

THE GENERAL BOARD

United States Forces, European Theater

Antiaircraft Artillery Section

37-10
E-10-60

44
115
20

COMMAND, STAFF, AND ADMINISTRATION

OF

ANTIAIRCRAFT ARTILLERY UNITS

Mission: Prepare Report and Recommendations on the Command, Staff, and Administration of Antiaircraft Artillery Units.

The General Board was established by General Order 128, Headquarters European Theater of Operations, US Army, dated 17 June 1945, as amended by General Order 182, dated 7 August 1945, and General Order 312, dated 20 November 1945, Headquarters, United States Forces, European Theater, to prepare a factual analysis of the strategy, tactics, and administration employed by the United States forces in the European Theater.

File: 320.2/52

Study Number: 37

Property of
Office of the Chief
Military Liaison
General Reference Branch

~~RESTRICTED~~
UNCLASSIFIED

TABLE OF CONTENTS

<u>SUBJECT</u>	<u>PAGE</u>
<u>Part One:</u> Narrative Report of Study	1
Chapter 1: Preface	1
Chapter 2: Basic Consideration Affecting Antiaircraft Artillery Command and Staff Organization.	3
Chapter 3: Present War Department Doctrine	5
Chapter 4: Antiaircraft Artillery Command and Staff Organization in the European Theater of Operations.	8
Chapter 5: Possible Solutions to Antiaircraft Artillery Problems.	14
Chapter 6: Allied Joint Planning Board	19
Chapter 7: Probable Future Requirements.	20
Chapter 8: Final Conclusions and Recommendations	21
<u>Part Two:</u>	
Bibliography	24
Appendices:	
1. Antiaircraft Artillery Requirements of a Division.	
2. Comments - Colonel W. G. Jeffords.	
3. Comments - Brig. Gen. C. H. Thiele on AAA Question- naire, ETOUSA, 11 June 1945.	
4. Comments - Brig. Gen. H. R. Jackson.	
5. Interview - Brig. Gen. W. L. Richardson and Col. M. L. Deichelmann.	
6. Interview - Brig. Gen. C. M. Thiele.	
7. Suggestions for Army AAA Command Structure.	
8. Air Defense Comments of Brig. Gen. W. L. Richardson.	
9. Comments on AAA Gunnery Instruction Teams.	
10. British AAA Structure.	
11. Comments - Brig. Gen. Thiele on Organization and Employment of AAA With Army Group.	
12. Arguments for a Coordinated Air Defense.	
13. Controversy over Location of Army Group Rear Air Boundary.	

14. Air Defense Division, SHAEF (Diagram).
15. Theater Liaison Section (Diagram).
16. IX Air Defense Command (Diagram).
17. 12th Army Group Liaison Section.
18. Employment of Divisional Liaison Battalions.
19. Divisional Liaison Officers' Opinions.
20. Conference of Armored Force Officers.
21. Proposed Organization of Liaison Regiment (AW) (Diagram).
22. Proposed Liaison Brigade Hq. and Proposed Liaison 90mm Gun Regiment (Diagram).
23. Proposed Liaison Division (Diagram).
24. Proposed Liaison Command (Diagram).

THE GENERAL BOARD
UNITED STATES FORCES, EUROPEAN THEATER

COMMAND, STAFF, AND ADMINISTRATION OF
ANTI-AIRCRAFT ARTILLERY UNITS

Prepared by:

Brig Gen Clare H. Armstrong, Chief, Antiaircraft Artillery Section
Colonel Charles W. Gettys, CAC
Colonel Donald J. Bailey, CAC
Colonel Halvor H. Myrah, CAC
Colonel William C. Mahoney, Jr., CAC
Colonel Sam C. Russell, CAC
Colonel Calvin L. Partin, CAC
Lt Colonel Charles S. Vance, CAC
Lt Colonel Earl L. Mickelson, CAC
Major William E. Corley, Jr., CAC
Major Joseph F. Dunn, CAC
Captain Lawrence N. Arant, CAC

Principal Consultants:

Combat Duties

Brig Gen Claude M. Thiele, Chief of AAA Section, 12th Army Group.
Brig Gen Harold R. Jackson, Chief of AAA Section, ETOUSA.
Brig Gen William L. Richardson, CG, IX Air Defense Command.
Colonel Matthew K. Deichelmann, A-3, IX Air Defense Command.
Colonel Wallace H. Brucker, Chief of Operations Section, Air Defense Division, SHAEF.
Colonel W. G. Jeffords, Executive Officer, AAA Section, ETOUSA.
Colonel William M. Vestal, Executive Officer, AAA Section, Seventh Army.
Lt Colonel Philip I. Baker, CO, 575th AAA AW Bn (SP)--11th Armored Division.
Lt Colonel Raymond E. Dunnington, CO, 486th AAA AW Bn (SP)--3d Armored Division.
Lt Colonel Lawrence W. Linderer, CO, 554th AAA AW Bn (M)--29th Infantry Division.
Lt Colonel James A. May, CO, 530th AAA AW Bn (M)--71st Infantry Division.
Lt Colonel William S. McArthur, CO, 574th AAA AW Bn (SP)--13th Armored Division.
Lt Colonel E. H. Thompson, CO, 433d AAA AW Bn (M)--70th Infantry Division.
Lt Colonel Benjamin M. Warfield, CO, 552d AAA AW Bn (M)--78th Infantry Division.
Major Dewey S. Harwood, Executive Officer, 778th AAA AW Bn (SP)--76th Infantry Division.
Major George E. Lawrence, S-3, 899th AAA AW Bn (M)--86th Infantry Division.
Major Opho A. Moomaw, Executive Officer, 899th AAA AW Bn (M)--86th Infantry Division.
Major Rodney S. Cohen, Chief, Technical Division, AAA Section, ETOUSA.

COMMAND, STAFF, AND ADMINISTRATION OF ANTI-AIRCRAFT ARTILLERY UNITS

PART ONE

NARRATIVE REPORT OF STUDY

CHAPTER 1

PREFACE

1. The Mission of This Study is: To analyze antiaircraft artillery command and staff structures, as employed in the European Theater from the OVERLORD Appreciation (August 1943)¹ until the end of hostilities on the Continent (May 1945), for the purpose of recommending:

- a. Changes to eliminate existing deficiencies;
- b. Antiaircraft artillery structures to meet future requirements.

2. Deficiencies of Antiaircraft Artillery Structures in the European Theater can be attributed to the following factors:

a. Operating in rear of the armies, there were four antiaircraft artillery special staff sections and one command headquarters (see paragraph 16). Few of their functions were mutually coordinated.² Such duplication of effort resulted in general loss of efficiency, and lack of economy, cooperation, harmony and teamwork.³

b. In each army there was an uneconomical duplication of effort with a resultant loss of time and efficiency in the antiaircraft artillery structure.⁴ The senior antiaircraft artillery officer in the army commanded antiaircraft artillery troops (the army antiaircraft artillery brigade) but performed no staff duties. These staff duties were performed by the chief of the army antiaircraft artillery special staff section, who commanded no troops, but acted as adviser to the army commander. It is felt that both of these command and staff functions can best be performed by the commander of antiaircraft artillery troops.

c. Antiaircraft artillery efficiency was adversely affected by certain deficiencies in equipment. Towed units lacked the desired tactical mobility, especially in advanced positions. Semi-mobile units could not be shifted rapidly in emergencies. High silhouettes and lack of protective armor were disadvantageous for units employed in exposed positions. Early air warning, air-ground identification and communications equipment (especially radios) leave much to be desired.⁵ Equipment deficiencies are listed in General Board Study Number 41, "Organization and Equipment of Antiaircraft Artillery Units".

-
1. P. 24 Bibliography Par 5.
 2. Ref. Apps. II, III.
 3. Ref. Apps. IV, V, VI.
 4. Ref. App. VII.
 5. Ref. App. VIII.

d. The usual policy was to attach antiaircraft artillery units to divisions and corps. This temporary affiliation did not produce the desired feeling of unity and cooperation that can be expected from a more permanent relationship. Best results will accrue when the antiaircraft artillery unit is an organic part of its division or corps.

3. The Strength of the German Air Force¹ was estimated to be one-seventh the combined strength of the Allied Air Forces before D-Day. Subsequent combat attrition made the comparison still more unequal. Therefore, it is considered unsound to use for a future standard the antiaircraft artillery requirements and troop allocations established in the European Theater. To cope effectively with an aggressive enemy having an air force on a parity with ours will necessitate larger commitments of antiaircraft artillery in all areas of a theater of operations.

4. Future Predictions.

a. Air Forces. General of the Army H. H. Arnold in a recently published article predicted that "this was the last war of pilots".² The article further states that "robot planes, rockets, television and radar bombing and atomic bombs will do the work today done by fleets of thousands of piloted bombers...but this will not replace the piloted plane for specialized tasks, such as pin-point visual bombing of rocket-launching sites, photo and visual reconnaissance, and airborne operations".

b. Future Offensive Air Weapons and Defense. Jet-propelled and pilotless aircraft, rockets and guided missiles have passed the experimental stage. Undoubtedly, they will dominate offensive air tactics in the future. However, piloted aircraft for certain bombing and harassing missions, reconnaissance, and troop-carrying assignments will probably never be superseded by pilotless missiles. Therefore, antiaircraft artillery weapons and command structures must be designed to meet both types of threats. The only known defense against jet-propelled aircraft, rockets and guided missiles are antiaircraft artillery deployed in great depth, and fighter aircraft. There is no practical defense at present against supersonic-velocity missiles.

5. Patch Board Report.

a. A board, headed by the late Lieutenant General Patch, presented its recommendations to General Marshall, the Army Chief of Staff, on 18 October 1945. Two of the recommendations affected Antiaircraft Artillery. They were:

- (1) That all artilleries (Coast, Field and Antiaircraft) be combined into one Artillery Arm.
- (2) That Antiaircraft Artillery remain under the Army Ground Forces and not be transferred to the Army Air Forces.

b. The antiaircraft artillery structural recommendations in this study will be equally effective for the present type of antiaircraft artillery organizations and for organizations which implement the recommendations of the Patch Board.

-
1. The OVERLORD Appreciation of SHAFF estimated that the strength of the German Air Force, prior to D-Day, was 1,740 aircraft of all types as opposed to 11,377 Allied aircraft in the combined U.S. Army and British Royal Air Forces.
 2. Page 34 in the 20 August 1945 copy of LIFE Magazine.

BASIC CONSIDERATIONS AFFECTING ANTI-AIRCRAFT ARTILLERY

COMMAND AND STAFF ORGANIZATION

6. Antiaircraft Artillery Operations are Theater-Wide. Aircraft, moving at high speeds, can quickly shift their operations from one area to another. No area is invulnerable to hostile air strikes. Staging areas, ports, cities, amphibious operations, landing beaches, combat areas and communications zones are all subject to air attack by day or night. Antiaircraft artillery, therefore, must be positioned and ready to protect those areas and their installations wherever they might be. However, because of the vast expense of a theater of operations and the unusually large number of vital installations normally contained therein, there never has been enough antiaircraft artillery to protect everything. Priorities must be established and the most important installations given adequate protection. When his installations are attacked by enemy aircraft, every higher commander demands adequate antiaircraft artillery protection. A single coordinating agency directly under the theater commander must have authority to allot antiaircraft artillery units where they will do the most good for the theater as a whole, and must not be dominated by the special interests of any one arm or activity.

7. Antiaircraft Artillery Operations are Continuous. Unlike many other arms, which do not go into action until they are in physical contact with the enemy, the antiaircraft artillery must be ready to destroy enemy aircraft striking at ports, assembly areas, supply installations and airfields prior to an amphibious operation. Continued protection of those installations, as well as new ones in the combat zone, is necessary after operations have commenced. Protection is a day and night responsibility. The vigil of antiaircraft artillerymen is unremitting. Therefore, sizable antiaircraft artillery units at all levels are necessary to permit duty reliefs and continuous efficient performance of tasks 24 hours of every day, month after month. This applies to command and staff elements as well as to gun crews.

8. The Antiaircraft Artillery Problem requires the application of science, skill, technique and the employment of highly specialized and intricate equipment. The continuous application of sound tactics, the cooperation with air, ground, and service force units, the coordination with other antiaircraft artillery units of the same and different levels, the integration of effort with a theater-wide policy of early air warning and fire direction and the need for continuous operation make the problem of the antiaircraft unit exacting and arduous. For the sake of unity of command, it is believed that the antiaircraft artillery unit should be organic in its major combat unit. However, this solution makes it mandatory that the antiaircraft artillery unit in the division, corps or army be able to operate without constant technical or tactical supervision from higher headquarters of its own branch. It is therefore necessary that each organic antiaircraft artillery unit be of sufficient size to accomplish its tactical mission and also to contain the necessary technical and administrative personnel to insure competent independent action.¹

9. Antiaircraft Artillery Defense Must be Flexible but Positive Throughout the Theater. Enemy air attacks may come at any instant.

1 Ref. app. IX.

Enemy air forces vary their air efforts constantly. One day, they will attack airfields; the next night they will concentrate on lines of communication; again, they will expend all their energy against front-line troops. In order to cope effectively with changing enemy air tactics, antiaircraft artillery fire units must be repositioned to meet new onslaughts.¹ Coordination with higher commanders on the establishment of protection for vital installations and positive control of antiaircraft artillery, so that it can be moved rapidly² from one area to another in order effectively to meet new threats, demands that there be one supreme coordinating agency for all antiaircraft artillery in a theater of operations, and that this agency be responsible only to the Theater Commander.³ In addition, a coordinating agency is needed at army group, to coordinate the antiaircraft artillery defense of the armies.

10. Coordination with Major Units. Antiaircraft artillery must provide adequate protection for all types of ground installations. This demands positive command echelons and close integration with armies, corps and divisions in combat zones. In rear areas adequate protection of airfields and supply installations requires that antiaircraft artillery, air force, air warning service and possibly a mobile reserve (for defense against parachute and air-landed troops) be part of an overall command, which, for the sake of definition of purpose is called an Air Defense Command. This Air Defense Command will maintain close liaison with Air Force and Communication Zone headquarters under the general supervision of the Theater Commander through his air defense staff division. Coordination with the antiaircraft artillery sections of army groups will be maintained under the supervision of the air defense staff division of the Theater. Antiaircraft Artillery Intelligence Services (AAAIS) should be tied in with Air Warning Services which are utilized by both Air and Ground Forces. The tremendous fire power of antiaircraft artillery weapons should be used in ground support whenever the primary mission is not compromised. Such services and missions require adequately staffed command echelons.

- 1 Examples of changing enemy air tactics which required rapid repositioning of Antiaircraft Artillery units were the Pilotless Aircraft attacks on Antwerp and Liege and the enemy air offensive coincidental with the Ardennes Offensive. The Need for Antiaircraft Artillery guns in both anti-air and anti-tank roles in the Ardennes Offensive was grave.
- 2 Ref. App. III, IV.
- 3 Ref. App. X.

PRESENT WAR DEPARTMENT DOCTRINE

11. Present Doctrine supports the premise that elements of anti-aircraft artillery and air forces should combine their efforts into an "air defense". It specifies that anti-aircraft artillery units in rear areas should be combined into an air defense command which is composed of fighter aircraft, anti-aircraft artillery, and air warning services, all operating under an air force commander. Anti-aircraft artillery weapons in that command are considered as "air defense weapons". For those units forward of the army group rear boundary, anti-aircraft artillery weapons are considered "ground force weapons" and the combat areas they defend are termed "anti-aircraft artillery areas".

12. Provisions of Present Doctrine.

a. Field Manual 100-20, 21 July 1943 states, in part: "Anti-aircraft Artillery attached or assigned to ground force combat units remain under the command of the ground force unit commander as distinguished from anti-aircraft artillery units assigned to an air commander for air defense of an area."

b. Field Manual 4-100, 28 June 1943 states: "All AAA units employed in air defense operations within the air defense area of a fighter command will be under the command of the fighter commander."

"AAA units assigned or attached to ground units of the field forces usually are not under fighter commands. Whenever practicable, however, these units will establish liaison with adjacent AAA units under control of fighter command for the purpose of:

- (1) Receiving intelligence and identification information of friendly and enemy aerial activity.
- (2) Receiving information relative to fire on unseen targets. Ground force commanders must see that such liaison is established."

c. Field Manual 1-25, 15 June 1943 directs: "Theater of operations, base, department, defense or similar commanders are responsible for the installation of the complete air defense organization within their command. This function is normally delegated to fighter commanders. . . within an air defense area prescribed by the theater of operations or similar commander. Ground units of the field forces outside of the air defense area are responsible for providing local anti-aircraft artillery protection through the fire of assigned or attached AAA units."

13. Application of the "Air Defense Doctrine" in the European Theater. The Commanding General, Ninth Air Force was charged with the responsibility of air defense of the Theater of Operations in rear of the army group rear boundaries. This responsibility was delegated to the IX Air Defense Command.¹ Initially, that command was composed of the three elements of air defense: fighter aircraft, anti-aircraft artillery, and air warning services. It then exemplified the specifications for an air defense command as prescribed in War Department

1. F 24 Bibliography Par 2.

doctrine. Early in October 1944, the fighter aircraft element in the IX Air Defense Command, because of the reduced threat against rear installations were withdrawn from the command and assigned to the tactical air commands. The IX Air Defense Command subsequently accomplished its mission by utilizing antiaircraft artillery as its only active defense element. However, the Commanding General, Ninth Air Force could have augmented that command with fighter elements when the situation warranted.

14. The Effectiveness of the IX Air Defense Command in the European Theater was not sufficiently tested. This was because the Allied Air Forces had reduced the German Luftwaffe to relative impotency before D-Day, and hostile air strikes thereafter against allied rear area installations were negligible.

15. Discussion of "Air Defense Doctrine". Theoretically, integration of antiaircraft artillery, fighter aircraft, and air warning services into one air defense team should be the proper solution for effective air defense of a theater of operations. The antiaircraft artillery would provide protection for vital "point-objective" ground installations; fighter aircraft would provide area defense by intercepting hostile air formations when detected; air warning services would alert both arms of the approach of enemy aircraft and identify friendly aircraft. The War Department theory of assigning the mission of all rear area protection to such an air defense command under the direct command of the Air Forces, however, was not practical¹ for several reasons which become apparent from consideration of the following:

a. Command Responsibilities. Rear area vulnerability to air, long range missile, and airborne attacks makes it imperative that an air defense command be charged with the air defense of everything in rear of the army group rear air boundaries. This command must be an organization of antiaircraft artillery, air force, and mobile (infantry, artillery, cavalry) and air transportable units which together are capable of combat in the air or on the ground or both and must be commanded by a qualified commander of combined arms. Present War Department doctrine² prescribes that an air defense command having fighter aircraft assigned must be commanded by an Air Force officer. However, in the type of air defense command required for adequate rear area protection, fighter aircraft will comprise only one of several major and highly technical commands involved. It is believed, therefore, that considerations made in the selection of the commander of the air defense command should be based solely on his qualifications, rather than be restricted to his branch origin.

b. Theater Antiaircraft Artillery Reserve. Actually, there was no reserve, as such, in the European Theater.³ In order for armies to receive additional antiaircraft artillery, requests were submitted to army groups. The latter, in turn, forwarded them to Supreme Headquarters.⁴ The Air Defense Division of Supreme Headquarters requested Ninth Air Force for the units, and Ninth Air Force passed on the requisition to the IX Air Defense Command. This resulted in unnecessary delays.⁵

1 Ref. Apps. XI, XII.

2 P 24 Bibliography Par 1.

3 Ref. Apps. II, XI.

4 Ref. App. II.

5 Ref. Apps. III, IV.

c. Fighter Protection. Much importance was placed on fighter aircraft working in conjunction with antiaircraft artillery in establishing the "Air Defense Doctrine" and properly so in that it is imperative that all available means be used to combat enemy aircraft. However, paucity of enemy air effort, particularly in rear areas, caused the fighter element to be detached from the IX Air Defense Command and to be employed offensively in forward areas--although, had the situation demanded, it could have been recalled. The importance of fighter aircraft in an offensive role is tremendous, and in a defensive role hardly less so. But no amount of fighter protection can prevent some aircraft from penetrating into a vital area. Experience in the forward combat zones focused attention on the necessity for local antiaircraft artillery defense. Defense against the usual sporadic attacks on front line troops of small numbers of planes by day and against practically all attacks by night fell to the antiaircraft artillery. Lack of concerted enemy air effort from D-Day until the end of the war left the "Air Defense Doctrine" untested in the European Theater insofar as the necessity for close integration of antiaircraft artillery and air forces is concerned.

d. The Mission of the Air Warning Service is to detect and identify aircraft, and issue adequate early warning to all units, particularly antiaircraft artillery and air force units. In the European Theater, the Air Warning Services with the IX Air Defense Command did not fulfil their mission to the extent intended or expected. The reasons for this are as follows:

- (1) There was an insufficient number of necessary Air Warning Services originally allotted to the IX Air Defense Command.
- (2) Many of the facilities of the Air Warning Services were taken away from the IX Air Defense Command in October 1944 to control offensive operations of tactical aircraft with the forward tactical air commands.
- (3) The lack of enemy air threat in rear areas reduced the emphasis placed on providing adequate Air Warning Services as prescribed in War Department Manuals.
- (4) Problems of positive means of identification and communications largely defeated much of the value of Air Warning Services to antiaircraft artillery units.¹

e. Supplies. Antiaircraft artillery units, in the matter of ammunition, equipment and similar supplies have little in common with the Air Forces.² Unnecessary delays were experienced in the IX Air Defense Command in obtaining supplies common to artillery requirements through Air Force channels.³

1. Ref. App. VIII.

2. Ref. Apps. II, VIII, XII.

3. Ref. App. II.

ANTIAIRCRAFT ARTILLERY COMMAND AND STAFF ORGANIZATIONIN THE EUROPEAN THEATER OF OPERATIONS

16. Above Army Level. War Department tables of organization do not provide for antiaircraft artillery special staff sections above the army. Those sections established in the various major American headquarters in the United Kingdom either followed British lines, or the tables of organization for the army antiaircraft artillery section, and were designed to fit requirements at each level. In each case, the War Department gave emergency approval to the tables of organization submitted by each section. There were four antiaircraft artillery special staff sections and one antiaircraft artillery command operating in rear of the armies, through which procurement of units had to be arranged.¹ Responsibilities of these special staff sections were never clearly defined. Considerable overlapping of duties resulted. Since they were all on more or less of an equal authoritative status, differences of opinion between them had to be settled by a command decision.² Brief descriptions of antiaircraft artillery organization in echelons behind the armies are given below:

a. Supreme Headquarters Allied Expeditionary Forces. The initial antiaircraft artillery unit at this level was a sub-section in the G-3 Division. On 1 June 1944 the Air Defense Division absorbed the sub-section and became the antiaircraft artillery, or more correctly, the "air defense" special staff section for Supreme Headquarters. It was headed by a major-general of the British Army and was fashioned after the current British antiaircraft artillery section design. Its chief of operations was an American colonel. The Division³ was subdivided into an operations section, a passive air defense section, a technical section, and later, a CROSSBOW section (named after the Allied code name given to all information on, and counter-measures against, the German V-weapons). Its main functions were:

- (1) Advising the Supreme Commander on air defense matters.
- (2) Determining overall theater requirements for antiaircraft artillery.
- (3) Making bulk allocations of antiaircraft artillery units to the major commands.
- (4) Coordinating air defense operations of subordinate commands.
- (5) Collecting intelligence on and determining counter-measures against V-weapons.
- (6) Dealing directly with immediate subordinate air defense headquarters on technical matters.

b. Headquarters European Theater of Operations, United States Army. The first antiaircraft artillery unit in this headquarters was an antiaircraft artillery command. It was established in July 1942. In November 1942 the command was changed to antiaircraft artillery special staff section. It continued as such until the end of the European War. It was headed by an American brigadier general and was patterned after the current army antiaircraft artillery special staff section. It was subdivided into an executive division, an operations division, an intelligence division,

1 The staff sections were at army groups, Com Z, ETOUSA, and SHAEF. The command was the IX ACO. The sections at ETOUSA and Com Z were combined.

2 Ref App XIII.

3 Ref App XIV.

and a munitions and equipment division¹. Prior to January 1944 this antiaircraft artillery section exercised operational supervision over all antiaircraft artillery units in the United Kingdom². When Supreme Headquarters became operational on 17 January 1944, Theater Headquarters became an administrative headquarters, stripped of command functions. The antiaircraft artillery section followed the same trend with respect to its relation with subordinate antiaircraft artillery units. Its functions from then until V-E day were as follows:

- (1) Acting as an administrative sub-section of the Air Defense Division of Supreme Headquarters.
- (2) Procuring antiaircraft artillery troops, ammunition, and equipment from the United States, then processing them in the United Kingdom and shipping them to the Continent.
- (3) Coordinating priorities for antiaircraft artillery defense of Communication Zone installations with the Commanding Generals of the Communication Zone and IX Air Defense Command.
- (4) Coordinating requisitions for antiaircraft artillery troops and equipment between the ground forces and the air force.
- (5) Supervising and developing technical matters in the European Theater.
- (6) Supervising and coordinating activities connected with antiaircraft artillery gunnery, automatic weapons and searchlight inspection teams.

c. Air Forces. The Ninth Air Force, the American tactical air force operating with the 12th Army Group, established the IX Air Defense Command for the purpose of carrying out its air defense responsibilities. In conformance with current War Department doctrine, the Air Force was charged with the overall direct defense against air attack of the areas and installations in rear of the armies as well as the fighter defense in the American sector of operations. The IX Air Defense Command was established to command and control the three elements of an air defense system, i.e., fighter aviation, aircraft warning service and antiaircraft artillery.³ As finally organized for operations on the Continent, the headquarters had a completely integrated staff of antiaircraft officers, signal aircraft warning officers and flying officers, the latter coming from the 71st Fighter Wing which was assigned to the Command. Initially, the commander was an antiaircraft artillery brigadier general, but later, when additional flying elements were assigned to the Command, an Air Force brigadier general assumed command and the former commander became his deputy. To conduct air defense operations over the area involved, three provisional Air Defense Wings were formed as immediate subordinate headquarters to the command. Only two of these wings actually became operational. In late October 1944,⁴ it was determined by the Commanding General, Ninth Air Force that the enemy air threat to vital areas defended by the IX Air Defense Command was so reduced that the defense normally could be handled by antiaircraft artillery alone. Thus, all fighter aircraft were released for offensive roles with the tactical air commands. At the same time the 71st Fighter Wing was transferred to

1 Ref App XV.

2 Ref App II.

3 Ref App XVI.

4 P. 24 Bibliography Par 2.

the newly formed 1st Tactical Air Force and the air defense wings were disbanded. However, at all times plans existed for the immediate augmentation of the IX Air Defense Command by fighter aviation should change in the enemy air situation indicate the necessity thereof and the command was in a position to employ such fighter augmentation. At this time the deputy commander assumed command and retained it throughout the war. The general mission of the command in August 1944 was to provide air defense on the European Continent for the American area in rear of the armies. Specifically, elements of the mission were as follows:

- (1) Command, administration and supply of all antiaircraft artillery units in the Communications Zone attached to the command.
- (2) Command, administration and supply of two night fighter squadrons, three signal air warning battalions, three fighter control squadrons, three air defense wings and auxiliary units assigned.
- (3) Air Defense of Communications Zone installations in accordance with priorities established at weekly conferences attended by G-3 and G-4 representatives from the Communications Zone, IX Air Defense Command and the Theater Antiaircraft Artillery Officer.
- (4) Antiaircraft artillery defense of all Ninth Air Force installations lying behind the army rear boundaries.
- (5) Operation of an air warning service and provision of passive defense intelligence for vital areas behind the army rear boundaries.
- (6) Coordination of coast defense radar activities for the purpose of avoiding interference.
- (7) Supervision of the ground defense of the Ninth Air Force installations.
- (8) Representing the Commanding General, Ninth Air Force, coordinated with the 12th Army Group in establishing weekly the location of the Army Group Rear Air Boundary.¹

d. Communications Zone. The Antiaircraft Artillery Section in Headquarters, European Theater of Operations, was also the Antiaircraft Artillery section of the Headquarters, Communications Zone. All antiaircraft artillery units assigned to the Communications Zone were attached and later assigned to the IX Air Defense Command which was also charged with the defense of all service and air force installations in rear of the army group rear air boundary. Priorities for installations to be given antiaircraft artillery protection were agreed upon at weekly conferences between the chief of the dual staff section mentioned above and the commanding generals of the Communications Zone and IX Air Defense Command.

e. Army Groups. The antiaircraft artillery staff elements in the 6th Army Group and the 12th Army Group were dissimilar; 6th Army Group had an antiaircraft artillery subsection of two officers in its

1 P 24 Bibliography Par 6 and App. V.

G-3 Division; 12th Army Group had a separate staff section similar to that at Theater Headquarters, headed by a brigadier general. The subsection in 6th Army Group was small and incapable of rendering much assistance to army units. It proved to be practical only in its capacity of advising the army group G-3 on anti-aircraft matters. The staff section of the 12th Army Group¹; on the other hand, was large enough to render valuable aid to anti-aircraft artillery units in the armies of the 12th Army Group. The chief of section, being a brigadier general, had considerable authority in coordinating anti-aircraft artillery allocations between the armies and in personally advising the army group commander.² This section exercised no command functions whatsoever. It performed the following functions:

- (1) Moved anti-aircraft artillery units between armies.
- (2) Gave technical and supply assistance to subordinate anti-aircraft artillery echelons.
- (3) Obtained reinforcements, ammunition, and equipment through the Anti-aircraft Artillery Section of Theater Headquarters.
- (4) Coordinated with the IX Air Defense Command in establishing weekly the location of the Army Group Rear Air Boundary.³
- (5) Supervised tactical, technical, and training activities of the anti-aircraft artillery in the armies of the 12th Army Group.

17. Armies.

a. Anti-aircraft Artillery Section. Each American army in the European Theater contained an anti-aircraft artillery section on the staff of the army commander. The sections were organized under the provisions of Table of Organization 200-1, 1 July 1942. The functions of this section were:

- (1) To submit recommendations for missions of anti-aircraft artillery units in the army.
- (2) To coordinate all means of active defense against hostile air operations with the air units cooperating with the army.
- (3) To issue direct to subordinate army anti-aircraft artillery units, in the name of the army commander, normal operation orders (letters of instruction) necessary to accomplish the anti-aircraft artillery missions.
- (4) To prepare, publish and supervise the execution of memoranda and technical training bulletins which pertained to subordinate anti-aircraft artillery units.

b. One Anti-aircraft Artillery Brigade was normally assigned to each army. (An exception existed in the case of the Seventh Army, which,

1 Ref App XVII.

2 Ref App VI.

3 P 24 Bibliography Par 6, and App V.

at one time, had three antiaircraft artillery brigades.) The relationship of this brigade with the Antiaircraft Artillery Special Staff Section has been discussed in paragraph 2 b of this study.

c. Army Antiaircraft Artillery Command. This command was authorized by Table of Organization 44-200-1, 26 October 1944. A sizable headquarters and headquarters battery under the command of a major general (antiaircraft artillery) was made organic with army headquarters. This headquarters may be authorized with a major general only when two or more brigades or the equivalent in groups are included under an army. It may be utilized with the commander as brigadier general in lieu of major general when the equivalent of one brigade is included under an army. It is not authorized when only one brigade, including brigade headquarters (T/O E 44-10-1) is included under an army. None of the United States armies in the European Theater except the Seventh Army, reorganized under this new table of organization, although some armies used a few of the grades and ratings to promote some of the officers and enlisted men in their antiaircraft artillery section.

18. Corps. An antiaircraft artillery group was normally attached to each corps. The VI Corps, which had an attached brigade, was an exception. The group (or brigade) commander acted in the dual role of commanding the antiaircraft artillery troops in the corps, and of advising the corps commander on antiaircraft artillery matters. When antiaircraft artillery groups were attached, rather than assigned to corps, unity of purpose, mutual cooperation and morale suffered. The group staff, because of its small size, found it difficult to:

a. Render required technical service (radar, gun and automatic weapon fire control) and air warning service to subordinate units.¹

b. Process efficiently and make field research for claims on enemy aircraft destroyed or probably destroyed.

c. Organize inspection teams for the purpose of maintaining the desired standards in subordinate units.

19. Divisions.

a. One antiaircraft artillery automatic weapons battalion (mobile or self-propelled) was attached to each infantry and armored division. It was the usual practice for the battalion commander to act as the antiaircraft artillery staff officer, and, as such, to have direct access to the division commander. In many cases the battalion was attached to the division field artillery. The latter practice is not considered advisable since the special interests of the field artillery may be permitted to prejudice the best interests of the division as a whole². An impartial viewpoint is essential.

b. Two weaknesses in the antiaircraft artillery structure with divisions are apparent. The first is the temporary and transient relationship due to attachment. This should be corrected by making the antiaircraft artillery unit an organic part of the division. A great many battalion commanders³ have been questioned on this subject and, without exception, they report a desire to be a part of the division with

1 Ref App IX.

2 Ref App XVIII.

3 P 24 Bibliography Par 3.

which they serve.¹ The advantages of supervision, supply, housing, morale and esprit are obvious. The second weakness, that of small size, was less obvious in the European War on account of the great air-superiority enjoyed by the Allies. Sound planning dictates that a two-battalion regiment is essential to meet the antiaircraft artillery requirements of the proposed division.² It must be borne in mind that the necessity for providing manning crews for continuous alert is more exacting in the case of antiaircraft artillery than in any other arm. A more detailed analysis of this study is set forth in Appendix I.

1 Ref App XIX.

2 Ref Apps XIX, XX.

- 13 -

R E S T R I C T E D

POSSIBLE SOLUTIONS TO ANTI-AIRCRAFT ARTILLERY PROBLEMS

20. Discussion. The emasculated German air effort did not fully test anti-aircraft artillery tactics as enunciated in War Department doctrine. This was especially true for rear area installations. Front line units received sporadic attacks of varying degrees of intensity. Even in this non-conclusive theater-wide test, certain deficiencies in current practices became apparent.

a. One weakness was the lack of a suitable anti-aircraft artillery coordination at Theater level. It is of utmost importance that a coordinating agency be established to operate directly under the Theater Commander. It must be free to deal impartially with the varied, and sometimes conflicting, interests of ground, air and service forces.¹ It would eliminate duplication of effort, division of purpose and waste of personnel. The delay experienced in the European Theater in World War II in getting important anti-aircraft artillery command decisions through the many command and special staff sections involved could have been disastrous. Decisions on anti-aircraft artillery matters, particularly those involving the shifting of units, were delayed in some instances from one week to two months.²

b. A lesser defect was the existence of separate command and staff organizations in the armies. As indicated in paragraph 2 of this study, it is believed that these functions can best be performed by one headquarters.

c. The practice of attaching anti-aircraft artillery units to divisions and corps contributed to certain deficiencies that can be overcome by making these anti-aircraft artillery units an organic part of the major units with which they serve.

21. Four Solutions to these deficiencies suggest themselves. Each solution is set forth in a plan in the succeeding paragraphs.

22. PLAN ONE -- Place All Anti-aircraft Artillery Under the Air Forces in an Air Defense Command. Fighter aircraft, air warning services, and anti-aircraft artillery--in short, all means to conduct defense against enemy air attack--would come under the command of the Air Forces. The Air Forces would then become responsible for the defense of ground installations, activities and personnel over the entire theater, including armies, corps, and divisions.

a. Advantages:

- (1) Unity of command of all elements of air defense.
- (2) Unity of responsibility for air defense.
- (3) Permit rotation of units between rear areas and forward combat zones.

b. Disadvantages:

1 Ref. App. XIII.

2 Ref. App. III.

- (1) Too cumbersome.
- (2) Multiplies channels through which coordination and decisions have to be reached for adequate defense of Theater as a whole.
- (3) The employment of antiaircraft artillery in its secondary--but at times very important--role of ground firing would be adversely affected.
- (4) Supply, administration and training of antiaircraft artillery units with divisions, corps and armies would be difficult.
- (5) Clashes in command between the air defense echelon and the major ground force units might frequently result and coordination might be extremely difficult.

23. PLAN TWO -- Organize all antiaircraft artillery into One Independent Integrated Command, retain full command jurisdiction under one headquarters, and attach to or support the major combat units as the situation indicates.

a. Advantages:

- (1) Unity of command of antiaircraft artillery.
- (2) Unity of responsibility for antiaircraft artillery.
- (3) Training, indoctrination, and supervision in technical matters could be more closely controlled by the parent branch.
- (4) Permit rotation of units between rear areas and forward combat zones.

b. Disadvantages:

- (1) Too cumbersome.
- (2) More difficult to supply the units attached to or in support of divisions and corps.
- (3) antiaircraft artillery units would lose the many advantages of being identified with, and a part of, the major combat units with which they serve.
- (4) Does not include all means of an air defense.
- (5) Clashes in command between the antiaircraft artillery echelon and the major Ground Force units might frequently result and coordination might be extremely difficult.

24. PLAN THREE --

a. Provisions:

- (1) Include suitable antiaircraft artillery units in the organic structure of divisions, corps and armies. The commander of each antiaircraft artillery unit indicated above to act as the staff adviser to his commanding general, thus replacing with his own

headquarters, or a portion thereof, the special anti-aircraft artillery staff section where one now exists.

- (2) Establish an anti-aircraft artillery staff section, headed by a general officer, in each army group, to coordinate the anti-aircraft defense of the armies.
- (3) Establish an anti-aircraft artillery command over all anti-aircraft artillery troops in the theater in rear of the armies.
- (4) Establish a strong anti-aircraft artillery staff division headed by a general officer, on the staff of the Theater Commander; this staff division to be responsible for coordination of all anti-aircraft artillery activities in the entire theater in the best interests of all ground, air and service forces.

b. Advantages:

- (1) Unity of command of anti-aircraft artillery units.
- (2) Unity of responsibility for anti-aircraft artillery. Note: The command and responsibility in the case of units organic with divisions, corps and armies would be exercised through normal command channels rather than directly through anti-aircraft artillery channels.
- (3) Proper tactical and technical supervision.
- (4) Anti-aircraft artillery units organic with divisions, corps, and armies, would be established on a sound basis of supply, administration, billeting and many other benefits that normally accrue to organic units.

c. Disadvantages:

- (1) A problem exists in the coordination of certain activities in which both the air forces and the anti-aircraft artillery are vitally interested, such as early air warning, rules for engagement of aircraft, restrictions on flying and the use of identification signals (Identification Friend or Foe, IFF).¹
- (2) Does not include all elements of air defense under one commander.
- (3) Would restrict rotation of anti-aircraft artillery units between rear areas and forward combat zones.

25. PLAN FOUR --

e. Provisions.

- (1) Include suitable anti-aircraft artillery units in the organic structure of divisions, corps and armies. The commander of each anti-aircraft artillery unit indicated to be on the staff adviser to his commanding general, thus replacing with his own headquarters, or a portion thereof, the special anti-aircraft artillery staff

1 Ref. App. VIII.

section where one now exists.

- (2) Establish an antiaircraft artillery staff section, headed by a general officer, in each army group, to coordinate the antiaircraft defense of the armies.
- (3) Establish an antiaircraft artillery command over all antiaircraft artillery troops in the theater in rear of the armies.
- (4) Establish an air defense command for air and ground defense of the theater of operations in rear of the army group rear air boundaries against hostile aircraft, long-range missile and airborne attacks. This air defense command, operating under the direction of the Theater Commander, to consist of an antiaircraft artillery command, an Air Force fighter command, air warning service command units, air transportable units, mobile reserves (infantry, artillery and cavalry, and passive air defense units. The commanding general of the air defense command to be a qualified commander of combined arms, rather than be restricted to an Air Force officer and to have a composite staff consisting of representatives from each of the different command elements in the air defense command.
- (5) Establish a strong air defense staff division headed by a general officer on the staff of the Theater Commander. This staff division to be composed of experienced officers from the antiaircraft artillery, the air forces, air warning services, passive air defense and such mobile reserve units as are required for defense against parachute and air-landed troops. The duties of the division will be to recommend to the theater commander the allocation of air defense means throughout the theater as the situation requires and to coordinate the air defense activities of the entire theater of operations in the best interests of all ground, air and service forces.

b. Advantages:

- (1) Unity of command.
- (2) Unity of responsibility. Note: The command and responsibility in the case of units organic with divisions, corps and armies would be exercised through normal command channels.
- (3) Proper tactical and technical supervision.
- (4) Antiaircraft artillery units organic with divisions, corps, and armies, would be established on a sound basis of supply, administration, billeting and many other benefits that normally accrue to organic units.
- (5) Reduction of channels through which coordination and decisions have to pass to provide adequate air defense for the theater as a whole.
- (6) Provides framework required for optimum air defense of the entire theater, regardless of varying situations.

c. Disadvantages:

- (1) Requires increase in overhead of personnel.
- (2) Would restrict rotation of entire aircraft artillery units between rear areas and forward combat zones-- such rotation being desirable for morale and rehabilitation purposes.

26. A review of the Advantages and Disadvantages of these plans indicates that Plan Four offers the best solution for effective and efficient air defense of an entire theater of operations.

- 18 -

R E S T R I C T E D

ALLIED JOINT PLANNING BOARD

27. The Need for Air Defense Representation on an allied joint planning board was clearly indicated in World War II, not only in the European Theater, but in the Far East and the Mediterranean Theater as well. Amphibious operations initiated the attacks in all theaters. These called for combined efforts of allied sea, air, and ground forces. Because of the disastrous effect enemy air attacks would have on the success of invasion operations, air defense representation on all joint boards was mandatory. Adequate air defenses were required for the assembly points, marshalling yards, ports, vessels in transit, and especially, on the far shores. Thereafter, air defense advice was sought by joint staffs on the best means of providing effective air and seaward defenses at ports and along coast lines.

28. The Air Defense Members on an allied joint planning board should be the senior air defense commander in the theater, representative members from his composite staff, such technicians as might be required to answer technical questions, and the commanders of the major air defense commands to be used in the joint operations.¹ In order to become familiar with joint board proceedings, it is suggested that field officers of Antiaircraft Artillery attend courses in joint staff schools.²

1. Ref. App. V.

2. Ref. App. II.

PROBABLE FUTURE REQUIREMENTS

29. Future Requirements of Antiaircraft Artillery will be influenced by pilotless aircraft, rockets, and guided missiles. These weapons are discussed at length in General Board Studies numbers 38, "Tactical Employment of Antiaircraft Artillery Units," and 42, "V-2 Rocket Attacks and Defense," but a brief reference here is considered pertinent.

a. These weapons have passed the experimental stage; they were actually employed in considerable quantity as a military weapon, and obviously were on the threshold of becoming a potent, if not a determining, factor in warfare. It is anticipated that they will replace much of our present artillery as an offensive weapon and force drastic changes in equipment, technique and tactics for defense.

b. Pilotless aircraft were successfully combatted by anti-aircraft artillery. In the final stages of the defense of Antwerp against the German pilotless aircraft (V-1 or P/C), anti-aircraft artillery units succeeded in destroying 96 percent of those directed against the vulnerable area.¹ Their moderate speed (approximately 350 miles per hour) and straight-line flight characteristics presented a comparatively simple gunnery problem. The defense did, however, require a great many gun batteries disposed in depth in multiple belts.

c. Rockets and guided missiles of supersonic velocity present a much more difficult problem. There is no proven defense against them after they have been launched. Defensive missiles have been designed but have not received combat test. Further research, development and experimentation are required.

30. Piloted Aircraft will Never be Entirely Replaced by Guided Missiles. Limited bombing, reconnaissance, ground harassing, and troop carrying missions will probably always call for piloted aircraft. Because of their high speed potentialities, jet-propelled aircraft will undoubtedly be the piloted aircraft of the future. Such aircraft will be capable of operating at great heights, in that jet motors work most efficiently in a rarefied atmosphere. The great speed and high altitude characteristics of jet-propelled aircraft will call for defensive antiaircraft artillery weapons of improved design. The answer to the solution of effectively combatting jet-propelled aircraft, as well as supersonic-velocity rockets and guided missiles, will probably lie in ground-directed rockets.

31. Area Defense consisting of antiaircraft artillery units deployed in great depth proved most effective against pilotless aircraft (P/C) and jet-propelled piloted aircraft. Such tactics require a greater number of antiaircraft artillery weapons than do non-area defense dispositions. Therefore, larger and more closely integrated antiaircraft artillery command units than existed in the European War will be a necessary future requirement for Antiaircraft Artillery.

32. There is a Requirement for Weapons and Units to combat supersonic-velocity rockets and guided missiles.²

1. P. 24 Bibliography. Par 4.
2. Ref. App. VIII.

FINAL CONCLUSIONS AND RECOMMENDATIONS35. Conclusions:

- a. The initial increment of antiaircraft artillery, dictated by combat needs, should be an organic part of each major combat unit, including divisions, corps and armies¹, subject to reinforcement by attachment.
- b. The senior antiaircraft artillery officer in a major combat unit (division, corps or army) should command the antiaircraft artillery troops of that unit and, in addition, act as the antiaircraft artillery special staff officer to his commanding general².
- c. To effectively protect divisions, corps and armies from present and future aerial weapons, lower antiaircraft artillery elements such as exist in the European Theater will be mandated, with those combined arms units.
- d. There is need for an antiaircraft artillery section in the army group to coordinate the antiaircraft artillery defenses of the armies.
- e. There is a need for unified command of all antiaircraft artillery behind army rear boundaries which will be responsible for the antiaircraft artillery defense of ground, air and service force installations.
- f. To provide the optimum means of air defense for adequate protection of the theater of operations in rear of the army group rear air boundaries against aircraft, long-range missiles and airborne troops there is need for an air defense command composed of an antiaircraft artillery command, an Air Force Fighter command, air warning service command units, passive air defense units and such mobile reserve units (infantry, artillery, air-transportable units and cavalry) as are needed to effectively protect rear area installations from parachute and air-lander troop attacks. The composite staff of this air defense command to consist of experienced officers from each of the major commands comprising the air defense command. The commanding general of this command need not be restricted to an Air Force officer and the command itself need not be a part of the Air Force.
- g. There is need for a strong air defense staff division headed by a general officer on the staff of the Theater Commander; this staff division to be composed of experienced officers from all elements of air defense (See para 35 f, above). It must have full authority to recommend to the Theater Commander the allocation of all air defense assets and to coordinate all air defense activities in the entire theater in the best interests of all ground, air and service forces.
- h. There is a need for War Department tables of organization or the structures enumerated above, as well as a delineation of their composition, size and personnel duties.

1 Ref. App. III.

2 Ref. App. VII.

3 Ref. Apps. V and VI.

i. The scale of antiaircraft artillery allotted in the European Theater was generally adequate under the existing conditions of preponderant Allied air superiority. However, an increase in this scale for future planning is indicated.

j. Rockets and guided missiles will be the major offensive air weapons of the future. (See General Board study number 42, "V-2 Rocket Attacks and Defense") Effective defense against them will require changes in equipment and techniques as well as increases in the allotment of antiaircraft artillery units.

34. Recommendations: It is recommended that:

a. An antiaircraft artillery unit be organic with each division, corps and army.

b. The type of antiaircraft artillery unit be as indicated below:

- (1) With each division -- an antiaircraft artillery regiment of two automatic weapons, self-propelled battalions (four batteries each)¹. (Note: The President of the General Board and the Reviewing Committee do not concur in the above recommendation and feel that but one battalion of self-propelled antiaircraft artillery automatic weapons with both the proposed infantry and armored division is indicated).
- (2) With each corps -- an antiaircraft artillery brigade².
- (3) With each field army -- an antiaircraft artillery division³.

c. The commander of each antiaircraft artillery unit indicated above act as the staff advisor to his commanding general, thus replacing, with his own headquarters or a portion thereof, the special antiaircraft artillery staff section where one now exists.

d. An antiaircraft artillery staff section headed by a general officer, be established in each army group to coordinate the antiaircraft artillery defense of armies.

e. An antiaircraft artillery command⁴ be established for each theater, to command all antiaircraft artillery troops in the theater behind the armies.

f. An air defense command, consisting of an antiaircraft artillery command, an Air Force fighter command, air warning service command units, passive air defense units and such mobile reserve units (infantry, artillery, air-transportable units, and cavalry) as are required to provide adequate defense against parachute and air-landed troops, provide the air defense for the theater of operations in rear of the army group rear air boundaries. This command to include a composite staff of experienced officers from each of the individual commands included in the air defense command. The commanding general thereof will not be limited to an air

1 Ref. App. XXI

2 Ref. App. XXII

3 Ref. App. XXIII

4 Ref. App. XXIV

Force commander, and the control of the command itself will not be restricted to the Air Forces.

g. A strong air defense staff division; headed by a general officer, be established on the staff of each theater commander; this division to be charged with recommending to the theater commander, the allocation of all air-defense means and to coordinate all air defense activities in the entire theater for the best interests of all ground, air and service forces. The staff members of the division to be experienced officers from all elements of air defense (see Par 26 f, above).

h. War Department tables of organization definitely provide for these structures enumerated above and delineate their composition, size and personnel duties.

i. Those portions of War Department field service regulations and manuals¹ which specify or imply that air defense commands and their commanders be restricted to the Air Forces be rescinded.

j. Steps be taken to organize, train and equip units for the employment of, and defense against, rockets and guided missiles.

1 P. 24, Bibliography Par. 1.

- 23 -
R E S T R I C T E D

BIBLIOGRAPHY

1. Current War Department Policy on Antiaircraft Artillery is contained in the following Field Manuals:

a. FM 4-100	28 June 1943
b. FM 1-25	15 June 1943
c. FM 1-26	20 Jan 1944
d. FM 101-5	19 Aug 1940
e. FM 100-5	15 June 1944
f. FM 100-10	15 Nov 1943
g. FM 100-15	29 June 1942
h. FM 100-20	21 July 1943

2. "Functional Organization and SOP IX Air Defense Command." No AGO reference. This is a history and study of the IX Air Defense Command, prepared by the deputy commander for antiaircraft artillery, IX Air Defense Command. Filed with the Air Section, Theater General Board, APO 408.

3. Letter, Headquarters European Theater of Operations, 11 June 1945, AG 472 OpAA, Subject: "Antiaircraft Artillery Questionnaire." This questionnaire covers all phases of antiaircraft artillery. Responses are filed in the AAA Section, Theater General Board, APO 408, from:

Headquarters, Twelfth Army Group,
Headquarters, Third, Seventh, Ninth, and Fifteenth Armies,
13 antiaircraft artillery brigades,
36 antiaircraft artillery groups,
47 antiaircraft artillery gun battalions,
103 antiaircraft artillery automatic weapons battalions,
5 antiaircraft artillery searchlight battalions.

4. "The Story of Antwerp X", published by Headquarters, 50th Antiaircraft Brigade. No AGO Reference. 50th Brigade staffed the defense "Antwerp X". This is a narrative and statistical summary of the defense of Antwerp against V-1. It is filed with the AAA Section, Theater General Board, APO 408,

5. "OVERLORD APPRECIATION", filed in Twelfth Army Group, AG Records of Headquarters Fifteenth Army, APO 408.

6. SHAEF Operations Memos, filed in Twelfth Army Group AG Records, File number 370.21.

ANTI-AIRCRAFT ARTILLERY REQUIREMENTS OF A DIVISIONSECTION 1GENERAL

1. Introduction. This is an estimate of the antiaircraft artillery requirements of a division. The requirements are estimated for the armored division proposed by the General Board USFET, but apply also to the infantry division. The estimate is based on the anticipated capabilities of aircraft and AAA automatic weapons of the future and on the assumption that an enemy can establish and temporarily maintain at least local air superiority.

2. The Proposed Armored Division.a. Organization (Principal Elements):

Division Headquarters

1 Cavalry Squadron (6 troops)

3 Armored Regiments (1 tank and 2 Rifle Bns each)

Division Artillery (1 AAA, 3 light FA, and 2 Medium FA Bns, organic, and 1 Light FA Bn attached when necessary)

1 Armored Engineer Regiment (2 Bns)

Division Trains (Supply Bn, Maint Bn, and Med Bn).

b. Tactical Formation (Main Subdivisions):

Division Control (Div Hq, Div Arty Hq, Cav, Engr, Trains,---less detachments)

Division Reserve (1 Armd Regt, reinforced but not including FA)

2 Armored Regiments in the line, reinforced, each consisting of a command echelon and two task forces composed as follows:

Command Echelon: Hq and Hq Co, Maint Co (-2 Bn Secs), Service Co, Lt Tank Co, Engr Bn Hq Det, Engr Co (-2 Plats), Med Co, Maint Det, MP Det.

Task Force 1: Rifle Bn, 2 Med Tank Cos, Engr Plat, 1 Lt FA Bn.

Task Force 2: Rifle Bn, 2 Med Tank Cos, Engr Plat, 1 Lt FA Bn.

c. March Routes: 3

d. Road Space: 100 miles (plus). The Division contains 1583 armored vehicles and an estimated total of 3800 of all types.

e. Bivouac Areas: Total Area 4,000 x 4,000 yards or four areas each of 2,000 x 2,000 yards¹.

f. FA Battalion Position Area: 1,000 x 1,000 yards.

g. Installations: Headquarters, one or more Air Strips, Dumps, Shops, Signal, Medical, Bridges.

3. Capabilities of Aircraft. Piloted aircraft will be able to fly at any altitude above tree-top height at approach speeds of from 500 to 1,000 miles per hour, photograph at any speed, and bomb and strafe at speeds of from 300 to 600 miles per hour. An aircraft of such capabilities can approach from the front to within 3,000 yards of a defended area before being detected. It can then attack within 15 seconds and depart completely out of range within 30 seconds. The individual destructive power will be at least equivalent to that afforded by a 1,000 pound bomb.

4. Capabilities of Proposed ~~AAA~~ Automatic Weapons: Present AAA weapons are incapable of defense against the latest aircraft. Proposed weapons have the following estimated characteristics:

Primary Weapon: (Cannon, automatic, 75mm)

Characteristics:

Fire Control.....	Radar and Computer
Ammunition.....	HE, proximity fuzed
Range.....	3500 yd
Effective Rate of Fire..	35 rds per min

Secondary Weapon: (Quadruple 20mm machine guns in a powered turret)

Characteristics:

Fire Control.....	Visual, computing sight
Ammunition.....	HE, point detonating, delay
Range.....	1500 yd (limited by vision)
Rate of Fire.....	600 to 1000 rds per min.

The speed of modern aircraft is such that either weapon can engage, at most, one aircraft per attack (one run at the target). Therefore, even if great accuracy is obtained from these guns, sufficient density of defense must be provided to be effective against formations of aircraft.

SECTION 2

AUTOMATIC WEAPONS DEFENSE FORMATIONS

5. The Smallest AAA Tactical Unit commanded by an officer and capable of an all-around defense is a platoon of four AAA primary and four secondary weapons. The principal mission of the secondary weapon is defense of the primary weapon and defense while marching. Its additional mission is incidental defense of the vulnerable area. All requirements estimated below are given in terms of platoons.

1 FM 17-100, 15 January 1944 estimates a total bivouac area of 2300 by 2900 yd for the old, smaller division based on a dispersion of 50 yd. With an increase in vehicles and dispersion increased to 60-75 yd the figure 4000 by 4000 yd is obtained. This is believed to be very conservative.

6. Spacing of Guns. Based on primary weapons of twice the range of the 40mm gun, the following spacing of weapons is necessary:

a. Cannon spaced 1,000 to 1,200 yards apart on concentric circles 1,000 yards apart, staggered.

b. Outer ring of a defense 1,500 yards from the defended area when local security permits.

7. Typical Defenses. a. Circular areas are the most economical to defend. Circles of diameters 4,400, 2,200, and 1,100 yards are respectively equivalent to the squares of sides 4,000, 2,000, and 1,000 yards mentioned in paragraphs 2 e and 2 f, above. The requirements for adequate defense of each area when isolated from other defended areas (No mutual support between AAA weapons defending one or more adjacent areas) are as follows:

Circular area of diameter 4,400 yd:	13 AAA platoons
Circular area of diameter 2,200 yd:	7 AAA platoons
Circular area of diameter 1,100 yd:	4 AAA platoons

b. When two or more of these areas are within supporting distances of each other (3,000 yards) these requirements can be diminished by the number of guns required to cover the cannon portions of the outer rings of each.

c. Area Defense by One Platoon. The employment of one platoon (four fire units) in defense of an area requires the primary weapons to be sited approximately at the four corners of a square of side 1,000 yards and will not permit an outer ring 1,500 yards from the vulnerable area. As can be seen by comparison with the requirement given in paragraph 7 a, above, a small vulnerable area will be defended by one AAA platoon with, at most, 25 percent adequacy if the area is more than 3,000 yards from other adequately defended areas. Furthermore, a one-platoon AAA defense permits engagement of primary weapons of four aircraft per run at the vulnerable area.

SECTION 3

DIVISION DEFENSE BY ONE AAA (AW) BATTALION

8. Strength of One AAA (AW) Battalion: 8 platoons.

9. Allocations to Division Defense.

a. Plan I:

FA Bns (organic), 1 Plat each--	5 AAA Platoons
Trains, 2 Platoons	-- 2 AAA Platoons
Air Strip, 1 Plat	-- 1 AAA Platoon

(1) Elements Uncovered: Div Hq, Div Arty FDC, the attached FA Bn, Engr Regt, Reserves, all Inf and Tank elements, all routes, defiles, construction, and other air strips.

(2) Effectiveness of Defenses. If artillery is massed, the defense thereof is quite good. This situation seldom exists, however, and each FA Bn defense is at a minimum. The Trains are defended to about one-half adequacy due to the lack of mutual support. The air strip has minimum protection.

b. Plan II:

Regts in the line, 2 Plats each--- 4 AAA Platoons
Medium Arty, 1 Plat per Bn -- 2 AAA Platoons
Trains -- 2 AAA Platoons

(1) Elements Uncovered: Div Hq, Div Arty FDC, Engr Regt, Reserve Regt, Air Strips, routes, defiles, and construction (bridges) back of the regimental reserve lines. Furthermore, in the Regts in line, if the FA is covered everything else is uncovered; if Task Force 1 is given both platoons, the Command Echelon and Task Force 2 is uncovered, etc.

(2) Adequacy of the Defenses: Unchanged.

c. Protection on the March. Eight AAA platoons cannot be allocated equitably among three columns to protect a movement of the division: Three platoons to each flank route leaves only two for the center; two to each flank route permits defense of only one defile at a time--and inadequate at that--and four are left for two echelons of the center column. If more routes are used, the situation is still worse. The gun density of 1 primary weapon per 3-plus miles is entirely inadequate.

d. General Estimate. No allocation of eight platoons will provide even minimum protection to the important elements of a division in bivouac, on the march, or in battle formation. See Annexes 1 and 2 which show elements uncovered in two typical situations in World War II. Even a weak but determined enemy air force could have crippled both divisions shown in the Annexes. Furthermore, if another AAA Battalion is attached, administrative and command difficulties will arise: there will be no headquarters capable of joint administration and tactical control of both battalions and there will be no higher commander fully qualified to command both battalions without relinquishing the command of one to a junior who is already busy.

SECTION 4

DIVISION DEFENSE BY TWO AAA (AA) BATTALIONS (Proposed AA REGT)

10. Strength of Two AAA (AA) Battalions: 16 Platoons.

11. Allocations to Division Defense by Two Battalions.

a. Plan I:

Elements in line, 1 Bn -- 8 AAA Platoons
Control and Rear Elements, 1 Bn -- 8 AAA Platoons
(This allows each Regt in the line 4 AAA Platoons)

(1) Elements Uncovered:

(a) Armd Regts in the line: Each Armd Regt consists of five principal elements--the Command Echelon, and an Inf Echelon and FA Echelon in each of two Task Forces. In addition, there are engineer projects and defiles. The CO can choose which to leave uncovered. Not all can be covered.

(b) Division Control and Rear Elements: Eight Platoons are available to cover the Reserve, Trains, Air Strips, Hq, 2 Medium FA Bns, the Engr Regt, dumps, routes, and defiles. All elements cannot be covered directly. Wide choice of elements to be covered is afforded.

(2) Adequacy of the Defenses. With an AAA two-battalion Regiment, every vulnerable area contemplated in Section 3 can be afforded protection approaching adequacy.

(a) Each Armored Regiment can be provided adequate protection of such small areas as desired, have covered small point objectives (such as bridges under construction), and, by mutual support between four small AAA platoon areas, can have the protection of each more than doubled. Furthermore, each is afforded reasonably continuous protection on the march, which is not possible with 2 AAA Platoons. In addition, each Armored Regiment in the line will have the advantage of an AAA Bn Hq Det the same as it has from the Engr Regt.

(b) The control and rear elements of the Armored Division can be covered by AAA platoons sufficiently close together to render some mutual support and be able to muster an AAA reserve by uncovering some rear elements in order to reinforce the forward elements. On the march, the forward echelon of Div Hq and the rear echelon will each have sufficient AAA to permit reasonable continuous defile protection during movement and, when the situation warrants, be able to reinforce the Regts in the line. The armored control and rear elements will have the advantage of the presence of AAA Bn Hq and its detachments.

(c) A study of Annexes 1 and 2 will reveal that most of the elements therein left uncovered will be protected. It will also be obvious that, in general, all defenses will be individually strengthened solely on account of an average gun density which often makes some mutual support possible, which was not true when only one AAA Bn was employed.

(d) The presence of two AAA Battalions will entail regimental control which is desirable for coordination and for freeing the battalion commanders from administrative duties which interfere with their tactical duties.

b. Plan II.

FA, 1 Plat per Bn	-- 5 AAA Platoons
Air Strip	-- 1 AAA Platoon
Regts in the line, 2 Plats each	-- 4 AAA Platoons
Trains	-- 2 AAA Platoons
Reserve	-- 2 AAA Platoons
Div Hq & Div Arty (as employed reserve)	-- 2 AAA Platoons

(1) The Elements Covered may be the same as before, but it is assured that each FA Bn is always covered. Otherwise, coverage is about the same.

(2) Adequacy of Defenses. Unchanged except that the medium FA Bns are inadequately covered if they operate separately. This plan has a command defect because area responsibility is not sharply defined for the Bn Commanders. If the reserve and the Engr Regt and parts of the trains use the same areas all can be covered

with varying degrees of adequacy.

c. Desirability of More Protection. While more AAA platoons than those made available by two AAA Bns might be desirable in many cases, it is felt that, in spite of the need for special situations, their assignment to the division at the expense of other major units is not justifiable.

SECTION 5

FINAL ESTIMATE

12. Conclusions: a. The threat to a division by an enemy capable of at least local air superiority is such that antiaircraft artillery in the division is necessary. When this threat diminishes, part or all of the AAA can operate in a powerful ground role. (This last conclusion is not developed in this paper because it has no bearing on the estimate made).

b. Eight platoons of AAA are entirely inadequate for furnishing antiaircraft protection to a division. The presence of so few platoons would create a false sense of security.

c. Sixteen platoons of AAA are necessary for the furnishing of adequate antiaircraft protection to a division.

13. Final Estimate. It is estimated that one regiment of AAA of two battalions (16 platoons) is necessary for the adequate antiaircraft protection of a division.

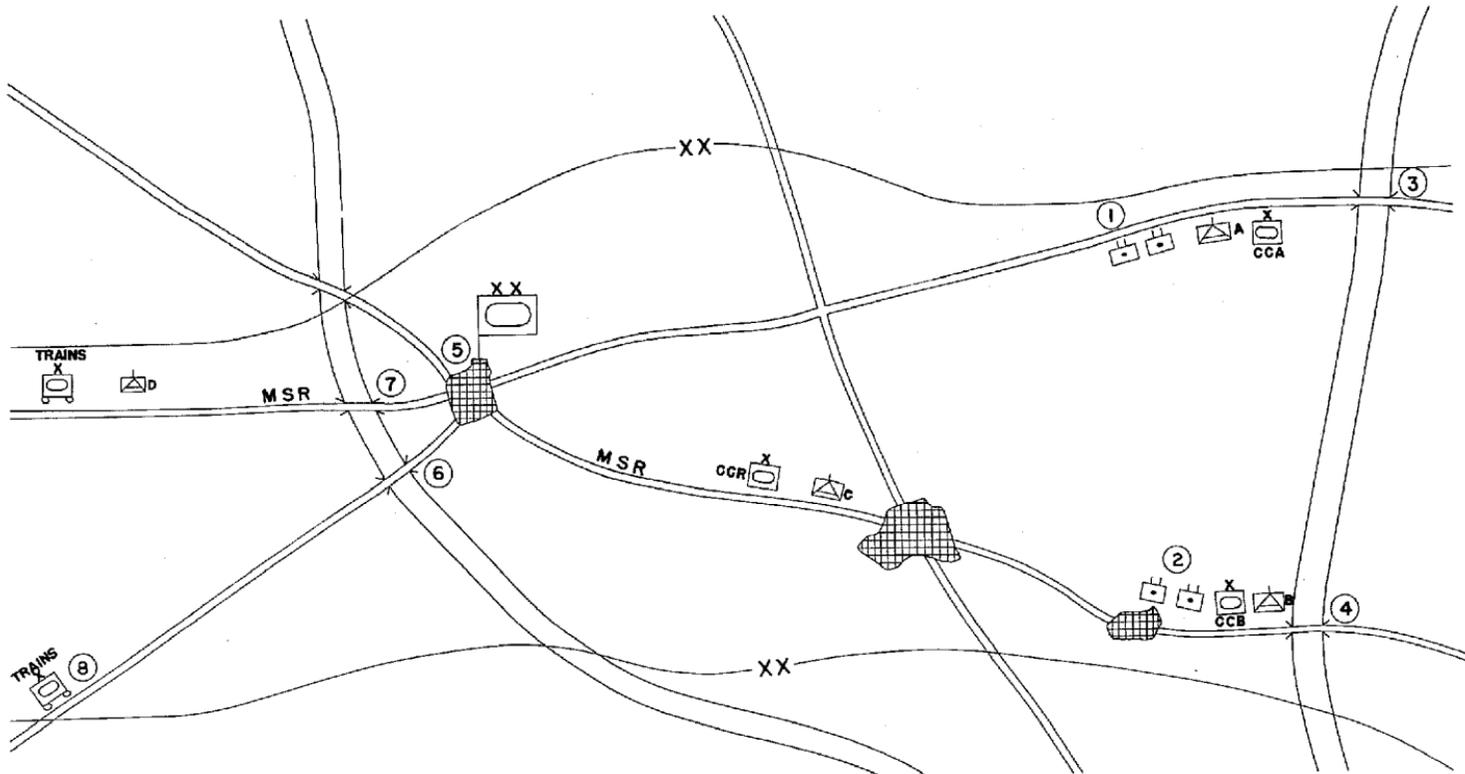
Annex 1 - attached.

Annex 2 - attached.

APPENDIX I

- 6 -

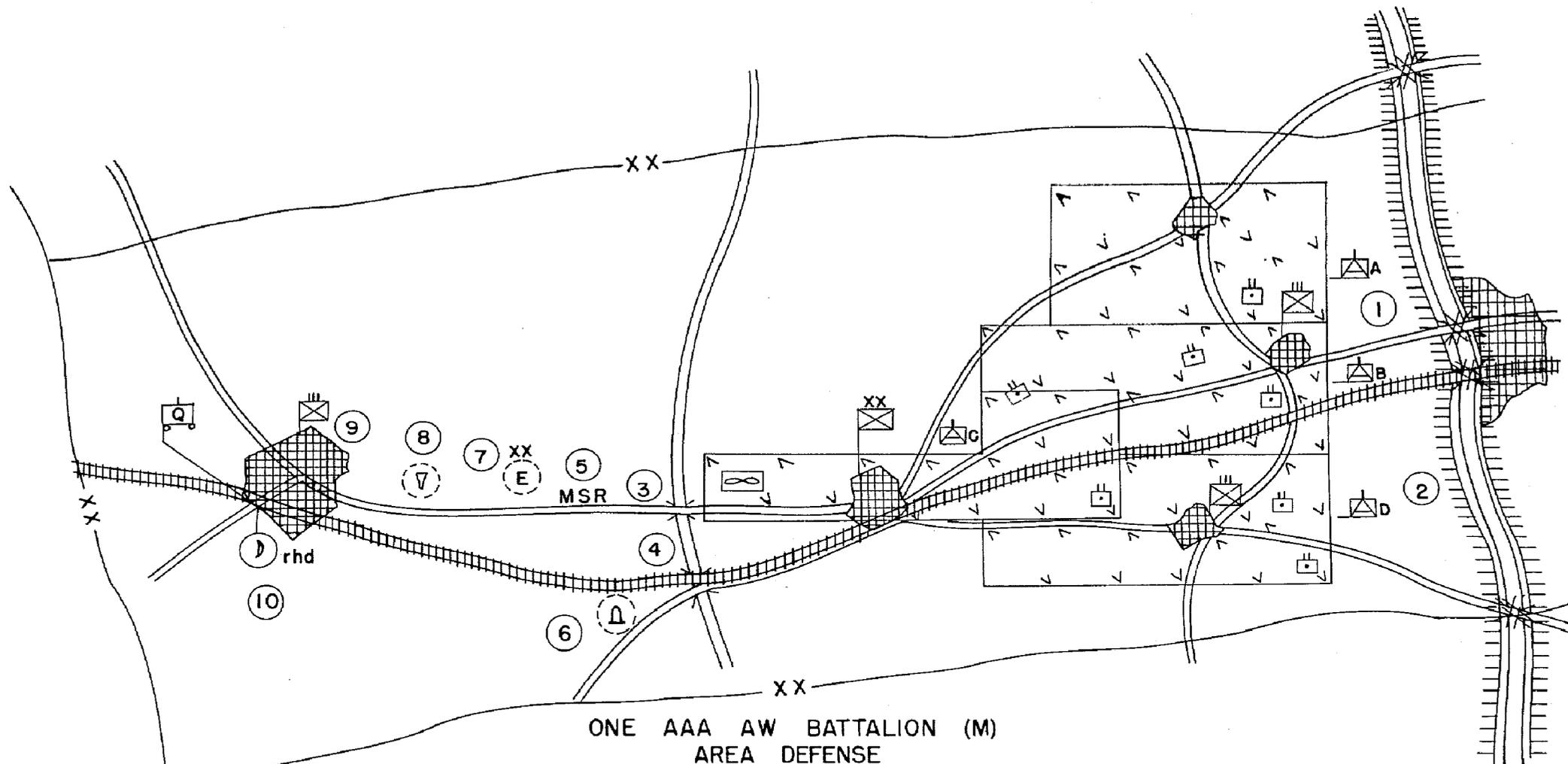
R E S T R I C T E D



ONE AAA AW BATTALION (SP)
 PROTECTION FOR
AN ARMORED DIVISION (SQUARE TYPE)

GERMANY
 APRIL 1945

DEFICIENCIES: 1. INSTALLATIONS NUMBERED IN CIRCLES ARE COMPLETELY UNPROTECTED. FOUR BATTERIES OF AAA INSUFFICIENT TO PROTECT ALL ELEMENTS OF AN ARMORED DIVISION (SQUARE TYPE).
 2. BRIDGES ③ AND ④ WILL HAVE TO HAVE PROTECTION WHILE CCA AND CCB ARE CROSSING THE RIVER AND AFTER THEY HAVE CROSSED.



ONE AAA AW BATTALION (M)
AREA DEFENSE
 ACTUAL SECTOR OF
 AN INFANTRY DIVISION
 GERMANY
 OCTOBER-NOVEMBER 1944

- GENERAL:
1. SYMBOL < REPRESENTS ONE AUTOMATIC WEAPONS FIRE UNIT (GUN).
 2. SIXTY-FOUR FIRE UNITS IN ONE AUTOMATIC WEAPONS BATTALION (OF FOUR BATTERIES).
 3. FIRE UNITS MUST BE MUTUALLY SUPPORTING (400-600 YARDS FROM EACH OTHER) TO BE EFFECTIVE.
 4. TWO FIRE UNITS PLACED IN EACH 1000 METER SQUARE, TERRAIN PERMITTING.
 5. DIVISION WAS SUPPORTED BY THREE 155 HOWITZER BATTALIONS FROM CORPS. THERE WERE THEREFORE 7 FA BNS IN DIV SECTOR.
 6. AREA DEFENSE CONCENTRATED ON FA PROTECTION.

- DEFICIENCIES :
1. ONLY ONE-THIRD OF DIVISION WAS PROTECTED. NUMBERS IN CIRCLES INDICATED VITAL POINTS UNPROTECTED.
 2. BATTERIES COULD NOT HAVE BEEN TAKEN OFF AAA MISSION TO FIRE GROUND ROLES.
 3. IF AREA DEFENSE HAD NOT BEEN USED, FOUR BATTERIES OF AAA COULD NOT HAVE PROTECTED 7 FA BATTALIONS.

COMMENTS OF COLONEL W.Q. JEFFORDS

1. Comments of Colonel W.Q. Jeffords who was Deputy Theater AAA Officer during the European War and was a member of the Theater AAA Section longer than any other AA officer. His remarks, therefore in view of his long experience, have particular weight.

2. Pertinent words and phrases applicable to the studies of the AAA Section, General Board have been underlined.

3. The following is an extract from a memorandum of Colonel W.Q. Jeffords to Brigadier General H.R. Jackson, Seacoast Evaluation Board, USFET, APO 413, dated 10 Nov. 1945, filed in the AAA Section, Fifteenth U.S. Army, APO 408.

* * * * *

"d. Gunnery Instructors. There should be a corps of qualified gunnery instructors. These instructors should be given at least one year's post graduate course and should be well grounded technically in all AA weapons and fire control instruments. These gunnery instructors should be included in the T/O of AA command in the ZI to provide a staff of well qualified instructors for the ZI (schools, training centers, practice camps) and all theaters of operation. This will establish a system of promotion and esprit de corps, and such instructors should be rotated so as to keep abreast of the latest combat lessons and scientific and technical developments. Instructors for theaters of operation should be provided on the following basis:

Headquarters, Theater, Army Group, AA Command
(or Air Defense Command), and Armies, each - 3
AAA brigades - 2
AAA groups - 1

"e. Battalion Fire Control Officer. In lieu of battalion, radar officer for gun battalion, and as an additional officer for AA battalions, provide a well qualified fire control officer. This officer should be retained on these duties, and so that he may be eligible for promotion a T/O allocation should be made such that the grade of this officer should not be over:

major for a battalion
lieutenant colonel for a group
colonel for brigades and higher echelons to include:
armies, army groups, AA Command or Air Defense Command,
and Theater headquarters.

* * * * *

"5. Major staff, command, and administrative problems occurring in the European theater.

"a. Command of AA units in rear areas.

- (1) While anti-aircraft artillery units were stationed in Great Britain these units were placed under command of the Theater AA Officer, and under operational control of Commander-in-Chief, Air Defenses of Great Britain. After Headquarters and Staff of European

Theater of Operations and of Communications Zone, services of Supply were amalgamated, instructions were issued reassigning antiaircraft artillery units in each Base of the Communications Zone to that base. Base Commanders in turn assigned these units to Districts. This decentralized command of antiaircraft units. Where there are limited means available for antiaircraft defense it is necessary to keep such units under command of a central agency for allocation to defense of vital areas, priorities of which are constantly changing; and in addition there are training (including target practices), personnel, supply, and ammunition matters which are best handled by an antiaircraft commander and his staff.

- (2) Antiaircraft artillery units are allocated on a theater basis in accordance with agreed scales for major commands. In each case where it was necessary to transfer antiaircraft artillery units for defense of higher priority objectives located in another base, it was necessary to obtain permission of the Base Commander under whose command units were then operating. This caused unnecessary delay. Antiaircraft units must be transferred without delay to any area to meet the expected attacks of the enemy air force and to provide an adequate defense for most important objectives. Base and district commanders used antiaircraft troops and equipment to meet emergency supply and personnel matters and transferred key personnel to other agencies, thereby affecting the antiaircraft defense in their areas and delaying movement of units to other areas when such movement was agreed upon by the various headquarters.
- (3) In planning for continental operations it was suggested that all antiaircraft units in the Communications Zone be assigned to an AA Command which would be charged with antiaircraft defense of the Communications Zone and which would have authority to move troops to meet expected attacks and for defense of most vital objectives in accordance with an agreed priority list. This recommendation was not favorably considered and the plan adopted was to assign units to the various advanced, intermediate and base sections; however, in the early part of the operations the Ninth Air Defense Command was created by Headquarters, Supreme Commander, Allied Expeditionary Forces, and all antiaircraft troops in American Forces not assigned or attached to army groups were assigned to US Strategic Air Forces in Europe for Ninth Air Defense Command. This created a command with a commander and an adequate staff charged with defense of all rear areas and all airfields in rear of an established air boundary which, with limited means available, provided an adequate defense and eliminated the majority of defects in the other system.

- (4) In the British sector antiaircraft units were assigned to GHQ AA and under command of a Major General, Antiaircraft, who in turn was under command of a Major General, Royal Artillery (all artillery - field, medium, antiaircraft, antitank, and coast defense units belong to one regiment - Royal Artillery). The Major General, AA, commanded all AA units in British sector not attached to Ground Forces (divisions, corps, and armies) and was responsible for all technical, training, and personnel matters affecting all AA troops and for the allocation of antiaircraft ammunition in the British sector. This is similar to an AA Command in US forces.

"b. Ninth Air Defense Command Problems. Antiaircraft units with Ground Forces were assigned to army groups whereas antiaircraft units for defense of rear areas and airfields in rear of an agreed air boundary were assigned to US Strategic Air Forces in Europe for the Ninth Air Defense Command. This was for administrative and supply purposes as the Ninth Air Defense Command came under the Ninth Air Force for tactical purposes. The Ninth Air Force in turn came under Allied Expeditionary Force for tactical purposes. Antiaircraft units are Ground Force troops and being assigned as indicated presented two major problems.

- (1) Command. In accordance with policies existing in this theater, antiaircraft troops were allocated and assigned as indicated in accordance with an agreed scale and the flow of AA troops to this theater. Inasmuch as antiaircraft units were not on a very high priority for equipment there were delays in getting assigned units to their respective commands to meet their requirements and it was necessary to reassign certain units. In other instances, to meet changing tactical requirements these major commands required additional antiaircraft units for temporary periods. To do this it was necessary for either the army groups or the Ninth Air Defense Command to present their requirements to Supreme Headquarters, Allied Expeditionary Forces (Air Defense Section, which was headed by a Major General of the British Army).

(Note: This was not necessary for British AA units as they were under British GHQ and all such matters were handled by the British.)

The Theater Antiaircraft Officer (who was also AA officer of Communications Zone, since these two headquarters were amalgamated on the Continent), in turn, was consulted by the Chief of the Air Defense Section, Supreme Headquarters, Allied Expeditionary Force. Conferences were then held with representatives of the AA officers of the Army Group concerned and the Ninth Air Defense Command. The problem reverted to one of cooperation and concurrence with consequent loss of time or requiring plans to be made so far in advance of the tactical situation that it was not practical to give due weight to future requirements over present obligations. The scale of AA troops for the theater had been drastically cut and a minimum scale only provided the major commands to meet their current and estimated future requirements. No

theater reserve of antiaircraft troops was provided. Instances of changing tactical situation were the defense of the port of Antwerp against pilotless aircraft (American AA units comprised more than 80% of the defense) and the River Rhine crossings. To overcome the command difficulties all AA troops in the theater should be theater troops and the office of the Theater AA Officer should be abolished and an officer of suitable rank (at least a major general) provided with an adequate staff and allocated a T/O similar to the system used at British GHQ, and in addition to his other duties charged with the responsibility for allocating AA units in accordance with means available, air threat, and in agreed priority list. There should be a theater AA priority committee and this officer should be the head of that committee with power to make decisions in accordance with priorities submitted by Theater Army Ground Forces, Army Air Forces, and Army Service Forces).

- (2) Supply. Inasmuch as all antiaircraft troops are Ground Forces troops the supply and personnel problems of AA units assigned to the Air Forces were complicated. It was necessary for Ninth Air Defense Command to go through Headquarters Ninth Air Force as well as US Strategic Air Forces to the Theater Headquarters and to Headquarters Communications Zone to arrange priorities for and to obtain antiaircraft ammunition and equipment, to service this equipment, and to obtain replacements and other personnel, with resultant delay. It was finally agreed to permit Ninth Air Defense Command to deal directly with such headquarters, but in case of personnel to keep the two Air Force Headquarters advised. All such matters of Theater and Communications Zone headquarters were coordinated through the office of the Theater Antiaircraft Officer. This procedure should be adopted where Ground Force troops (antiaircraft) are assigned or attached to Army Air Forces or to Communications Zone.

* * * * *

7. Composite planning staff for joint and combined operations. There should be antiaircraft representatives in any joint and combined operations planning staffs. Training of commanders and staff members of such planning staffs should include antiaircraft phases of joint and combined operations. In addition, all antiaircraft brigade and group commanders likely to participate in such operations should be required to attend a short course conducted by qualified joint and combined operations instructors so as to familiarize them in such operations."

COMMENTS OF BRIG GEN C.A. THIELO ON AAA
QUESTIONNAIRE, ETCUSA, DATED 11 JUNE 45

The following extract of Brigadier General Claude M. Thielo, AAA Section Chief, 12th Army Group, is in response to "AAA Questionnaire", ETOUSA, dated 11 June 1945, filed in the AAA Section, Hq Fifteenth U.S. Army, AFO 408:

"The policy of attaching AAA units from the IX Air Defense Command to Army Group for 'Operations only', as decided by SHAEF as the campaign progressed was made at the insistence of the Air Defense Command over the objections of this Army Group. The reasons given for the policy were that the Air Defense Command could retain administrative control over the unit. This seems to have been the only argument for the policy. Objections to it are as follows:

"a. Army supply, maintenance and administrative facilities are adequate. The addition of a few AAA battalions does not impose a noticeable burden. Actually, battalions so attached were at a considerable disadvantage, since armies normally have a higher priority for supplies than units in rear areas. It should be unnecessary to add that a duplication of such facilities by the Air Defense Command is uneconomical.

"b. The expression 'attached for operations only' and applying to AAA units only creates in the minds of all concerned the thought that AAA is 'different'. This is not true as AAA problems are substantially the same as for other ground force units. Any idea to the contrary should not be allowed to persist. These AAA units while so attached do not feel that they are a part of the army. While performing the same job as army units in adjacent defenses and on similar tasks, they are not included in any of the activities or bonuses which normally attached army units receive. . . From the experience of this campaign, the AAA command and staff organization behind armies did not lend itself to efficiency. At army group level, the only means of reinforcing an army was to take units from other armies, or request additional units from higher headquarters. In the latter case, decisions were delayed from one week to two months. In moving situations, and on special occasions (like the AAA defense of Antwerp against V-1's, and the need for additional AAA troops in the Ardennes Offensive) this proved to be a serious handicap since armies could not intelligently plan for the future. As a result of all AAA in rear of armies being under Air Force control, a spirited rivalry developed in the obtaining of incoming units, new and replacement equipment and spare parts. As army boundaries, both lateral and rear, move much more often than other boundaries, it is believed that for air defense purposes an army group area should be designated; this area to normally be that containing the Advance Section area behind the army group. Thus, the Army Group commander will have at all times under his control a small reserve of AAA units which will be available to reinforce armies where necessary, and to promptly release army units when boundary changes are made. This provision will also allow army units to be rotated, rested, and refitted which was not possible during the recent campaign. Since the army group rear boundary will not change as rapidly as the army boundaries, this will allow time for the necessary coordination with the Communications Zone for the relief of army group units."

NOTE: Fortinent words and phrases applicable to the studies of the AAA Section, General Board, have been underlined.

COMMENTS OF BRIGADIER GENERAL H. R. JACKSON

1. Comments of Brigadier General H. R. Jackson who was the Theater AAA Officer during the European War.

2. Pertinent words and phrases applicable to the studies of the AAA Section, General Board have been underlined.

3. The following is an extract from a letter of Brigadier General H. R. Jackson, Seacoast Evaluation Board, USFET, dated 9 November 1945, filed in the AAA Section, Hq Fifteenth U. S. Army, APO 408:

* * * * *

"I favor the union of the antiaircraft artillery with the field artillery in a single arm. The decision as to whether this is to be done or not will influence any future organization of AAA in the field forces. Assuming that such a union takes place, I believe that AAA units should be in two categories: (1) those assigned or attached to army groups and lower commands, and (2) those retained under a central command (an AA command or air defense command). Army groups should be responsible for AA defense of elements forward of an agreed air boundary, and an AA command or an air defense command should be responsible for AA defense of all elements in rear of such air boundary. I favor an AA command, and as second choice an air defense command. However, of more importance is the necessity of having all rear area AAA under a central command, rather than having it assigned or attached to the various sections of the communications zone. Such central command is essential in order to facilitate rapid shifting of AA units from one area to another in accordance with the requirements of rapidly changing situations. Such rapid shifting was repeatedly found necessary during the European operations ... I believe that to facilitate shifting of AAA units between rear areas and army group areas an AA command would be desirable. AA units should be assigned to army groups, armies, corps, and divisions, in accordance with a previously agreed scale. The remainder of the AAA assigned to the theater should remain under the AA command or air defense command.

* * * * *

"There is a controversial question as to whether AA with corps and divisions should be assigned, or should be placed in support and retained under a central AAA commander. I concede that, theoretically, a more satisfactory area defense can be established and maintained under an AA commander. However, I believe that other considerations, such as esprit de corps, close cooperation with local commander, road movements, supply and so forth outweigh the advantage of central control. I therefore favor assignment of AAA units to divisions and corps.

"I believe that gunnery instructors, working among the field units, were invaluable, and their use should be continued in the future. I agree with Colonel Jeffords and Major Cohen that they should be assigned to T/O organizations in order to provide reasonable promotion. I believe that the greatest benefit was derived from the work of these instructors when it was understood by all concerned that they were not inspectors."

INTERVIEW WITH BRIG GEN WILLIAM L. RICHARDSONAND COL MATTHEW K. DEICHELMAHN¹

1. Introduction. General Richardson commanded the IX Air Defense Command of the Ninth Air Force from its organization, early in 1944, until the present time. Colonel Deichelmann was his A-3 (G-3) throughout the major part of the European War. Their experience, therefore, in command of the major anti-aircraft artillery (air defense) echelon in the European Theater was broad and their opinions carry considerable weight.

2. General. Their answers to questions pertinent to this study are quoted below.

3. General Richardson:"a. SHAEF:

- (1) If you have a number of subordinate AA commands like in this war, you will need a coordinating agency and policy advisory section to the Supreme Commander like the Air Defense Division at SHAEF.
- (2) However, I favor having one commander to be advisor to Supreme Commander and commanding all AAA back of the armies.

"b. THEATER (ETOUSA): Not necessary. Eliminate. However, there should have been AAA people in the G-1 and G-4 Divisions of the Theater... Had the Section been part of the G-1, G-4 divisions of ETOUSA, we would have gotten personnel and supplies much more promptly.

"c. ARMY GROUPS:

- (1) ... I favor an AAA Special Staff Section in the Army Group. To help out the AAA in the Armies, they should be on an equal footing with all the G's--not only the G-3. They have as much to do with G-1 and G-4 as with G-3 because personnel and supplies are ever-present necessities for Army AAA units and Army Group should help get them.
- (2) I definitely favor the 12th Army Group set-up for an Army Group. It did a splendid job and helped out the Army units a great deal. Such things as training, personnel requirements, supplies, technical aid and tactical supervision of subordinate commands they ably managed to take care for the Army units.

"d. ARMY HEADQUARTERS: Get away from your staff sections at Army level and have it a command. Call it an AAA Division and let a major general command it. Assign all AAA in the entire Army to him (and I also mean those in support of Corps and Divisions)... The major

¹ Interviewed by Colonel Donald J. Bailey, AAA Section, General Board, at Bad Neustadt, Germany, on 3 December 1945.

general should command all the AAA in the Army and be advisor to the Army Commander.

"e. CORPS: Should have a brigade. But, the brigade should be attached to the Corps, only and should be under the Army AAA Division. There should be two groups assigned to the Corps brigade--one to command the Division AA and the other the Corps AA. That would provide an excellent AAA chain of command, supply (ammunition especially), administration, promotions and decorations. The brigade would be 'in support of the Corps'. The AAA Army Major General then could swing a lot of pressure when ammunition got critical. The Corps CG isn't interested in such matter.

"f. DIVISION: You should have a Group Headquarters attached to (in support of) each division. The Group would be assigned to the Corps brigade. The Group CO would be liaison officer to the Division CG and command the one or two AAA battalions in support of the division. Your suggestion about a two-battalion regiment sounds swell. I think it would work fine.

"g. AIR FORCES AA:

- (1). ... I think that all AAA back of the Armies should be under one commander and they should all be assigned to the Air Forces. I know that the trend is towards the Ground Forces and undoubtedly the AAA will stay with them. However, I feel the IX A.D.C. system worked in the European Theater, so why not do it again? Let the AAA be part of the Ground Forces but assign all the AAA back of the Armies to an Air Defense Command under the Air Forces. The IX A.D.C. consisted of three separate major elements: day and night fighters, antiaircraft artillery, and signal warning service.
- (2). The crystal ball of the future is too cloudy to predict whether we will throw our guns away and take on rockets or whether the Air Forces will give up all their planes. We must plan with what we have now and what appears we will have in the near future--not 20 to 50 years from now. Guided missiles are too revolutionary a step to make many predictions on them right now.
- (3). I maintain that Air Corps and AAA targets are in the air while all other ground units have their targets on the ground. Therefore, isn't it logical to combine the two services who work on the same target? Also, a ground warning and control system is necessary to control and coordinate the AAA and Air Corps.
- (4). The best answer is to have one command and one commander responsible to the Supreme Commander, but it should be under the Air Forces so as to reap the advantages of fighter protection and air warning services...
- (5). You ask: Didn't we become a huge AAA Command rather than an Air Defense Command when the fighters were moved to offensive operations in October 1944? Yes, that is basically true, but in case of an emergency, we would have gotten the fighters back on a moment's notice and commanded them. The AAA with combat units

would only have had independent fighter support. Also, we had the signal air warning service with us which could control our weapons. AAA with combat units didn't have that combination.

"h. SERVICE FORCES: There was never any AAA Section in Com Z even if their organization diagram does show an AAA Section... The IX A.D.C. took over Com Z installations in August 1944... SHAEF directed that all AA remain assigned to Com Z and attached to us. All Com Z installations in the U.K. were under British protection, aided by such American AAA as was available over there, but all under the British.

"i. SUPPLY AND ADMINISTRATION, IX ADC:

- (1) Having our AAA troops assigned to Com Z at first was bad because we got the 'run-around' on supplies between the Com Z and the Air Forces... The Air Forces had not planned for an Air Defense Command, however, so were not able to supply us with everything at first. Finally, though, we received just as much as any of their Fighter Commands. The Air Forces allotted an Air Force Service Team to the IX ADC to take care of all supplies. When our units were defending cities or ports, they were supplied directly by that city or port. Our units at Antwerp drew directly from the Port of Antwerp, those at Marseilles from the Port of Marseilles, and the 47th brigade in Paris from the U.S. Supply installations in Paris. In the case of ammunition for our units at Antwerp, we got the Air Forces to help us in getting ammunition from Com Z.
- (2) Administration was handled through Air Force channels only. However, the Ninth Air Force delegated to me the authority to award bronze stars, soldier medals and purple hearts. For promotions, the Ninth Air Force made all up to the grade of Lt Colonel.

"j. ALLIED JOINT PLANNING STAFF: If there is no supreme AAA Command, I favor having the AAA advisor to the Supreme Commander (like Major General Cameron on the Air Defense Division at SHAEF) sit on an Allied Joint Planning Board. He should take in on such conferences all AAA technical advisors necessary for the future operations and all AAA commanders who will participate in the joint operations. The permanent member of such a board would be the Supreme AAA commander or advisor. He should bring in other interested individuals on details. Officers who sit on such a Board should be sent to Joint Staff Schools. They must keep the big picture in their minds and not waste their time with details. Their mission is only high level planning.

"k. COOPERATION WITH ADJACENT HEADQUARTERS--IX A.D.C. We cooperated with the 12th Army Group and Com Z continuously by means of 'phone calls or conferences. Usually my A-3 and the Deputy AAA Officer of the 12th Army Group get together and decide where the Army Group Rear Air Boundary should be. There was no friction on those meetings. With Com Z, we would have weekly conferences to go over with them what their most important installations were to protect and then protect them according to a priority list.

"l. VERTICAL RELATIONSHIP OF IX A.D.C. WITH SUBORDINATE COMMANDS. We gave on-site training to our AAA units. We tried to get a firing range for them but it was taken over by the Armored Forces. In technical help, the IX A.D.C. was self-supporting. We had 20 SRMU's assigned to us as well as two Ordnance Maintenance Bns with 8 companies. Also a Signal Company and a Signal Construction Company to put in our telephone net. We also had about 10 gunnery teams organized to help our units.

"m. AIR DEFENSE VERSUS ANTI-AIRCRAFT DEFENSE.

- (1) Neither Antiaircraft Defense nor Air Defense should be tied to ground defense units and weapons. Our targets are in the air; theirs are on the ground.
- (2) The Army Group Rear Air Boundary delineated the difference, in my opinion between Air Defense and anti-aircraft Defense. Back of the Army Group Rear Air Boundary is Air Defense; forward, is Antiaircraft Defense.
- (3) General Eisenhower desired, when possible, to coordinate the Air Forces and the AAA together. He supported Air Defense--especially the idea of having everything back of the Army Group Rear Air Boundary under one commander.
- (4) The question of the where and when of Air Defense, also, is based on the matter of communications. Where we could integrate our battalions in on our telephone or radio net, that would determine the area of the air defense. All installations back of the Army Group Rear Air Boundary were essentially stable in nature and could be tied in on such a net. Corps and Armies moved too often to be tied in on such a net.

"n. GENERAL.

- (1) In any planning program, I always added 10% to the maximum amount of AA I thought necessary for an undertaking. Those units could be used on installations of secondary importance and moved up to important objectives if the need arose. They could be called an AAA reserve. It was sound practice.
- (2) I am sure that the AA will remain with the Ground Forces... But the majority of it should be assigned to the Air Forces to form an Air Defense Command. I do think, however, that the Antiaircraft should be kept together under one command--like in the E. T.O. Let it be a Ground Force arm but let the majority of it be assigned to the Air Forces. I definitely favor the AA going in to either the Air Forces or the Ground Forces."...

4. Colonel M. K. Deichelmann:

"a. GENERAL.

- (1) ... The Field Artillery has ground targets and the AA has air targets. The Air Corps has air targets, too. Why not get them together?

- (2) ... The next war will be so different from this one that no one can predict what will happen. Probably rockets will replace all guns. The Air Corps then will take over rocket launching and still combat air targets (probably rockets). So will the AA. I see all the more reason for getting them together.
- (3) ... The IX A.D.C. association with the Ninth Air Force has been of the highest order and I think we did an efficient job for them."

- NOTE: 1. Pertinent words and phrases applicable to the studies of the AAA Section, General Board, have been underlined.
2. Record of these interviews are filed in the AAA Section, General Board, USFET, APO 408.

APPENDIX V

- 5 -

R E S T R I C T E D

INTERVIEW WITHBRIGADIER GENERAL CLAUDE M. THIELEat Bad Nauheim, GermanyOn 13 December 1945

(by Colonel J. J. Bailey, G-2 Section, General Board)

1. Introduction. General Thiele, as an Officer, 12th Army Group during combat was the senior American antiaircraft artillery Officer in the European Theater. He had been Theater G-2 Officer from June 1942 until May 1944. When the 1st Army Group (later changed to the 12th Army Group) was organized he acted as Theater G-2 Officer and G-2 officer of the 1st Army Group. After May 1944, he relinquished his Theater G-2 officer duties to Brig. Gen. H. R. Jackson and thereafter continued as G-2 Officer of the 1st Army Group (later 12th Army Group) until the end of the War. His opinions on antiaircraft Artillery, therefore, are based on a great deal of personal experience and first-hand knowledge of G-2 command and staff functioning in the various levels in the European Theater.

2. Resume of Interview. Only those points of the interview pertinent to this study will be recorded herewith. They will be briefly summarized.

a. General.

- (1) General Thiele feels that command of antiaircraft artillery in a theater of operations should be under Ground Force, rather than under Air Force control.
- (2) He feels that the IX Air Defense Command was a sound command but that its duties would have been more efficiently performed if it had been under Ground Force control.
- (3) He contends that the need for one centralized G-2 command in rear of the Army Groups rear boundaries was and always will be a major consideration in a theater of operations.
- (4) He feels that protection of Air Force installations as well as Communications Zone installations can be more efficiently performed by an G-2 command under Ground Force control. Close liaison with the Air Force could easily be maintained without the necessity of being under their command.

b. Recommended Command and Staff Structures.

- (1) Divisions. He feels that the proposed two-battalion G-2 and regiment for both the armored and infantry divisions is a sound organization. He believes it should be organic in the division.

- (2) Corps. An army brigade headquarters and headquarters battery, he contends, would efficiently fulfil the dual-role requirements of command and staff at the corps level. He believes it should be organic in the corps.
- (3) Army. He enthusiastically supports having an army division at army level supplant the army army special staff section with the division commander (a major general) commanding the army army troops and acting as army adviser to the army commander.
- (4) Army Group. General Thiele contends that a sizable army section at army group level, commanded by a general officer of the same or higher grade than the army division commander in the army is an absolute necessity. For coordinating allocations of army units between armies, personally advising the army group commander on army matters, and exercising supervisory control over army army units, both an army section and a commander of the same or higher rank than the army army commander is necessary. He feels that a small subsection to the G-3 division in the army group would be unable to function efficiently and coordinate army activities between armies.
- (5) Theater Army Section. He feels that this can be eliminated.
- (6) Army Command in Communications Zone. In General Thiele's opinion, there should be one centralized command of army in rear of the army groups. He supports the premise that a corps of army would be a logical organization for that area but believes it should be organized like a G.H.C. of Antiaircraft Artillery with the commanding general thereof, acting as a staff adviser and a commander of army troops and being responsible to the Commanding General of the Communications Zone or to the Commanding General of the Service of Supplies (S.O.S.).
- (7) Supreme Headquarters. General Thiele feels that there should be an army section at supreme headquarters similar to the Air Defense Division of SHAEF in the European War. It should be commanded by an American Major General (army) who would advise the supreme commander on army matters, but would have no command prerogatives.

NOTE: Pertinent words and phrases applicable to the studies of the army section, General Board, have been underlined.

APPENDIX VII

SUGGESTIONS FOR ARMY ANTI-AIRCRAFT COMMAND STRUCTURE

The following are comments by:

<u>Name</u>	<u>Combat Assignment</u>
Brig. Gen. S.L. McCroskey	Commanding General, 55th AAA Brigade; and Air Defense Division, SHAEF
Brig. Gen. N.W. Burnell	Commanding General, 52d AAA Brigade
Col. William C. Mahoney, Jr.	Executive Officer, 49th AAA Brigade
Col. John G. Murphy	AAA Officer, Ninth Army
Col. Sam C. Russell	Executive Officer, 38th AAA Brigade
Lt. Col. K. F. Cordrey	Asst AAA Officer, Fifteenth US Army

on the desirability of having an AAA Command Headquarters replace the Army AAA Section:

1. "There is no objection to the Antiaircraft Command, T/O & E 44-200-1, providing it is organic to the army in order to insure continuity of planning and maintenance of efficient staff liaison."
2. "Although the combat operations of this army were limited, it is my firm opinion, after having talked to several AAA officers of other armies, that the command structure between the army special staff section and the senior tactical command is outmoded. A fast-moving situation requires the delegation of command to responsible subordinates. The senior AAA officer must have this authority delegated to him by the army commander. The structure of army headquarters must be modified to match operational requirements. I favor an organic army AAA Command to act in place of the AAA Section which has both tactical and administrative command over all assigned AAA troops within the army."
3. "Our experience over a number of months operating as the First U. S. Army AAA brigade leads us to believe that the Headquarters and Headquarters Battery, Army Antiaircraft Artillery, or similar type unit is a far more efficient organization to handle army AAA matters than the army AAA section. Tactical and administrative command to the senior tactical commander are a necessary requirement."
4. "The new Headquarters Army Antiaircraft Artillery Command set-up should cure existing problems between an AAA Section and an AAA Brigade working at army level. There is no necessity for both, and command relationships are sometimes strained under the old set-up."
5. "The present command and staff relationship between the AAA Section and the Army AAA brigade is unsatisfactory. The senior tactical officer must also be the AAA advisor to the Army Commander. I recommend that an AAA Command or AAA Brigade be used in place of the AAA Section."
6. "A major general, with an appropriate staff, functioning as a staff officer as well as an AAA troop commander should replace the AAA Section in army headquarters."

AIR DEFENSE COMMENTS OF BRIG GEN W. L. RICHARDSON

The following are conclusions and recommendations of Brig. Gen. William L. Richardson, Commanding General IX ADC, filed as a part of "Functional Organization and S.O.P., IX ADC" in the Air Section, 15th U.S. Army. NOTE: Pertinent words and phrases applicable to the study of the AAA Section, General Board have been underlined.

CONCLUSIONS

"1. The basic doctrine on air defense, as contained in FMs 100-5, 100-15, 1-25 and 100-20 is essentially sound. The most important principles, which must never be compromised, are:

"a. The Air Force commander in any theater is responsible for air defense in that Theater.

"b. All air defense means, including antiaircraft, should be assigned to the Air Defense Command, except that ground forces should have a suitable complement of AAA automatic weapons units assigned for the close defense of their own troops in the fighting zone.

"2. The Tactical Air Command should be responsible for the air defense of its own installations and of the installations and communications of the ground forces with which it is cooperating. To provide an antiaircraft component for this mission, AAA units assigned to the Air Defense Command should be attached to the Tactical Air Command. These units should be attached, rather than assigned, to the Tactical Air Command, with responsibility for supply, administration and training remaining with the Air Defense Command.

"3. The Air Defense Command should be responsible for air defense in all areas except the ground fighting zone. A line known as the Air Defense Boundary, which delimits the responsibilities of the Air Defense Command and the Tactical Air Command, should be determined from time to time by the senior air commander.

"4. The European campaign proved the great value of:

"a. Joint training of AAA units with the air forces prior to becoming operational.

"b. In airdrome defense, keeping an AAA unit always associated with the same air unit (i.e., fighter group, bomb group).

"5. The organization and SOPs of the IX Air Defense Command, as finally worked out, were completely satisfactory, except as noted in these conclusions and recommendations.

"6. Economy of force may be practiced to a considerable degree when an Air Defense Command is included in a major Air Force. For example, the fighter resources of the Air Force may be easily concentrated on either offensive or defensive missions or logically split between the two, according to the situation. Fighters and AAA may be properly disposed and tactically directed by one commander to obtain maximum results with the least expenditure. AAA can assist and augment other elements of the Air Force in such matters as ground defense and security, navigational aids and markings close bomb lines.

"7. The administration and supply of AAA units of the II Air Defense Command was not satisfactory due to their questionable status (i.e., assigned to Communications Zone and attached to the Air Forces) throughout most of the campaign.

"8. Early warning of enemy air activity was unsatisfactory due to lack of identification, which in turn was due to lack of communications, lack of flying control and misuse of IFF, colors of the day and other identification aids.

"9. There were too many areas where flying was restricted for air defense considerations, too many violations of such restrictions and the procedure and rules connected therewith were too complicated.

"10. Communication facilities available failed by a wide margin to meet either operational or administrative needs.

"11. A large amount of supply and administrative responsibility should have been delegated to AAA Brigade Headquarters, but could not be so delegated because of inadequate Brigade T/O.

"12. Rocket projectiles of the V-2 type are a potent weapon against which no defense has been developed.

"13. Intercept (Y-service) is an extremely valuable means for securing air intelligence for air defense tactical purposes.

"14. Entirely too much time was required to make an AAA unit operational after its arrival in the European Theater of Operations.

"15. A considerable savings in time, cost and maintenance could be effected by a reduction in the number of types of internal combustion engines used for such purposes as generating power for radars, radios, searchlights, lighting, wire communications, engineer tools, etc.

"16. Failure to supply the proper fuel (white gas) for power units and cooking ranges cost much more in the form of additional maintenance and replacement than the saving effected by use of substitutes (leaded gas).

RECOMMENDATIONS

NOTE: The term "active air defense" is frequently used herein. It is defined as the disposition and employment of all such active means as fighters, AAA, searchlight and balloons for the purpose of counter-attacking enemy air force engaged in offensive operations, and the disposition and employment of detection and control devices such as radar for intelligence and operations in connection therewith.

"Passive air defense" is defined as the employment of such means and measures as concealment, protective cover, dispersion, deception and damage control, which are designed to minimize the effects of enemy air attack, but which in themselves cannot inflict damage upon the enemy.

"1. That active air defense, including the anti-aircraft features thereof, be the responsibility of the senior air force officer in any Theater or similar area.

"2. That all means for conducting active air defense, including AAA except as noted in 3 below, be assigned to the Headquarters of the senior air force officer in the Theater or similar area.

"3. That ground forces be assigned a suitable complement of AAA automatic weapons units to provide the close AA defense of their own troops in the fighting zone. "A suitable complement" will depend upon the situation, but for normal operations against an enemy with a moderately strong air force, may be considered as one (1) AAA AW Battalion per division and three (3) AAA AW Battalions per corps, all commanded by an AAA Brigade Headquarters.

"4. That, wherever active air defense operations are to be conducted, an Air Defense Command be provided as a part of one of major Air Force Headquarters in that Theater or area.

"5. That the T/O & E for an Air Defense Command Headquarters, as recommended in letter to C.G., Ninth Air Force, "Proposed T/O & E", 28 July 1945 (Incl 1 herewith), be adopted without delay.

"6. That, wherever Tactical Air Commands operate actively in the same Theater or similar area as an Air Defense Command, responsibility for active air defense be fixed as follows:

"a. The Tactical Air Command will be responsible for the active air defense of its own forward installations and the forward installations and communications of the ground forces with which it is cooperating.

"b. The Air Defense Command will be responsible for the active air defense in all areas except the ground fighting zone.

"c. A line known as the Air Defense Boundary, which delimits the ground areas for which each Tactical Air Command and the Air Defense Command are primarily responsible, will be determined from time to time by the appropriate air commander.

"7. a. That all AAA in a Theater or similar area be assigned to the Air Defense Command, except that assigned to the ground forces (par 5 above).

"b. That an AAA Brigade Headquarters and a suitable complement of other AAA units from the Air Defense Command be attached to each Tactical Air Command as means to meet the responsibilities assigned in par. 6a above.

"8. That, in the future, the air forces be prepared to supply and administer the AAA component of such forces.

"9. That all AAA units engage in at least two (2) months per year of intensive joint training with the air forces.

"10. a. That the air forces be responsible for the AA defense of their own installations, wherever they may be.

"b. That, once a particular AA unit is associated with a certain air unit for airdrome defense purposes, these units remain together wherever the air unit may be based.

"11. That, in future campaigns, in order to provide an efficient air warning and air defense control system:

"a. Adequate communications be made available for air defense purposes.

"b. A light-weight compact and fool-proof IFF device be provided, which will under all conditions identify friendly aircraft to other friendly aircraft and to individual fire units of AAA.

"c. Intercept facilities (Y-service) be provided on an extensive scale.

"12. That coordinated control be substituted for inflexible flying restrictions in vital areas where heavy concentrations of AAA exist.

"13. a. That AAA Brigade Headquarters be organized to handle supply and administration, as well as operations.

"b. That AAA Group Headquarters be reorganized to include only a Group Commander, two (2) officer assistants and three (3) enlisted men, with the general mission of field supervision for the Brigade Commander

"14. That a defense against jet-propelled missiles, such as the V-2, be developed without delay.

"15. That a T/O & E be provided for AAA gun, AW and searchlight instruction teams.

"16. That a survey be made of the requirements of all branches of the armed forces for internal combustion engines and electrical generating equipment, with view to greatly reducing the number of different types of such equipment.

"17. That internal combustion engines and other petroleum-burning devices (such as cooking ranges) be provided with fuel for which they were designed."

COMMENTS ON AAA GUNNERY INSTRUCTION TEAMS

1. Comments of Major Rodney S. Cohen who was the officer in charge of Theater AAA gunnery instruction teams and Chief Technical Division, AA Section, ETOUSA during the European War.

2. Pertinent words and phrases applicable to the studies of the AAA Section, General Board have been underlined.

3. The following is an extract from a memorandum of Major Rodney S. Cohen's to Brig. Gen. H. R. Jackson, Seacoast Evaluation Board, USFET, dated 3 November 1945, filed in AAA Section, Headquarters Fifteenth U.S. Army, APO 408:

*

*

*

"2. The present AA problem demands the utmost in scientific preparation and exactness of procedure. During the Continental operations, auto-weapon battalions equipped with relatively simple fire control devices (as compared with the more complicated equipment of gun battalions) demonstrated the need for adequate instruction and precise procedure. It may be safely said that all AA of the future will call for skill of the highest order.

"3. The training of AA units for combat was in the main inadequate - some of the causes are set forth below:

"a. Lack of proper training (firing, motor movement, maintenance).

"b. New equipment and absence of instructional material on same.

"c. Unfamiliarity of officers and operating personnel with existing and new equipment.

Due to the exigencies of combat many units learned as best they could; the natural result being the formation of many incorrect procedures and maintenance difficulties. Gunnery Instruction Teams and Weissight instructors aided materially in alleviating this condition.

"4. It is believed that the following two suggestions, particularly the formation of gunnery instructors, will be of invaluable assistance in insuring that organizations are capable of conducting effective fire. AA today is so complex it is not felt that the average officer, not scientifically or technically trained, can achieve maximum results without qualified assistance.

"a. The establishment of a fire control officer in each battalion, group, Brigade and higher echelon. Duties of this officer to cover the entire field of fire control and include those duties presently performed by the AA radar officer. Install a satisfactory means of promotion for these men - in the U.S. Marine Corps the communication officer when promoted is maintained as the signal officer of a higher echelon, remaining with communications - his specialty. The service thus retains and makes use of a highly trained specialist in his particular field of endeavor.

"b. The establishment of a department or section of the Ad Command known as Gunnery Instructors, with a satisfactory promotion system. The fine work accomplished by our Gunnery Instruction Teams and The British IG's demonstrate their value. Rotate these officers through training camps, schools and combat units. The cost and effort expended on the establishment of such a corps of eminently qualified instructors is infinitesimal compared to equipping, supplying and transporting units to combat areas not capable of delivering effective fire."

APPENDIX IX

- 2 -

R E S T R I C T E D

BRITISH AAA STRUCTURE

Digest of report of Colonel Wallace H. Brucker, Chief of Operations, Air Defense, SHAEF, in a letter to the Chief of AA Section, Theater General Board, dated 14 September 1945, filed in AAA Section, General Board, USFLT, AFC 408.

The British structure for command and control was less complicated than the American. In the British forward areas, in addition to the organic light antiaircraft artillery of corps and divisions, there were antiaircraft brigades under army command which defended all installations in the army area. In the British lines of communication area, all antiaircraft troops were under command of General Headquarters, Antiaircraft Troops, whose commander was responsible through the Major-General, Royal Artillery, to the Army Group Commander (Field Marshal Montgomery) for the protection of all installations in rear of armies. As the threat declined, Royal Artillery antiaircraft were withdrawn from rear airfields by agreement with the Air Officer commanding 2 Tactical Air Force, Royal Air Force, and the responsibility for antiaircraft artillery protection of 2 Tactical Air Force was assumed by the light antiaircraft artillery squadrons of the Royal Air Force regiments.

APPENDIX X

R E S T R I C T E D

COMMENTS OF BRIG GEN C.M. THIELE ON ORGANIZATION
AND EMPLOYMENT OF AA WITH ARMY GROUP

The following is an extract from a letter of Brigadier General Claude M. Thiele, AA Section, ETOUSA, subject: "Study on Organization and Employment of AA with Army Group", dated 7 November 1943, filed in AAA Section, Hq Fifteenth U.S. Army, APO 408. NOTE: Pertinent words and phrases applicable to the studies of the AAA Section, General Board, have been underlined.

"b. It may be noted that roughly 50 percent of the total amount of the AA is assigned to Field Armies and the remainder to defense of rear areas. There is no question or problem concerning the assignment of AA to Field Armies. A question does exist in the assignment of AA units in rear area defense. The present doctrine for employment of antiaircraft artillery is prescribed in FM 100-20, FM 1-25, and FM 4-100. The rigid application of certain portions of this doctrine operates in such a manner as to remove from the command of the Army Group Commander all antiaircraft artillery not assigned to armies, corps, and divisions, and place it under the command of the superior air commander in the theater. The undersigned is not convinced that this is the best policy. Facts bearing on this question, and advantages and disadvantages of three plans for the organization and employment of antiaircraft artillery with the group of armies, are presented in the following paragraphs.

"b. AA Reserve

The AA units in rear area defense comprise a pool from which the Army Group Commander must be able to draw reinforcements for forward areas. FM 4-100, paragraph 25, is quoted:

'In each theater the AAA units not allocated to field forces or to relatively stabilized rear area defenses are held in the theater reserve. This reserve is provided to protect strategic establishments, sensitive points, and important areas in the theater zone of communications, and as a reserve for the reinforcement of armies, independent corps, and other units operating directly under theater headquarters.'

"c. AA Training

As outlined under FM 4-100, paragraph 65 (2b above), the command of AA units assigned to the Fighter Command is absolute. It includes supervision of training, yet these units may at any time be drawn for attachment with forward units, where it is essential that they be proficient in mobile training, and in the use of their weapons in secondary roles of anti-tank weapons, as field artillery against enemy ground personnel, emplacements, etc.

"d. Interchangeability of AA units

In order to hold to a minimum the AA troop setup for the

NO, no provision has been made for an A reserve, it being planned that units in the forward areas, requiring reorganization or rest, will be replaced by units taken from rear areas. Likewise, reinforcing units will come from the same source.

"5. PROCEEDINGS FOR AIR DEFENSE ORGANIZATION

"a. North African Theater

The Major General, ... is the advisor to the Commander-in-Chief on ... matters and exercises command over all ... defense in North Africa. In occupied territory, initial ... defense is the responsibility of the Commanding General, Army Group, and his subordinate army commanders. When air defense sectors were established in the rear area, those ... units providing antiaircraft defense came under the command of the Major General, ...; Operational control is exercised by the Air Force through the ... defense commander. Allocation of ... resources for the defense of rear area installations and for reinforcement of forward areas is made by the Commander-in-Chief.

"b. 21st Army Group

The organization for air defense in the British 21st Army Group is of interest as, in Cross-Channel operations, the two systems, British and American, will operate side by side and must be closely coordinated. ... units assigned to armies, corps, and divisions are under the command of the commanding generals of those units. ... units not assigned to armies, corps, and divisions are directly under the ... General, 21st Army Group. After an air defense system has been fully developed, operational control is vested in the Air Force. There are 12 ... Brigades in all, utilized as follows:

<u>Brigades</u>	<u>Utilization</u>
2	Arms
2	Assault brigades for beach defense
2	Tactical air force for ... protection of airbases
2	Line of Communications
4	Ports

These units are all retained under the control of the Army Group Commander.

"c. German Army

German antiaircraft artillery, with the exception of that assigned to the Army and Navy, is part of the German Air Force. It is organized into Corps, divisions, brigades, regiments, battalions, batteries, and platoons assigned in general as follows:

<u>Field Force Unit</u>	<u>Air unit attached</u>
Army Group	1 Corps
Army	1 Division
Corps	1 Regiment
Division	1 Battalion

In the field, antiaircraft artillery comes under the command of the unit to which it is attached. This applies as well to antiaircraft artillery of the German Air Force, when attached to field force units."

Arguments for a Coordinated Antiaircraft-Air Defense

The following is a report submitted by Colonel W. M. Brucker, G-3, U.S. Army, Chief of Operations, Air Defense Division SILEF, to the Supreme Commander on the Air Defense Division's attitude towards the "Air Defense Doctrine" in the Zone of Occupation after termination of hostilities. Though it applies to post-war duties, it reflects the final thought on air defense problems of the members of the Air Defense Division (which was the staff advisory body on air defense matters in SILEF Headquarters from D-day until the end of the war). Pertinent words and phrases applicable to the study of the ILL Section, General Board, have been underlined. Filed in ILL Section, Rq. Fifteenth U.S. Army, LPO 408.

1. GENERAL CONSIDERATIONS. Antiaircraft artillery units were included in the Occupational Troop Basis in order to provide a balanced force with which to meet any future air threat to the European Theater. Therefore, any decision regarding command over Theater Air Artillery must be based upon consideration of a system which will enable Air Artillery to carry out most effectively its primary mission of defense against air attack. However, since this is now an inactive Theater, where air defense may never entail more than a training requirement and the maintenance of a minimum defense of vulnerable installations against the possibility of surprise attack, the system of command devised should also take into account the capability of Air Artillery units to perform occupation duties similar to those of other Ground Force troops, and should above all exploit the dual purpose capabilities of Air Artillery weapons. Finally, if operational requirements do not dictate otherwise, consideration should be given to the fact that Air Artillery units normally employ the administrative and supply procedures common to Ground and Service Forces, and that differences in Air Force procedures have in the past impaired the flexibility of Air Artillery in this Theater.

In the succeeding paragraphs, the application of War Department Air Defense policy, wholly or in part, to the special requirements of the European Theater is discussed in relation to the general considerations outlined above.

2. AIR DEFENSE AIR DEFENSE POLICY. Current War Department Air Defense Policy is stated in Field Manual 100-20, Field Service Regulations, subject: "Command and Employment of Air Power", and Field Manual 1-25, Army Air Forces Field Manual, subject: "Air Defense". Following is an extract from paragraph 18, FM 100-20:-

"a. The active air defense means of an area may include fighter aviation, antiaircraft artillery, searchlights, barrage balloons and aircraft warning service. Areas of responsibility for active air defense will be prescribed by the air force commander. Normally, the tactical air force will be responsible for the active air defense of the battle area, utilizing fighter aircraft and the mobile aircraft warning service.

"b. When antiaircraft artillery, searchlights, and barrage balloons operate in the air defense of the same area with aviation, the efficient exploitation of the special capabilities of each, and the avoidance of unnecessary losses to friendly aviation, demand that all be placed under the air commander responsible for the area. This must be done.

"c. Antiaircraft artillery attached or assigned to ground force combat units remain under the command of the ground force unit commander, as distinguished from the antiaircraft units assigned to an air

commander for the air defense of an area."

An ambiguity is noted between paragraphs b and c regarding command over antiaircraft artillery in a battle area. From these paragraphs the inference is drawn that antiaircraft units assigned or attached to ground forces are considered to be engaged in antiaircraft defense, which is a local defense problem, and are not engaged in air defense, which is conducted on an area basis.

3. APPLICATION OF WAR DEPARTMENT POLICY TO THE THEATER.

a. Origin of Policy. The War Department air defense policy had its origin in the concepts of unified command developed in the Air Defense of Great Britain (ADGB) in 1940, whereby the A. S. F. Fighter Command was given "operational command" over ... Command, with responsibility for strategic dispositions and interservice standing operating procedures, and "operational control" over local ... defenses, with authority to restrict ... gunfire to prevent engagement of friendly aircraft. The conditions of ADGB during the Battle of Britain will probably never be repeated. The frequency of mass air attacks together with the relative ineffectiveness of the ... artillery of that period against unseen aircraft made expensive standing air patrols necessary and dictated the requirement that defensive air operations should have the highest priority. The rapid development of gun laying radar for unseen firing, proximity fuzes, and automatic equipment has brought ... artillery to such a high level of performance that the original conceptions of ADGB are now questioned.

b. Defense of Army Areas. War Department air defense policy deviates from British policy with respect to defense responsibilities in army areas. Whereas in army areas the British distinguish between "air defense", which is an Air Force responsibility, and "antiaircraft defense" which is a Ground Force responsibility (with the principle retained of operational control by the Air Force), the War Department policy attempts to carry the ADGB concept into army areas and at the same time leave ... artillery assigned or attached to armies under Ground Force Command. As a result, War Department policy is capable of various interpretations. In all of the campaigns in the Mediterranean and European Theaters, the U.S. forces took a loose interpretation of the War Department policy, which was in effect the British policy for defense of army areas, and achieved a consistently high degree of success. Based upon every operational precedent which exists, it is considered that the idea of a coordinated antiaircraft-air defense is sound for the following reasons:-

- (1) It places responsibility for air defense upon the Air Force commander, whose fighter aviation possesses the necessary flexibility for conducting this defense on an area basis.
- (2) It places the responsibility for antiaircraft defense, which is essentially local in nature, upon the Ground Force commander, who has the primary interest in the defense of vital installations in his area of responsibility.
- (3) It allows the same degree of operational control for the purpose of avoiding unnecessary losses to friendly aviation as does the system of overall Air Force command.
- (4) It leaves the Ground Force commander free to exploit the dual purpose capabilities of ... artillery weapons when the situation permits.

- (5) It avoids an unnatural division in the AA Artillery forces in an Army area, makes possible a better grouping of units, insures uniformity of training and of administrative and supply procedures.

c. Defense of the Occupied Zone. From the standpoint of defense against air attack, the problems and responsibilities of the Military District commanders are regarded as essentially the same as those of Army commanders in a combat zone, and for the reasons enumerated in subparagraph b it is considered that all AA Artillery in the Occupied Zone should be assigned to the Armies. From the standpoint of internal security, it is considered essential that all weapons having dual purpose capabilities should be at the disposal of Ground Force commanders. If AA Artillery is assigned to the Air Force, the intention is to use the bulk of it for security of airfields. It is believed that a better solution to the airfield defense problem could be found by (1) guaranteeing a minimum scale of AA Artillery for the protection of each airfield against ground and air attack and (2) by placing "in support" of each airfield a small balanced force of infantry, combat engineers, and AA Artillery. This arrangement should not necessitate the displacement of units, or fractions of units, from their normal areas of responsibility.

4. CONCLUSIONS. It is concluded that:-

a. By a loose construction of War Department air defense policy, AA Artillery assigned to Armies for antiaircraft defense may be deployed in an area over which the Air Force has air defense responsibility, and the operations of the two coordinated, so that neither AA Artillery nor fighter aviation loses its flexibility and the danger to aviation from friendly AA gunfire is minimized.

b. That the above relationship, which may be described as a "coordinated antiaircraft-air defense" has been used successfully in every campaign in the Mediterranean and European Theaters and lends itself logically to the conditions of the Occupied Zone.

c. That when the requirements for internal security can be reconciled with the requirements for defense against air attack, AA Artillery should remain under Ground Force command, so as to insure maximum exploitation of the capabilities of AA weapons, best possible grouping of units within areas, uniformity of training, and uniformity of administration and supply.

d. That the security of airfields is a special problem which cannot be solved alone by AA Artillery but which requires the use of other arms as well.

5. RECOMMENDATIONS. It is recommended that a directive be issued incorporating the following points:-

a. Air defense of the Occupied Zone will be the responsibility of Commanding General, Ninth Air Force.

b. Antiaircraft defense of all installations within their respective Districts will be the responsibility of the Commanding General, Eastern Military District, and Commanding General, Western Military District.

c. Hq USFET will exercise overall coordination between the Theater air defense and antiaircraft defense elements. This coordination will include the issuing of procedure instructions governing AA gunfire, operation of aircraft warning and movement liaison systems,

establishment of joint LA Operations Rooms-Fighter Control Centers, and establishment of restricted areas. It will also include the establishment of minimum scales of antiaircraft defense for airfields, ports, and other static installations in which the Military District commanders do not have the primary interest.

d. LA Artillery for the protection of airfields, ports, and other static installations will be placed in support of the commanders thereof, in the same manner as will units of other arms having similar defense missions.

/s/ W. H. Drucker
/t/ W. H. BRUCKER,
Colonel, U.S.

APPENDIX XII

- 4 -

R E S T R I C T E D

APPENDIX XIII

CONTROVERSY OVER LOCATION OF

ARMY GROUP REAR AIR BOUNDARY

Appendix XIII contains correspondence relative to controversy between the Commanding General, 12th Army Group, and the Commanding General, Ninth Air Force, over command status of Antiaircraft Artillery units protecting Ninth Air Force airfields with respect to location of the Army Group Rear Air Boundary. This discussion had to be settled by General Eisenhower. These letters are on file in the Antiaircraft Artillery Section, Headquarters Fifteenth U.S. Army, APO 408.

APPENDIX XIII

R E S T R I C T E D

SUPREME HEADQUARTERS
ALLIED EXPEDITIONARY FORCE (MAIN)
AIR STAFF

2 December 1944.

370.

SUBJECT: Study by ADD, SHAEF, "Anti-aircraft Defenses, Ninth Air Force Installations".

TO : Chief of Staff, SHAEF.
(Thru: ADD, SHAEF.)

* * * * * E X T R A C T * * * * *

1. A-3 does not concur.

2. Reasons.

a. The policy recommendation of the Commanding General USSTAF (Tab A) as to command of all AA units not organic to combat units is avoided and does not establish Theater Policy in accord with FM's 100-20 and 1-26 as is requested.

b. The request of the Commanding General, Ninth Air Force (Tab B) for policy change to enable him to defend his air bases, wherever located, is definitely refused.

c. Revision suggested by Air Defense Division does not guarantee adequate protection of airfields forward of the established Rear Air Boundary.

3. Discussion.

a. Extracts of the pertinent Field Manuals which indicate War Department Policy are attached hereto as Inclosure 1. In accordance with this policy Sixth Army Group has attached AA to First Tactical Air Force (Prov) for defense of its airfields and Sixth Army Group Hqs., wherever located. To the contrary Twelfth Army Group insists that any AA entering its boundaries shall come under Army Group control (Inclosures 2a and 2b).

b. Comments on contrary statements appearing in letters of the Commanding Generals of Twelfth Army Group (Tab C) and Ninth Air Force (Tab B) are as follows:-

(1) Twelfth Army Group (Tab C) advances that all AA in Army Group areas is a ground weapon and at the disposal of the Ground Force Commander. Ninth Air Force (Tab B) considers AA other than that organic to the combat units as an air defense weapon. Use, command, supply and administration are therefore treated differently because of the conflicting viewpoints. On the one hand Tab C treats all AA units as belonging to the Ground Forces whereas Tabs A and B consider that AA units used in the coordinated air defense should be on the same command status as other air defense weapons used in the coordinated air defense. The latter view is strictly in accordance with War Department Policy as expressed by FM 100-20.

(c) It can be argued that Army Group is entitled to AA units based on combat units assigned. The Air Force does not argue this point but does submit that all AA units assigned, including those staging, should be credited to their allotment, if they are to demand allotment on all assigned combat units, whether active or not.

(4) At the same time, the IX A.D.C. has had to furnish 12 Gun Battalions and 3 A.W. Battalions to the Antwerp defenses. In spite of the position, known to Twelfth Army Group, constant demand for additional A.W. is being made. (See Incls 5. and 6.)

d. The exception taken to para 4, Tab B, by para h, Tab C is only a difference in wordage since the only source from which Twelfth Army Group can be reinforced with A.W. is from Ninth Air Force resources and the effect, in fact, is as stated in para 4, Tab B.

4. Conclusions.

a. That the command policy in this Theater as proscribed for A.W. in para 11, Ops Memo No. 7 (Tab B) has proven thoroughly unsatisfactory because of the non-cooperative policy of Twelfth Army Group although War Department Policy was modified for use in this Theater so as to satisfy the desires of the Commanding General, Twelfth Army Group;

b. That Twelfth Army Group makes use of the provisions of Ops Memo No. 7 to effect command of all A.W. within their areas, to augment this A.W. beyond their proper share at the expense of rear area installations, including airfields, and to establish priorities within their areas without sufficient regard to air force installations; and,

c. That they refuse to make use of the Rear Air Boundary with its possibilities for ensuring the best possible use, including adequate defense of air fields, of all air defense weapons.

5. Recommendations.

a. That SHAEF Ops Memo No. 7 be amended, insofar as American Troops in this theater are concerned, to accord with War Department Policy as defined in FM's 1-26 and 100-20. Command decision is required, notwithstanding previously expressed opinions of the various Commanders, and should be based on operational requirements in enemy territory and during the post hostility occupation period as well as present needs.

* * * * * E X T R A C T * * * * *

/s/ H. B. Thatcher,
/t/ H. B. THATCHER,
Brigadier General, U.S. Army,
Assistant Chief of Staff, G-3.

SUPREME HEADQUARTERS
ALLIED EXPEDITIONARY FORCE (MAIN)
AIR STAFF

10 January 1945.

MEMORANDUM:

SUBJECT : Antiaircraft Defense of Ninth Air Force Installations
TO : Air Defense Division

1. Returned herewith is your Staff Study of Antiaircraft Defense of Ninth Air Force Installations.
2. You will observe that nothing concrete has materialized from this study due to a total lack of "ground giving" by the interested parties. In an effort to further the attempt of Air Defense Division to arrive at a compromise solution, the A-3 non-concurrence is hereby withdrawn.
3. Your proposed letters to General Spaatz and General Bradley are herein concurred with the following exceptions:
 - a. That S.H.A.E.F. designate the Army Group Rear/Air Boundary.
 - b. That Army Group antiaircraft units be employed to defend combat troop installations excluding airfields wherever located, and that Air Defense Command defend airfields, supply installations, and lines of communications, all of which are essentially static in nature.

/s/ H. B. Thatcher,
/t/ H. B. THATCHER,
Brigadier General, U.S.A.,
Asst. Chief of Staff, A-3

370 (A... Section)

APPENDIX XIII

- 4 -

R E S T R I C T E D

Dear General Bradley,

I have given the problem of air defence in this Theater further thought, and have found your letter of 26 November very helpful in enabling me to reach a decision.

You are probably familiar with the current War Department policy regarding the air defence of rear areas, which provides for an integrated Air Defence Command, consisting of fighter aircraft, anti-aircraft artillery, barrage balloons, and aircraft warning units. This policy I consider sound, as it permits air defence to be dealt with by a single commander on the area basis. I realize that there are practical limitations to the extension of this system into the forward areas, where the Ground Force Commander's interests are paramount and where he must be able to employ his forces as he sees fit.

I feel that the boundary between areas of air defense responsibility must be based upon the principle that the Army Group's allotted AA artillery is employed to defend combat troops and installations, including airfields situated well forward, and that Air Defence Command defends supply installations, the lines of communication, and the more rearward Air Force establishments, all of which are essentially static in nature and less subject to fluctuations in day-by-day operations. The division of responsibility should be the "rear air boundary" drawn by the Army Group Commander in accordance with his forward area requirements for anti-aircraft protection. As the Armies move deeper into Germany the Air Defence Command should follow behind, establishing its rear area defence in the same manner as it does in the Communications Zone.

I realize that this procedure is contrary to your wish to retain command over all anti-aircraft artillery in your Army Group area, but I feel that its adoption will leave you and your Army Commanders free to conduct ground operations without the constant distractions arising from problems of secondary importance to you.

Sincerely,

/s/ Dwight D. Eisenhower
/t/ DWIGHT D. EISENHOWER

Lieutenant General Omar N. Bradley,
Headquarters, Twelfth Army Group,
APO 655, U. S. Army

Office of the Chief of Staff
SGS

Subject: *AM* Defense for
Continental Operations

File No. 384.51/1

18 January 1945

Dear General Spaatz:

I am quite in agreement with your views on an integrated air defense in the Theater as proposed in your letter of 20 November. As you know, we have had such a procedure as you describe in effect in the Communications Zone since early August, and I am now extending it to include the Army Group areas behind a "rear air boundary", where the installations are essentially static in nature, and thus lend themselves readily to this type of defense. Forward of the "rear air boundary" the problem of air defense is closely associated with ground operations, and naturally should be the concern of the Army Group Commander.

Regarding the complaint of Vandenberg that he is not obtaining proper anti-aircraft defense for his airdromes, Bradley has stated that this is the first time that he has heard of any dissatisfaction. I am certain that this is a matter which can be easily resolved on the basis of mutual agreement between Bradley and Vandenberg.

Sincerely,

/s/ Dwight Eisenhower
/t/ DWIGHT EISENHOWER

Lieutenant General Carl Spaatz,
Headquarters U.S. Strategic Air
Forces in Europe.
APO 633, U. S. Army

SHAFF
AIR DEFENSE DIVISION

CHIEF
Air Defense Div.

AG of S
A - 2

D/ CHIEF
Air Defense Div.

Operations
Section

Passive Air
Defense
Section

Technical
Section

Asst. CHIEF
Air Defense Div.
& Chief Special
Sub Division

Air Advisory
Section

Continental
Crossbow Collating
Section

Scientific Advisory
Section

Crossbow Intelligence
Interpretation Section

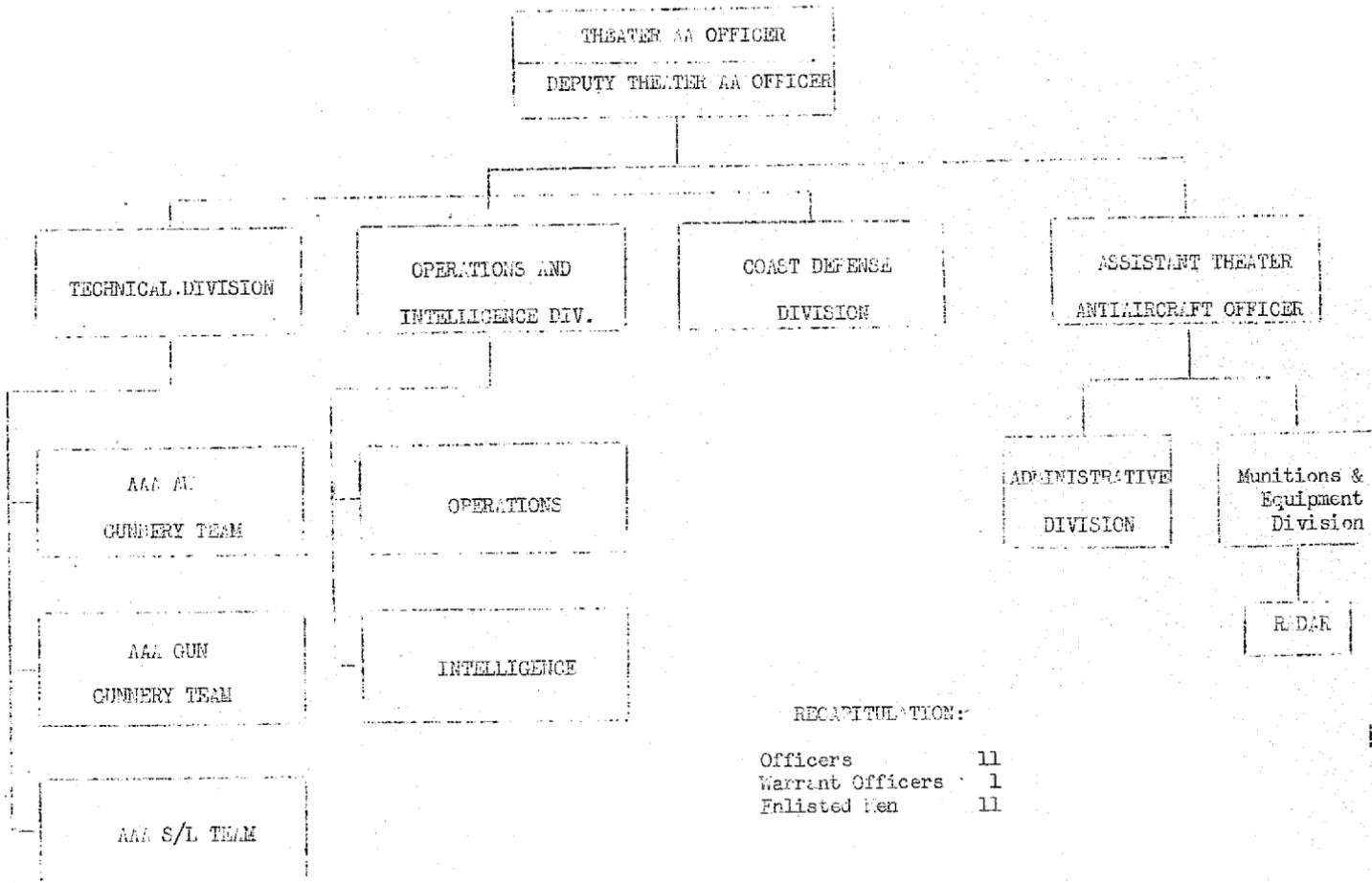
Continental
Crossbow Forward
Unit

Special Defense
Force
Royal Artillery

R
E
S
T
R
I
C
T
E
D

APPENDIX XIV

OFFICE OF THE THEATER ANTI-AIRCRAFT OFFICER

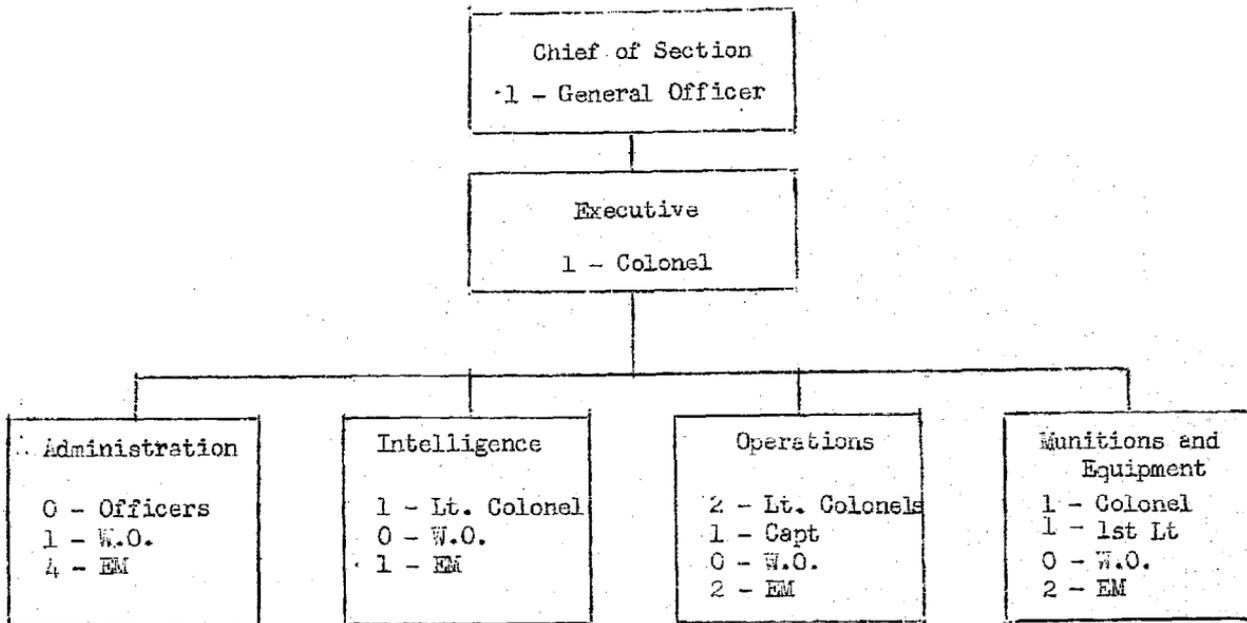


RECAPITULATION:

Officers	11
Warrant Officers	1
Enlisted Men	11

APPENDIX XV

12TH ARMY GROUP
ANTI-AIRCRAFT SECTION



RECAPITULATION

Officers - 9
Enlisted Men - 9

than was desirable in order to avoid what might be construed by the division commander as interference with his own command functions over his attached AAA battalion. In one division the policy of the division command was to refer all AAA matters to his own AAA battalion commander and to accept his judgment in tactical matters before acceding to the recommendations or suggestions of higher AAA commanders. This, in effect, subjected the judgment of AAA brigade or group commanders to the approval or disapproval of a battalion commander. While perfectly proper from the division standpoint, this policy would not be conducive to the best results from the Corps standpoint.

* * * *

"(2) . . . Under this plan all AAA battalions would always be under the AAA command, subject to its supervision and control, receiving the benefit of training and supervision from those best qualified in the tactics and technique of antiaircraft artillery. The AAA battalions would always receive the proper and necessary guidance, assistance and control and the divisions would benefit by receiving more complete and effective AAA protection."

NOTE: Pertinent words and phrases applicable to the study of the AAA Section, General Board, have been underlined.

APPENDIX XVIII

- 2 -
R E S T R I C T E D

APPENDIX XIX

DIVISIONAL AAA OFFICERS' OPINIONS

Seven battalion commanders,

<u>NAME</u>	<u>COMBAT ASSIGNMENT</u>
Lt Colonel PHILIP I. BAKER,	CO, 575th AAA AF Bn (SP) - 11th Armored Division,
Lt Colonel RAYMOND E. DUNNINGTON,	CO, 486th AAA AF Bn (SP) - 3d Armored Division,
Lt Colonel LAWRENCE W. LINDEGER,	CO, 554th AAA AF Bn (M) - 29th Infantry Division,
Lt Colonel JAMES A. MAY,	CO, 530th AAA AF Bn (M) - 71st Infantry Division,
Lt Colonel WILLIAM S. McARTHUR,	CO, 574th AAA AF Bn (SP) - 13th Armored Division,
Lt Colonel EDGAR H. THOMPSON,	CO, 433d AAA AF Bn (M) - 70th Infantry Division,
Lt Colonel BENJAMIN M. WARFIELD,	CO, 552d AAA AF Bn (M) - 78th Infantry Division,

interviewed by the AAA Section, Theater General Board, expressed opinions as follows:

1. Six out of seven declared that one AAA battalion is not sufficient for a division.
2. All stated that the antiaircraft artillery unit should be organic with the division.

NOTE: Record of these interviews are filed in the AAA Section, General Board, USFET, APO 408.

APPENDIX XIX

R E S T R I C T E D

APPENDIX XX

CONFERENCE OF ARMORED FORCE OFFICERS

On 7 November 1945 the following officers were present at a conference of the Armored Section, Theater General Board:

<u>Name</u>	<u>Combat Assignment</u>
Lt. Gen. G. Koyes	Commanding General, II Corps
Maj. Gen. H. R. Allen	Commanding General, 12th Armored Division
Maj. Gen. J. M. Devine	Commanding General, 8th Armored Division
Maj. Gen. H. W. Grow	Commanding General, 6th Armored Division
Brig. Gen. T. E. Baudinet	Commanding General, Combat Command "B" 3rd Armored Division
Brig. Gen. J. D. Balmer	Commanding General, XXIII Corps Arty
Brig. Gen. J. E. Collier	Commanding General of a Combat Command, 2d Armored Division
Col. C. V. Bromley	Commanding Officer of a Combat Command, 12th Armored Division
Col. F. J. Brown	Commanding Officer of Division Artillery, 3rd Armored Division
Col. C. G. Dodge	Chief of Staff, 8th Armored Division
Col. K. J. Hendy	Commanding Officer of Division Artillery, 1st Armored Division
Col. C. I. Lutten	Commanding Officer of Division Artillery, 2d Armored Division

In a vote on the question, "Do you favor having an ~~11th~~ Regiment of two battalions in the Armored Division or one battalion as at present", eleven favored the Regiment.

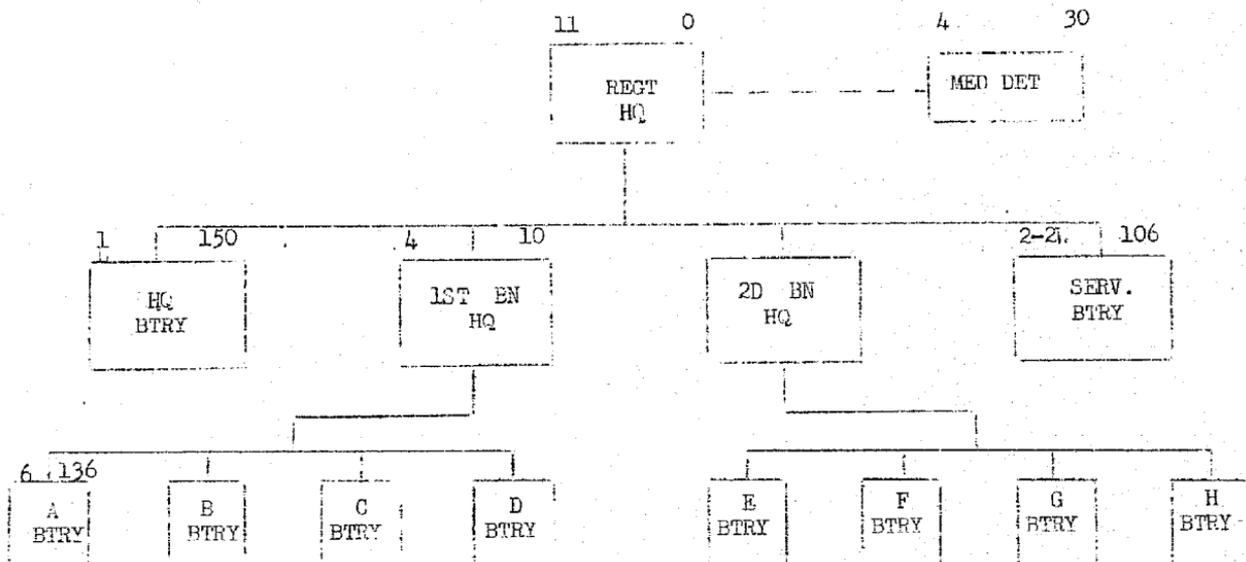
NOTE: The minutes of this conference are filed in the Armored Section, General Board, USNET, APO 408.

APPENDIX XX

R E S T R I C T E D

PROPOSED ORGANIZATION OF ANTI-AIRCRAFT ARTILLERY REGIMENT

(AUTOMATIC WEAPONS)



8 - 75 mm Automatic Cannon, Full-Track
 8 - 20 mm 4-Barrel Automatic Cannon, Full-Track) each btry identical

SUMMARY

Personnel (Approx.)

74 Officers
 2 Warrant Officers
 1394 Enlisted men

Armament

64 75mm Automatic cannon, full-track
 64 20mm 4-barrel Automatic Cannon,
 full-track

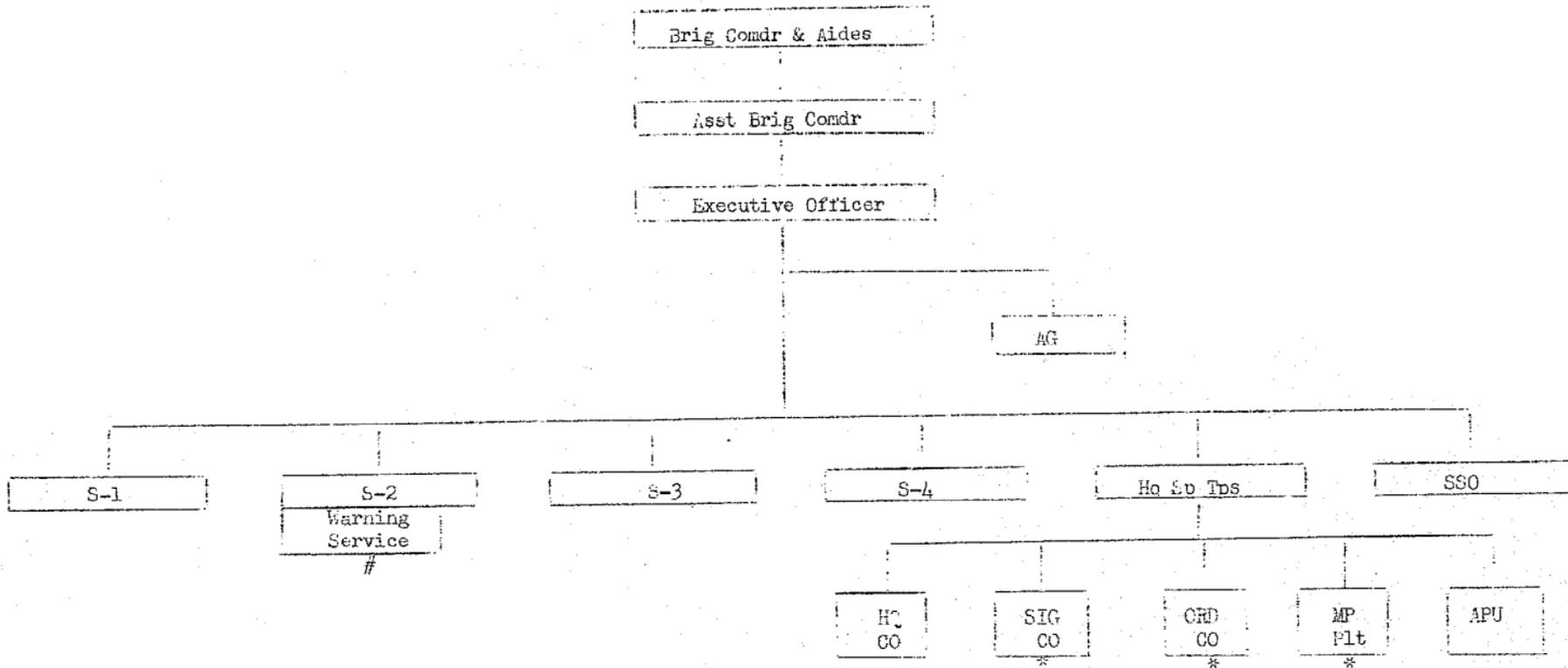
Vehicles (Approx.)

52 Trucks, cargo,
 with trailer
 82 Trucks, medium
 and light

RESTRICTED

APPENDIX XXI

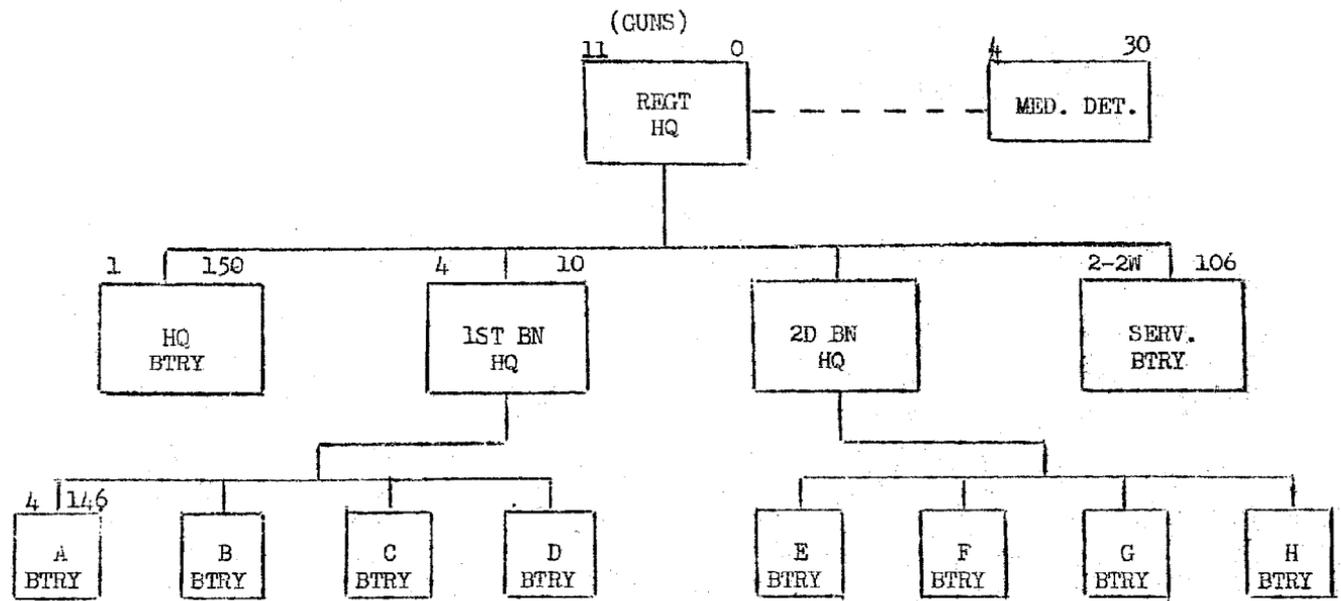
PROPOSED ANTI-AIRCRAFT ARTILLERY
BRIGADE HEADQUARTERS



Personnel to operate service will be provided by Signal Company
* C.O. also performs Special Staff functions

RESTRICTED
APPENDIX XXI

PROPOSED ORGANIZATION OF ANTI-AIRCRAFT ARTILLERY REGIMENT



4 - 90mm Gun
 4 - 20mm Multiple Barrel Automatic Cannon, Full Track } each battery identical

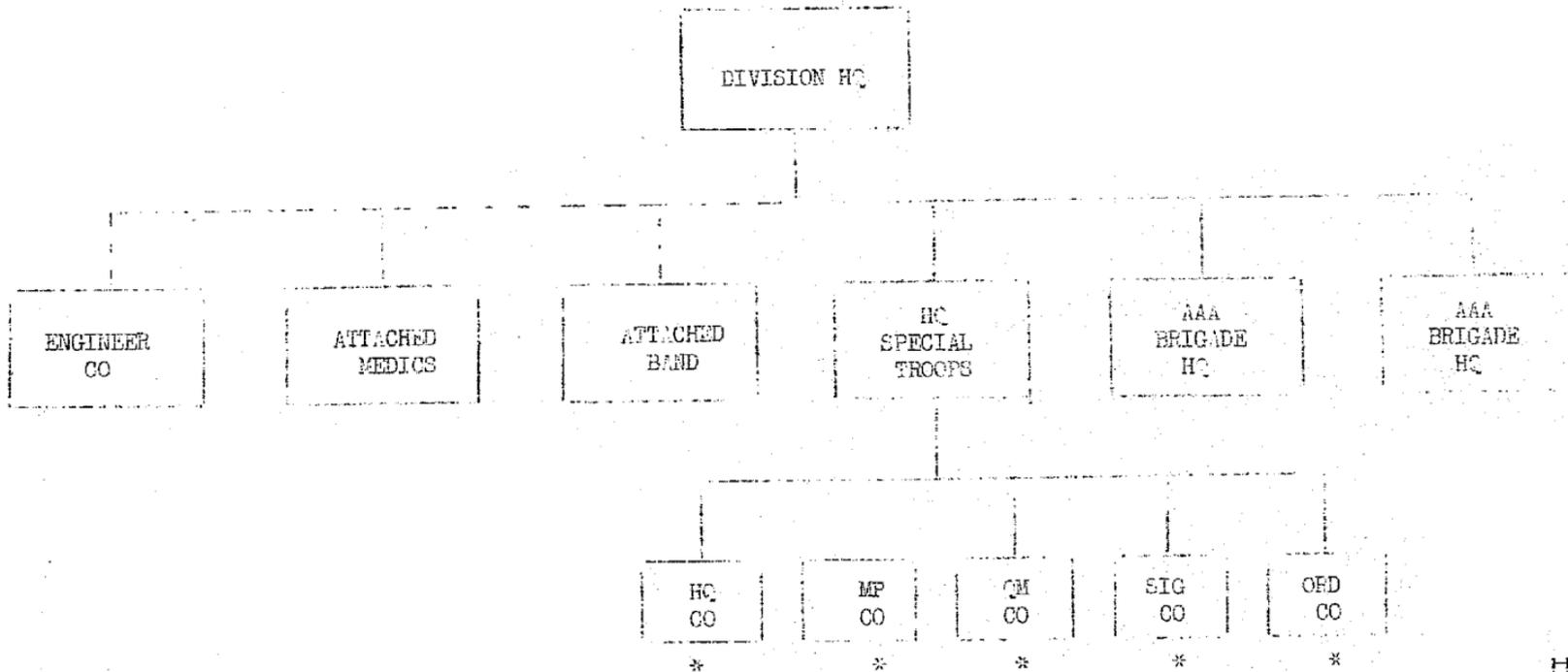
Personnel (Approx.)
 59 Officers
 2 Warrant Officers
 1474 Enlisted Men

SUMMARY
Armament
 32 - 90mm Gun
 32 - 20mm Multiple barrel Automatic Cannon, Full Track

Vehicles (Approx.)
 40 Tractors, High Speed, 18-ton
 12 Trucks, 4-5 Ton Tractor
 14 Trucks, K-60
 84 Trucks, medium
 66 Trucks, medium and light

RESTRICTED - 2 - APPENDIX XXII

PROPOSED ANTI-AIRCRAFT ARTILLERY DIVISION

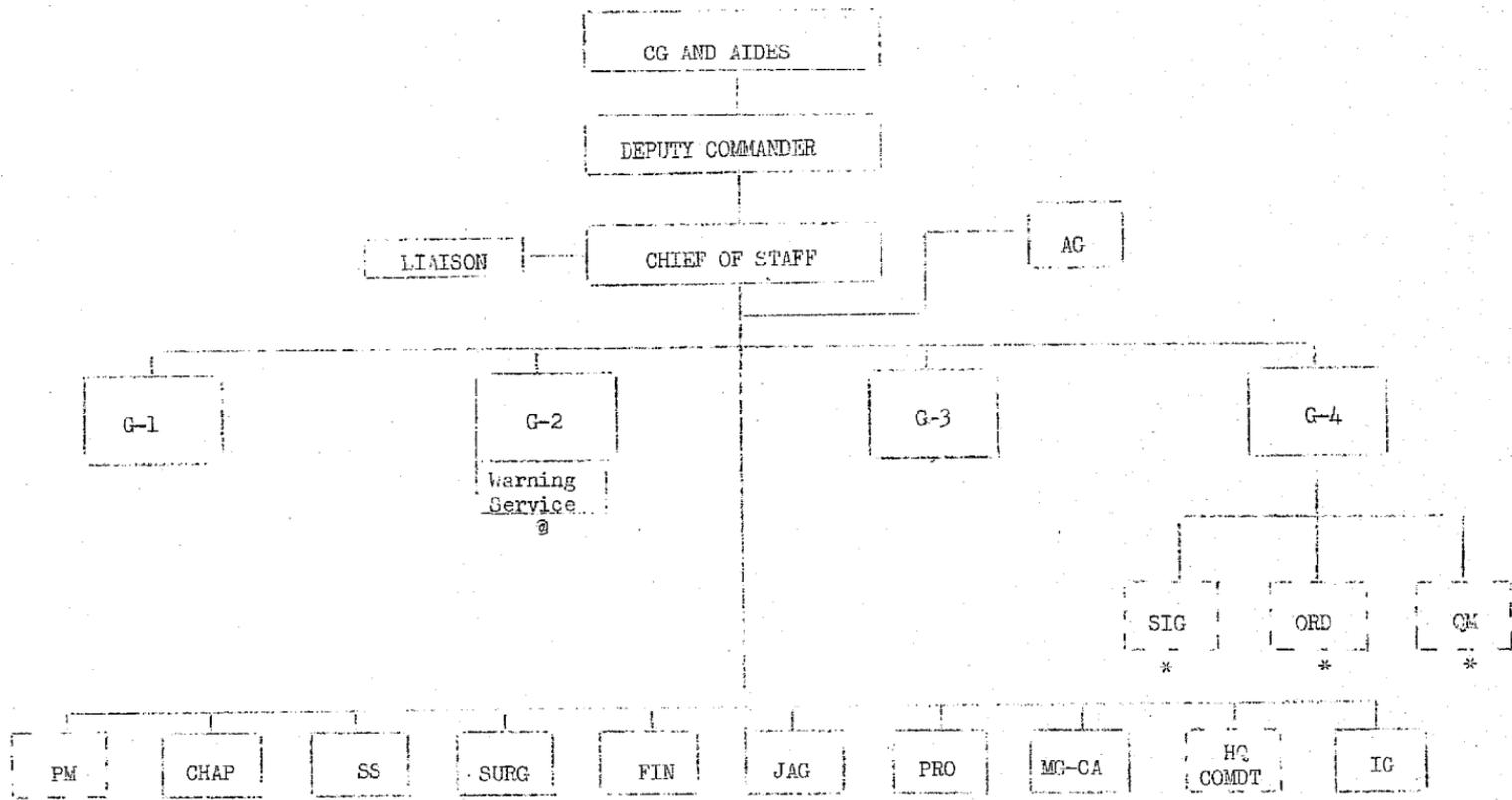


RESTRICTED

APPENDIX XIII

* C.O. also Performs Special Staff Work for the Division

PROPOSED ANTI-AIRCRAFT ARTILLERY
DIVISION HEADQUARTERS

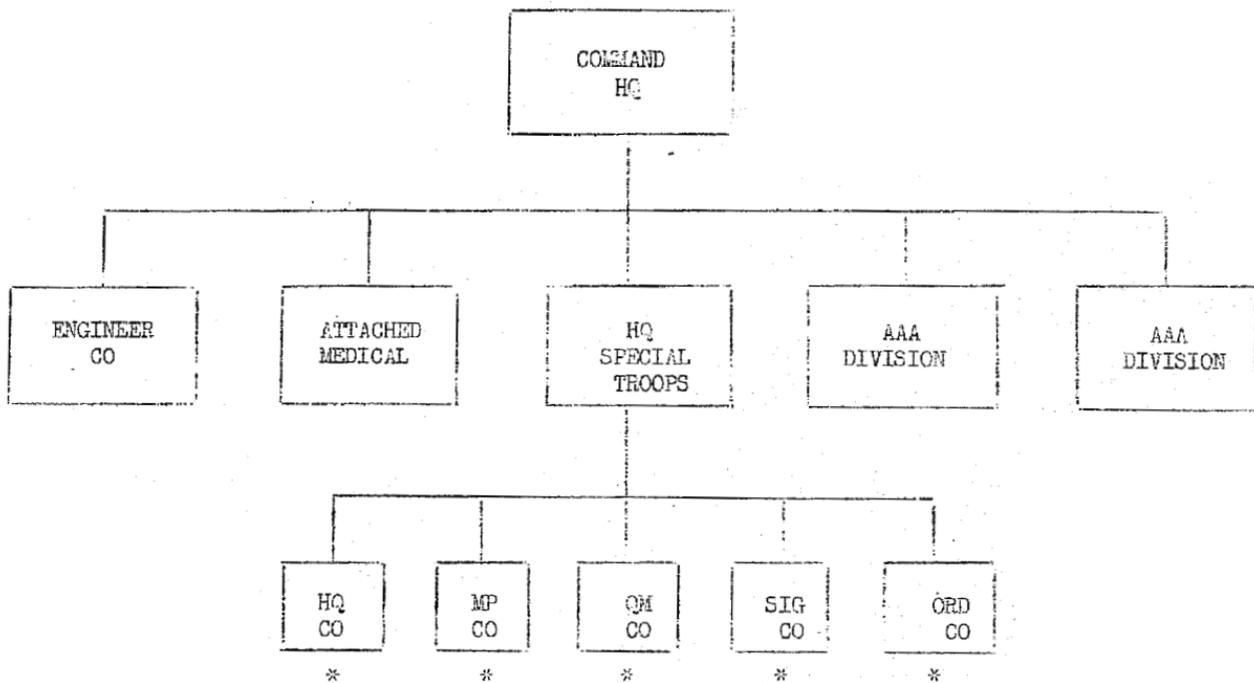


RESTRICTED - 2 -

APPENDIX XXIII

* Also commands special troop unit of his arm,
Is also C.O. Special Troops.
@ Troops for air warning furnished by Signal Company.

PROPOSED ANTI-AIRCRAFT ARTILLERY COMMAND

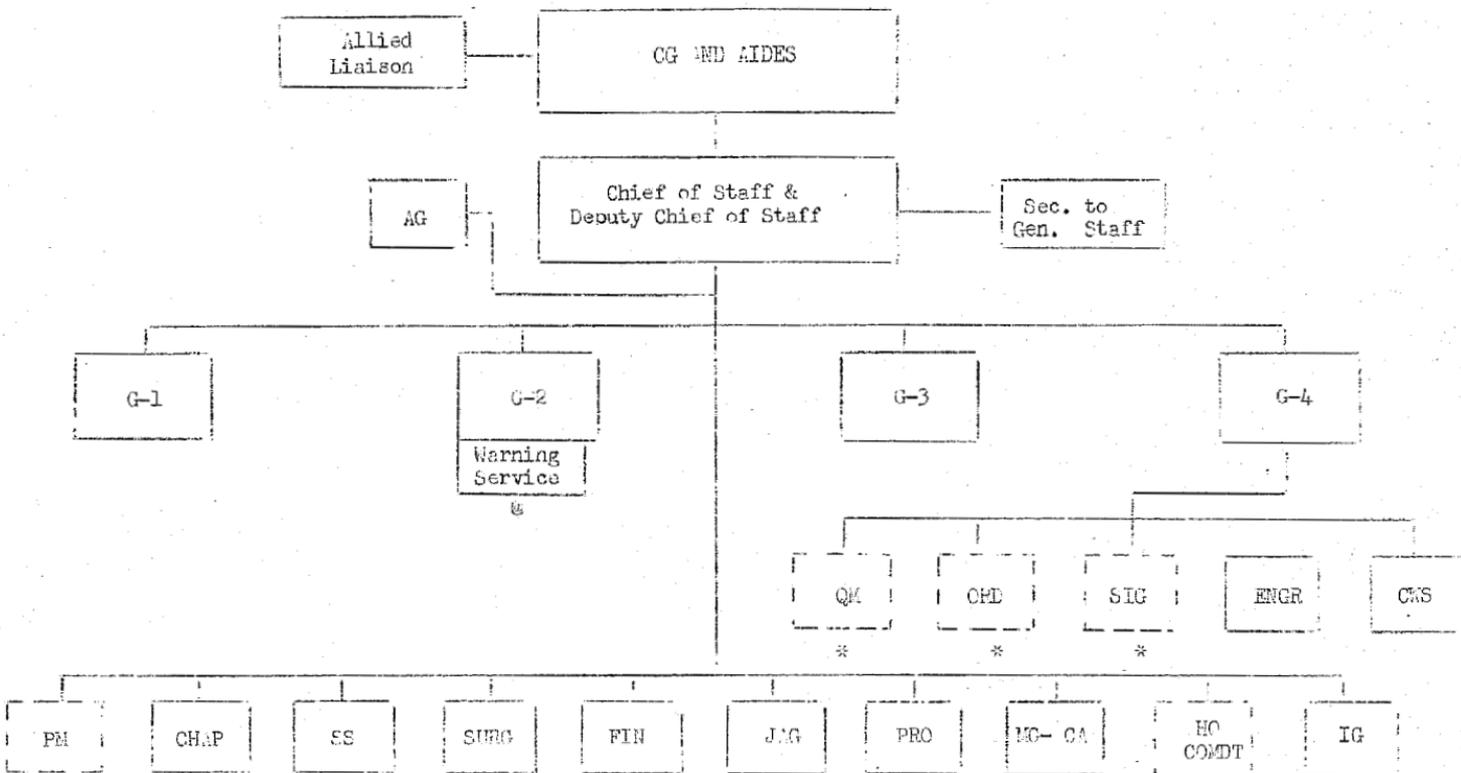


* C.O. also performs Special Staff Work for the Command.

RESTRICTED

APPENDIX XXIV

PROPOSED ANTI-AIRCRAFT ARTILLERY
COMMAND HEADQUARTERS



- * Also commands special troop unit of his arm.
- # Is also C. O. Special Troops.
- @ Troops for air warning furnished by Signal Company.