSIBILITIES OF MISSILE PERSONNEL

OBJECTIVES:

Administration

Maintenance

Operation

INTRODUCTION:

This day of instruction is designed to use the information presented in previous lessons to enable the class to develop a missile organization. The organization developed in class will also serve as an introduction to the organization of maintenance which is taught in days 5 and 6. The reference material for this lesson will supplement the information received in previous days.

REFERENCES: Read

- 1. SAC REG. 20-20
- 2. Review Officer AFSC's
- 3. Review Text

SUMMARY:

To insure effective operation, the commander must put the right man in the right position according to the organizational functional charts. Placing a man with little or no experience in a supervisory position will be wasted effort and destructive to the mission of the unit. To be sure of getting the proper man for a certain position, the Air Force developed the present classification system. Through proper use of this system and the operation of an agressive OJT program you will find that your unit will possess the necessary personnel strength and depth for accomplishing its assigned mission.

QUESTIONS:

- 1. Field and Organizational maintenance in the missile field will be organized in accordance with <u>SAC Reg</u> 20-20 and AFM 66-1
- BMAT What is the title of the 31 Career Field? 2.
- MMT 3. What is the title of the 44 Career Field?
- What is the title of the 54 Career Field? 4.
- EPP(SorT) ele Power What should the AFSC of a missile organizational commander be? 5.

0086

- 6. What are the duties and responsibilities of a missile staff officer (3116)? 1. Operations and maintence a. Plan and organize
- 7. Differentiate between the Duties and Responsibilities of a Missile Launch Officer (1824) and a Missile Officer (3124).

3124 operations + maintenance