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THE GENERAL BOARD

United States Forces, European Theater

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QUARTERMASTER SUPPLY OPERATIONS

MISSION: Prepare Report and Recommendations Covering the Quartermaster Supply Operations in the European Theater of Operations.

The General Board was established by General Orders 128, Headquarters European Theater of Operations, US Army, dated 17 June 1945, as amended by General Orders 182, dated 7 August 1945 and General Orders 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.

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3. Form for Daily Telegram

4. Letter, Hq Seventh US Army, file AG 400.213 QM, subj: Quartermaster Requirements, 7 October 1944

5. Letter, Hq Seventh US Army, file AG 400.213 QM, subj: Quartermaster Class III Requirements, 7 October 1944.

6. Letter, Hq Communications Zone, ETOUSA, Office of the Chief Quartermaster, subj: Mission of the Charleroi Depot Area, Q-183, 2 March 1945.

7. Letter, Supreme Headquarters, Allied Expeditionary Forces, subj: Allocation of Credits - Civil Affairs Supplies/Stores - Operation OVERLORD - D plus 91 to D plus 120, dated 9 July 1944

8. Letter, Supreme Headquarters, Allied Expeditionary Forces, subj: Allocation of Credits - Civil Affairs Supplies/Stores - Operation OVERLORD, dated 19 October 1944

9. Letter, Hq Services of Supply, ETO, Office of the Chief Quartermaster, file 430.0 Sub, subj: Composite Ration for E.T.O.U.S.A., 27 April 1943

10. Contents and Allowances of Ration Accessory Convenience Packets.

11. Overissue of Rations to US Army Forces

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13. Organization of the British Army Catering Corps Published by the War Office (S.T.), October 1942

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16. Chapter 3, Quartermaster Service Reference Data, Volume II (Revised), Operations-Planning 1 January 1944, published by Hq Services of Supply, ETO, Office of the Chief Quartermaster.

17. Chapter 6, Quartermaster Service Reference Data, Volume II (Revised), Operations-Planning 1 January 1944, published by Hq Services of Supply, ETO, Office of the Chief Quartermaster.

18. Report of Class III Consumption Rates of US Forces in Final Advance to the Rhine, prepared by Supreme Headquarters, Allied Expeditionary Forces, 25 April 1945

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REPORT ON QUARTERMASTER SUPPLY OPERATIONS

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QUARTERMASTER SUPPLY OPERATIONS

PART ONE

INTRODUCTION

1. General.

a. The purpose of this study is to present in concise but detailed form the broad phases of the problems faced by the Quartermaster Service in the European Theater of Operations in the performance of its supply mission, and the organizations, methods and procedures the Quartermaster Service evolved to meet these problems.

b. In the preparation of this study close coordination was effected between the Quartermaster Section of The General Board and the Theater Chief Quartermaster, Theater Service Forces, European Theater. In order to assist The General Board, the Chief Quartermaster prepared a group of study analyses of various phases of Quartermaster supply activities in the European Theater of Operations. The studies have been carefully followed; exact quotations were made where appropriate and proper annotations made to the individual studies in the bibliography. The following is a list of documents made available by the Chief Quartermaster to the Quartermaster Section of The General Board in the preparation of this report:

(1) Critique of Quartermaster Planning for Continental Operations.

(2) Operational Study Number 1 - Definitions of Quartermaster Supplies.

(3) Operational Study Number 3 - Levels of Supply.

(4) Operational Study Number 4 - Quartermaster Logistical Data.

(5) Operational Study Number 5 - Quartermaster Supply Operations in the Communications Zone During Combat.

(6) Operational Study Number 8 - Manpower in Relation to Supply.

(7) Operational Study Number 9 - Requisitioning Procedures for Supply of an Overseas Theater from the Zone of the Interior.

(8) Operational Study Number 11 - Use of Personnel other than United States Military in the European Theater of Operations.

(9) Operational Study Number 13 - Broad Phases of Organization and Operation for Supply.

2. Quartermaster Organization for Supply in the European Theater of Operations.

a. The mission of the Quartermaster Service in the European Theater of Operations was similar to that of the Quartermaster Corps in the United States. The Chief Quartermaster was charged with the procurement, storage and issue of all Quartermaster supplies and with the operation and provision of all Quartermaster facilities and services. He not only was charged with the supply of United States military forces, but also with the supply of certain categories of personnel and units other than United States military.

b. In the performance of his mission the Chief Quartermaster acted in a dual capacity as Chief Quartermaster, European Theater of Operations, and as Quartermaster, Communications Zone. He acted, therefore, as a staff and planning as well as an operating agency. In the performance of its supply mission the Office of the Chief Quartermaster was organized into various divisions and branches, each with specific duties and responsibilities. The Supply Division was the overall agency for the procurement, storage and issue of Class II and IV supplies. The Subsistence Division performed similar functions for Class I supplies and, in addition, prepared menus and formulated mess policies. The Petroleum and Fuel Division concerned itself with all matters pertaining to Class III supply. The Procurement Division handled the local procurement of all items of all classes of Quartermaster supplies which were requested by other divisions. The Storage and Distribution Division was charged with the efficient movement and distribution of supplies and with the technical administration of depots. Other divisions and branches handled training and assignment of units and personnel, graves registration functions, and other field service activities.

c. The responsibility, authority and control for Quartermaster supply flowed from the Office of the Chief Quartermaster to the Quartermasters of Base, Intermediate and Advance Sections, Communications Zone. The Chief Quartermaster decentralized Quartermaster operations and activities whenever possible, so long as such decentralization did not jeopardize his own control. He was kept constantly informed on the status of supply in order to be able to support operations at all times. He designated depots according to the missions they were to perform, prescribed the stock levels each was to maintain, and controlled the shipment and distribution of supplies from ports to depots and between depots by means of distribution directives. In general, Advance Section depots were charged with supplying the immediate requirements of the armies. Stocks in Advance depots were to be maintained at such levels to insure the performance of the depot missions, and at the same time to allow the depots to keep pace with the forward movement of the armies. Stock levels in Advance Section depots were replenished and maintained by Base or Intermediate depots designated by the Chief Quartermaster for that purpose. Army, corps and division Quartermasters were charged with furnishing the immediate Quartermaster supply and service requirements to their respective units.

3. Operations. The planning of the invasion of the continent, and the operations that occurred after D-Day, required close coordination by the Chief Quartermaster with other staffs and services to overcome the problems that arose. The problem of shipping the initial requirements of low priority Class II supplies to the continent after D-Day was overcome by the development of beach maintenance and beach follow-up sets. There was a continuous problem of maintaining stock levels in the depots. Many changes in stock levels were made necessary by changing situations. There was a constant shortage of transportation which, particularly during the fast move of the Third U S Army across France, failed to meet Quartermaster requirements for the movement of Class III and other supplies. There was the problem of troop forecasting which, from the level of the Chief Quartermaster to that of the division Quartermaster, is one of the most essential elements of sound supply planning. Failure in troop forecasting was one of the chief defects in supply planning for operations in the European Theater from a Quartermaster viewpoint. There was the problem of maintaining a balanced stock of type "A" and "B" rations in the various supply points, and in coordinating the daily deliveries on the daily train with the requirements as set forth in the daily telegrams. Maintenance and logistical factors were constantly revised and new factors evolved, based upon experience in the European Theater. The supply of gasoline and the continuous drain on the supply of gasoline containers continually taxed the facilities of the Quartermaster service.

4. Scope. This volume contains four related subjects. Part two deals with activities common to all classes of Quartermaster supply, including transportation and labor. Part two also outlines the methods, policies and procedures used in the supply of other than United States Army forces, including the U S Navy and Quartermaster supply and services peculiar to the United States Air Forces. Each of the other parts is limited to a study of the methods, policies and procedures of a specific class of supply. The total study covers, as briefly as possible, but in sufficient detail to bring out the broader aspects, the supply activities of the Quartermaster Service in the European Theater of Operations.

PART TWO

GENERAL QUARTERMASTER SUPPLY, TRANSPORTATION, LABOR AND SUPPLY OF OTHER THAN US ARMY FORCES

CHAPTER 1

CLASSES OF SUPPLY

SECTION 1

WAR DEPARTMENT DEFINITIONS

5. Definitions in War Department Field Manuals.

a. The War Department has established five classes of supply which apply to all Services. They are defined in Field Manual 100-10 and are quoted below:[1]

> "Class I Supplies. Those articles which are consumed at an approximately uniform daily rate irrespective of combat operations or terrain and which do not necessitate special adaptation to meet individual requirements, such as rations and forage.
>
> Class II Supplies. Those authorized articles not included in Class IV, for which allowances are established by Tables of Basic Allowances, Tables of Allowances, and Tables of Equipment.
>
> Class III Supplies. Fuels and lubricants for all purposes except aviation, including gasoline for all vehicles, diesel oil and coal.
>
> Class III (A) Supplies. Aviation fuels and lubricants.
>
> Class IV Supplies. Supplies and equipment for which allowances are not prescribed, or which require special measures of control and are not otherwise classified. Normally such supplies include fortification materials, construction materials, aircraft and articles of a similar nature.
>
> Class IV (E) Supplies. Complete airplanes, airplane equipment and all spare parts and supplies required to maintain the complete airplane in commission.
>
> Class V Supplies. Ammunition, pyrotechnics, antitank mines and chemicals."

b. The following definitions for classes of supply are listed in Field Manuals 10-5 and 10-10:[2,3]

> Class I - No change from definition in Field Manual 100-10.

Class I - No change from definition in Field Manual 100-10.

Class II - Those authorized articles for which allowances are established by Tables of Basic Allowances and Tables of Allowances, such as clothing, gas masks, arms, trucks, radio sets, tools, and instruments.

Class III - Engine fuels and lubricants, including gasoline for all vehicles and aircraft, diesel oil, fuel oil, and coal.

Class IV - Those articles of supply which are not covered in Tables of Basic Allowances and demands for which are directly related to operations contemplated or in progress (except for articles in Classes III and V), such as fortification materials, construction materials, and machinery.

Class V - No change from definition in Field Manual 100-10.

SECTION 2

DEFINITIONS DEVELOPED IN THE EUROPEAN THEATER OF OPERATIONS

6. Definitions prescribed by the Chief Quartermaster, European Theater of Operations. The Quartermaster Service Reference Data, Volume II, Office of the Chief Quartermaster, European Theater of Operations, dated 1 January 1944, gives the following definitions for classes of supply.[4]

a. Class I - As stated in Field Manual 100-10, War Department, 15 November 1943.

b. Class II - Those supplies and equipment for which allowances are established by Tables of Allowances, Tables of Equipment and OQMG Circular 1-18; namely, clothing and equipage used by the individual and also organizational equipment such as heavy tentage, axes, field ranges, and any other items to be used for the whole of the organization; also items of an expendable nature such as soap, stationery and brooms.

c. Class III - Petrol (Gasoline, oil and lubricants and solid fuels (coal, coke and wood).

d. Class IV - Miscellaneous articles of supply such as post exchange items, special sales store supplies, repair supplies and equipment, depot equipment or other such supplies which are not covered in documents establishing Class II allowances and the demands for which are directly related to the operations contemplated or in progress.

e. Class V - Ammunition, pyrotechnics, antitank mines and chemicals. These are not supplied by the Quartermaster Service.

SECTION 3

EUROPEAN THEATER OF OPERATIONS EXPERIENCE WITH DEFINITIONS

7. Class I Supplies.

a. The First US Army carried and issued solidified alcohol heat units as Class I supplies,[5] in contradiction to Circular 23, Headquarters European Theater of Operations, which listed this as an item of expendable Class II supply.[6] In the Third US Army the Class I section was responsible for the issue of gratuitous post exchange supplies, whereas the Class II and IV section was responsible for the distribution of post exchange sales items.[7] In the report for September 1944, the Third US Army Quartermaster stated that he was issuing gratuitous post exchange items through Class I channels but that the stocks of those items were stored in a Class II and IV depot.

b. Due to inconsistencies and misconceptions such as these that arose throughout his experience in the European Theater, the Chief Quartermaster recommended the following definition of Class I supplies:[9]

> "Class I - subsistence rations, subsistence ration accessories, and those items which are distinctively necessary and exclusively used in the handling and preparation of the above products, such as bread sacks, solidified alcohol heat units, coffee bags, etc."

8. Class II and IV Supplies.

a. Research failed to reveal any definition of these two classes of supply published by any of the field forces. However, the field forces were not always clearly decided as to what exactly was the difference between Class II and IV items. One Army Quartermaster, on being asked to separate Class II and IV items on the daily telegram, stated that "no one can determine which are to be Class II or IV items".[8] This confusion results from the existing definitions of Class II and IV supply. Heavy tentage is listed under Class II because its issue is provided for in Tables of Equipment. Tentage for housing purposes, however, was considered by some agencies as Class IV supply.[9]

b. Class II and IV Supplies were combined and made the responsibility of one sub-section both in the Offices of the Army Quartermasters and also in the Office of the Chief Quartermaster, European Theater of Operations. Maximum levels of supply for these two classes were prescribed for the combined group in terms of days of supply.[7] Reports of levels of supply on hand were made for the combined group and were also given in days of supply.[10] However, since Class II supplies were procured primarily on the basis of allowances, and Class IV supplies were procured on the basis of specific needs for planned operations, the procurement of these two classes required that each class be separated on requisitions to the Zone of the Interior. The lack of a clear distinction between the two classes made such separation difficult, not only at the higher levels but also among the combat troops, and caused further confusion when opinions differed.

c. On the basis of three years' experience the Chief Quartermaster, European Theater of Operations, re-

commended the following definitions of these two classes of supply:[9]

(1) "Class II Supplies.

"A. T/E Equipment:

Individual or organizational clothing and equipment, allowances of which are covered by T/E's and T/A's.

Examples:

Clothing - shoes, overcoats, socks, underwear.

Equipment - individual equipment as authorized by T/E 21 - blankets, web equipment, shelter halves; organizational equipment as authorized by T/O's and T/E's - field ranges, heavy tentage, cots, G.I. cans, etc.

"B. Expendables:

Expendable supplies covered by allowances contained in official War Department or Theater publications.

Examples:

Cleaning and preserving materials - soap, brooms, mops and brushes.

Office supplies - stationery, pencils, paper clips, etc.

"C. Spare Parts:

Maintenance and repair parts, and component parts for the above Class II items.

Examples:

Field range parts; hammers and saws which are components of carpenter's tool kit, etc.

"Issue of any Class II items in excess of the allowances prescribed in T/E's and T/A's or documents covering expendable supplies does not change its supply classification. Such issues are known as Class II issues in excess of authorized allowances.

"Those items which are contained in T/E's or other documents mentioned in (1) A, B and C above, but which are used exclusively in the retail handling of basic products of other classes will not be considered as Class II, but will be considered as an item of the class in which its

related item falls.

Example:

Gasoline cans are T/E equipment yet they are used exclusively in the handling of gasoline and are therefore to be considered as a Class III item.

(2) "Class IV Supplies.

Those articles of supply which are not contained in documents which establish Class II allowances:

A. Officers, nurses and WAC officers distinctive items of clothing and accessories.

B. Items procured specifically for such personnel as American Red Cross, War Correspondents, and sold to such personnel.

C. Supplies procured for specific projects for a nonrecurring operation; examples, American flag arm bands, nausea bags, etc.

D. Medals and decorations.

E. Material handling equipment items which are not contained in T/E and T/A allowances."

9. Class III Supplies. The field forces in the European Theater of Operations followed generally the concepts of higher headquarters in the definition of Class III supplies. The Chief Quartermaster, however, took exception to the existing definition of Class II supply and stated:[9]

"Gasoline cans under the War Department definition are Class II items; yet the procurement, storage and issue of gasoline cans is directly related to the procurement, storage and issue of gasoline. Gasoline cans are out of place in a Class II depot, on a Class II daily train, or a Class II requisition. They are required at Class III dumps and should be included along with other items used in the retail distribution of POL under the classification of Class III supplies. Examples: Gasoline cans, gasoline dispensers, gasoline hose, etc."

He therefore recommended that the following definition be adopted:[7]

"Class III - Gasoline, oil, lubricants and solid fuels (coal, coke and wood), and such items as are distinctively necessary and exclusively used in the retail handling of the above products. Examples: Gasoline cans, gasoline dispensers, gasoline hose, etc."

10. Post Exchange Items. Regarding the issue of post exchange items and the establishment of an additional class of supply for these items, the Chief Quartermaster stated:

> "One other difficulty has been the lack of a clear cut policy on the classification of articles which are sold and distributed through Army Exchange facilities. This group of items could be termed as follows: Those items necessary to promote morale and personal hygiene, which are procured by the Quartermaster Service but which are turned over in wholesale lots to the Army Exchange Service, or to agencies such as the Navy, Red Cross, etc., for distribution and sales purposes. These items have been classified both in this Theater and by the Zone of Interior in Class I, II and IV. There is no clear-cut official classification of these items. They present a special problem in that under some circumstances they may be issued as a daily or weekly ration, while in the majority of cases the items are distributed through sales facilities. They are procured, stored and sold in bulk by the Quartermaster Service to the Army Exchange. Unlike all other items handled by this Service it is not the responsibility of the Quartermaster Service to insure their delivery to the individual consumer. For this reason it is advisable to establish an additional class of supply known as "PX Items".
>
> "The additional class of supplies should be referred to simply as "PX Items" and should be defined as follows:
>
>> "Those items, necessary to promote morale and personal hygiene, which are procured by the Quartermaster Service, but which are turned over in wholesale lots to the Army Exchange Service or to other agencies such as the Navy, Red Cross, etc., for distribution and sales purposes. The same items if distributed gratuitously by the Quartermaster Service retain classification as a 'PX Item'."

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

11. Conclusions. Various inconsistencies and problems arose throughout the European Theater of Operations, due to the many interpretations of definitions of the classes of supply.

12. Recommendations. That appropriate agencies of the War Department amend pertinent War Department Field Manuals to standardize definitions for classes of supply in conformity with the recommendations submitted by the Chief Quartermaster, European Theater of Operations. (Par 7b, 8c, 9 and 10).

Bibliography

Chapter 1

1. FM 100-10 (FSR).

2. FM 10-5, 29 April 1943.

3. FM 10-10, 2 March 1942, Change 1, 8 October 1942.

4. QM Service Reference Data, Vol II, OCQM ETOUSA, 1 Jan 44.

5. SOP for Operation of Class I Truckheads, First US Army, 20 Nov 44.

6. ETOUSA Cir 23, 4 Mar 44.

7. After Action Report, Third US Army (QM Section).

8. 1st Ind. 400.312 (G-4 Sup) Hq 12th Army Group to CG, Communications Zone, 25 Dec 44 and "Memo for Record" attached thereto by 12th Army Group.

9. QM Operational Analysis Study #1, Subject: "Definitions of Classes of Supply" Hq TSF, ETO, OTCQM (Rear) APO 587, undated.

10. Ltr Hq 12th Army Group, file 400 (G-4 Sup) 13 Feb 45, subject: "Levels of Supply", to CG, Communications Zone.

CHAPTER 2

LEVELS OF SUPPLY

SECTION 1

EXISTING DEFINITIONS

13. Day of Supply. A day of supply is the estimated average expenditure of various items of supply per day in a campaign, expressed in quantities of specific items, in rounds per weapon, or in pounds per man per day.[1] In dealing with Quartermaster supplies, the following detailed definitions were employed in the European Theater of Operations:

a. Class I. A ration is the food required to subsist one man for one day. A day of supply for one man of Class I therefore was set at one ration.[2]

b. Class II & IV. A day of supply of Class II could not be computed accurately, and was therefore only regarded as a unit of measure. Actual experience showed the expenditures of various items to be variable under campaign conditions. Class IV items are those required for special or particular types of operations, and requirements varied considerably as the combat conditions changed. A day of supply of Class II or IV cannot be expressed in pounds, but must be expressed by item. Days of supply were computed based on the War Department replacement factors, which gave the expected average over-all expenditure of each item.[4,5] The allowances as authorized by these replacement factors, converted into pounds, provided a figure of .85 pounds per man per day.[17]

c. Class III. A day of supply of Class III was based on experience and consumption data compiled throughout the campaign. The figure, expressed in pounds per man per day, varied from 15.47 pounds per man per day to the final figure of 11.38 pounds per man per day. This figure, however, was also regarded as a unit of measure. It was not to be considered as one day's requirements of any given command, but as an average day of supply which would meet requirements over a given period of time.[3]

14. Levels of Supply. A level of supply is the quantity of supplies held at a given point; base, defense command, department, theater of operations, or similar activity, measured in days of supply or in specific quantities of an item.[1] Levels are prescribed by the War Department for the theater of operations, and by the theater for the various depots, sections and armies. Levels as prescribed by the War Department were of three principal types: Minimum, Operating and Maximum levels.

15. Minimum Levels.

a. The minimum level is the quantity of supplies (in days) needed to maintain an overseas command pending receipt of expeditious replacement in the event such action becomes necessary.[5] As defined by the War Department in letter dated 20 January 1944,[16] it is an emergency reserve

prescribed by the War Department as being the stockage necessary to provide for the replacement of the normal supply routine due to interruptions in transportation, enemy action, and other unforeseen demands. The stockage of this reserve in echelon provides for distribution and envisages the assembly of adequate supplies immediately behind combat operations to insure a constant flow in the event of an interruption in the normal operating level.

b. The minimum level is therefore governed by the need to have levels spread from the rear to forward areas, and by the quantities needed to maintain the supply pipe line from ports and base depots to forward supply installations. The quantity in the supply pipe line itself is governed by the length of the lines of communication and by the transport and handling facilities available. When the pipe line is short, the field forces are supplied direct from base depots and levels are relatively easy to maintain. As the line lengthens, and the time factor for delivery increases, Advance and Intermediate depots become necessary. Minimum levels must be established and maintained at all depots in order to maintain a sufficient flow of supplies to the field forces.[6]

16. Operating Level. An operating level of supply is the quantity of supplies (in days) necessary to maintain an overseas command during the interval between receipt of shipments from the zone of interior.[5] The operating level, therefore, is based on the frequency of sailings,[16] and on the time required to perform the following:[5]

a. Initiate and forward a requisition to the zone of Interior.

b. Load and ship the supplies from the zone of interior.

c. Unload the supplies in the theater of operations. (The number of days involved from the initiation of the requisition to the receipt of the supplies in the theater is called the "order and shipping time".)[7]

17. Maximum Level. A maximum level of supply is the maximum quantity of supply permitted on hand at any given time in an overseas command, and is the sum of the minimum and operating levels, expressed in terms of days of supply.[5]

18. Application.[16] Although maximum, operating, and minimum levels of supply were prescribed for the European Theater of Operations, all stocks of Quartermaster supplies, from the time of their arrival, were considered to form part of a single level. There was no physical segregation of stock between operating and minimum level stocks. Depots were not concerned with operating and minimum levels, but were interested only in the total figure, in assuring themselves that requirements for so many days were available. Requisitions to the zone of interior were based on so many days of supply, and not on operating or minimum levels. All incoming Quartermaster supplies formed one European Theater stock pile, controlled and distributed by the Chief Quartermaster. Although the factors considered in the determination of the minimum and operating levels are essential to the final determination of the maximum level, the European Theater of Operations avoided confusion and excessive records by confining itself, insofar as Quartermaster supplies were concerned, to only the one level.

SECTION 2

DETERMINATION OF LEVELS

19. Necessity for Establishing a Level.

a. A level of supply is essential to provide protection against interruption in the flow of supplies. Convoys are sunk, delayed or lost, daily trains fail to arrive and trucks break down. Stock levels must be maintained in all echelons to provide continuous supply in spite of such interruptions.

b. A level of supply is essential to provide proper distribution. Every soldier, regardless of his position, requires Quartermaster supplies every day, and in order to meet these demands there must be concentrations of stock at various vantage points throughout the area in which troops are located. Each item of clothing, in all sizes, though not issued to every soldier every day, must be available in stock to meet the demands. Supplies flow through many channels. Troops are widely dispersed, and the problem in distribution throughout all echelons requires stock levels to meet the demands when placed.

c. A level of supply is essential to meet unexpected demands. Supplies are requisitioned from the zone of interior based on specific plans and on estimates of needs and consumption rates. Actual consumption of supplies in excess of the anticipated rate results in a failure to meet demands of the anticipated rate results in a failure to meet demands solely from the supply stocks ordered for consumption purposes. In April and May 1945, the number of prisoners of war taken by the United States forces was double the anticipated rate. There were several instances of large scale destruction of supplies, necessitating immediate replacement. Several factors cause unexpected demands to be made, and stock levels must be sufficient at all times to meet such requirements.

20. Size of the Level.[16]

a. In determining the size of the level to be carried, the frequency of convoy arrivals must be considered Each ship, or each convoy, cannot carry a balanced load of a number of days supply of each item, and the interval between convoy arrivals therefore cannot be mathematically calculated into the determination of the level to be carried However, it is a factor for consideration due to probable interruption of convoy arrivals by submarine and bombing activities of the enemy.

b. During the early days of the European Theater of Operations a period of 180 to 210 days was required from the time of placing a requisition on the zone of interior until supplies were received. The order and shipping time was considerably reduced to a period of 120 days in the latter phases of the campaign, and specially handled requisitions required even less time. The size of the level, therefore, is reduced in proportion to reduction in the order and shipping time.

c. Distribution problems also effect the size of

levels, and special problems peculiar to each class of supply must be considered separately. In general, however, supplies were distributed by means of the depot system. The larger the area and the greater the dispersion of troops, the greater the number of depots required. The establishment of additional depots to satisfy this distribution requirement was a consideration in the recommended establishment of any increased theater level. The level in each depot is also dependent upon the transportation facilities available for bringing in stock, making inter-depot shipments, and for maintaining a proper stock level.

d. The principal problems in the distribution of Class I supplies involved the percentage of each type ration to be consumed, the necessity for maintaining a balanced diet, and the supply of perishables. The numerous sizes of clothing items required the distribution and maintainance of balanced stocks of all sizes in accordance with tariff tables, and other items in Class II and IV, such as spare parts, presented similar peculiar problems of stockage and distribution.

e. Unexpected demands on supplies affect the size of the level to be carried. As more experience was gained in the European Theater of Operations requirements were more accurately estimated and unexpected demands decreased.

21. Levels as Prescribed.

a. Various levels were prescribed for the European Theater of Operations from the time of its inception. Prescribed levels for Class I varied from 75 days on 29 November 1942, to 50 days on 3 March 1945. Other classes varied between 45 and 90 days, with a 60 day level as average. The Chief Quartermaster voluntarily elected to maintain a 60 day level of all classes, and a 45 day level of Post Exchange items, until March 1945, when he conformed to those prescribed by the War Department.[16]

b. The War Department prescribed the theater levels to be maintained, directed that they not be exceeded, and indicated the point at which incoming supplies would be included first in the theater levels.[5,7,8,9] The prescribed levels were subject to the review and recommendations of the European Theater Commander. (Appendix 1)

c. The Commanding General, European Theater of Operations, prescribed the levels to be maintained within the theater. He recommended, in February 1945, the following levels in days to be maintained within the theater:[10]

Class	Army Service Area	Advance Section	Intermediate Section	Base Section
I	7	10	18	15
II	15	15	20	10
III (MT-30)	7	10	10	3
III (Allied Products)	7	10	18	10
IV	15	15	20	10

The balance of theater stocks not included in the Army Service Area and Advance Section were to be divided between the Intermediate and Base Sections, but the levels in these sections were to be brought down as soon as practicable to the levels prescribed.

d. The reaction to the Theater Commander's recommendations varied in the field forces. The Third US Army desired to reduce the Class I level of the Army Service Area from seven to five days in order to retain mobility, and at the same time to increase the level in the Advance Section from 10 to 15 days.[11] The First US Army, however, desired to increase the Army Service Area level to 15 days since there were 15 days in the ration cycle.[12] The Third US Army desired that expendables in the Army Service Area be increased to a 30 day level,[11] while the First US Army desired a 30 day level for all Class II and IV supplies. Each desired a higher stock level in the combat zone, either in the Army Service Area or in the Advance Section.

e. The 12th Army Group recommended a slightly higher stock level,[6] but the Theater Commander, on 12 March 1945 prescribed that the following levels be established and maintained at the earliest practicable date:[13]

Class	Army Service Area	Advance Section
I	7	10
II	15	15
III	7	10
IV	15	15

He stated that there was an obvious advantage in having uniform stock levels authorized and maintained in Army Service Areas and in the Advance Section, and that the levels prescribed were set to afford maximum support to the armies while still maintaining their mobility. Exceptions to these levels were authorized only on specific Class II and IV items necessary for operational requirements, and subject to agreement between the 12th Army Group and the Communications Zone.

SECTION 3

EXPERIENCE IN THE EUROPEAN THEATER

22. Definition. Based upon experience throughout the campaign, the Chief Quartermaster recommended that the existing definitions of levels of supply be disregarded, and that only one level be established and defined as follows:[16]

> Level of Supply - that amount of supplies necessary to be stocked under control of the using agency (Theater, Army, Corps, etc.,) to provide for all requirements for a given period of time in the future. Its purpose is to provide protection against interruption in the regular flow of supplies; to provide for an even balanced distribution; and to provide a reserve to meet unexpected demands.

23. Expression of Level of Supply. A level expressed in days of supply should be a realistic forecast of supply requirements, and should not be based on such factors as present manpower or replacement factors alone. A day of supply of Class II cannot be expressed as a whole as each item must be analyzed separately, and the use of a purely replacement factor level is inaccurate due to the great number of initial issues which were made. The use of present manpower figures, in computing days of supply for all classes, was also inaccurate as manpower was subject to constant change. Other factors, such as an incorrect tariff of sizes on hand, the different menus to be served to different categories of personnel, and future planned operations such as those calling for the employment of large armored forces, must be considered in computing days of supply. The levels of supply were therefore analyzed in a realistic forecast of requirements which took all influencing factors into consideration, and the levels were expressed, not in terms of replacement factor and manpower days of supply, but in a forecast of the number of days the supplies would probably last.[16]

24. Levels on Hand.

a. The levels down to armies were generally maintained, insofar as priorities and transportation would permit. Levels within the armies, however, varied considerably. In August 1944; the Third US Army had on hand two days supply of Class I, one day of Class III, and four days of Class II and IV, while the levels of the First Army were relatively high. In September 1944, the Ninth Army became operational with high levels, while those of the First and Third Armies were extremely low. The disproportion between the levels of the various armies gradually decreased and improved until by the end of the campaign excellent proportionate distribution was effected.[14]

b. Levels throughout the operations in Southern France were generally higher. Plans called for the landing of five days supply every three days, building up a two day stock each time. The plans were carried out, but the expenditure of Class III was heavier than anticipated. In October 1944 stock levels in the Army Service Area were established at five days for Class I and III and 15 days for Class II and IV. A 15-day level of all classes was established for the Advance Section. The shortage of transportation facilities prevented the actual build-up of these levels in the forward areas until January 1945, when the forward movement of the Seventh US Army and the First French Army had slowed down.[15]

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

25. Conclusions.

a. That the European Theater of Operations was only concerned with one level of supply. That the use of three types of levels causes confusion and presents an incorrect picture of the situation.

b. That the computation of days of supply, based purely on replacement factors and present manpower, is necessarily an incorrect figure.

c: That levels must be established to meet all requirements, stocked through all echelons, and maintained in such balance and size as to meet requirements without impeding mobility.

26. Recommendations.

a. That existing definitions of levels of supply be disregarded, and that only one level be established in conformity with the definition as recommended by the Chief Quartermaster, European Theater of Operations.

b. That the computation of days of supply, based on replacement factors and present manpower, be amended to include consideration of all requirements.

Bibliography

Chapter 2

1. Chapter 1, FM 100-10, Field Service Regulations - Adm.

2. Adm Inst No. 9, 21 August 1944, 12th Army Group.

3. TWX QX 23281, 091905A Nov 44 from 12th Army Group.

4. Adm Inst No 13, 27 August 1944, 12th Army Group.

5. Part III, TM 38-205, "Army Supply Procedure", 15 May 1944.

6. Ltr, Hq ASF, Wash, D.C., SPX 400 (16 Jun 44) OB-S-SPDDL-M, 19 June 1944, subj: "Adherence to Authorized Levels".

7. Ltr, WD, Wash, D.C., AG 400 (15 Nov 44) OB-S-E-M, 23 Nov 44, subj: "Levels of Supply for Overseas Areas, Departments, Theaters, Bases".

8. Ltr, WD, Wash, D. C., AG 400 (21 Dec 44) B-S-E-M, 29 Dec 44, subj: "Levels of Supply for Overseas Areas, Departments, Theaters and Bases".

9. TWX, EX-93501, G-4, Com Z, 020930A Feb 45.

10. Ltr, Hq Third US Army, file AG 400 (Gen) GNMCD-3, 8 Feb 45, subj: "Levels of Supply".

11. TWX CX 828, First US Army, 081040A Feb 45.

12. Ltr, Hq 12th Army Group to CG, Com Z, file 400 (G-4 Sup) 13 Feb 45, subj: "Levels of Supply".

13. TWX EX 19609, Hq ETOUSA, 121600A March 1945.

14. Periodic (Weekly) G-4 Reports, 12th Army Group (Aug 44 - May 1945).

15. History of Continental Advance Section, Communications Zone, ETOUSA, August 1944 - May 1945.

16. QM Operational Analysis Study No 3, undated, "Levels of Supply", TSFET, TCQM.

17. QM Operational Analysis Study No 4, undated, "Quartermaster Logistical Data", TSFET, TCQM.

CHAPTER 3

DAILY TELEGRAM

SECTION 1

PRESCRIBED USE

27. Definition. A Daily Telegram is a message dispatched daily by divisions, air force service commands, and larger units requesting Class I and III supplies.[1] It is the basis for the supply of these classes from the Communications Zone to the using units.[10]

28. Procedure.

a. Individual units submit daily ration requests to their next higher headquarters. Divisions (for divisional and attached troops) and corps (for corps troops only) consolidate unit requests and estimate their total ration requirements. They then prepare the daily telegram, giving the strength of the command, total rations required, and a report on the status and requirements of Class III supplies.[10]

b. Corps and division daily telegrams are submitted direct to army. Army prepares a consolidated army telegram, based on the requirements of all subordinate units including army troops, on stock levels on hand in army supply points, and on estimated requirements for intended operations. Army submits its telegram to the regulating station, stating the amount of supplies desired at each supply point. The regulating station notifies the appropriate Communications Zone depots which prepare and deliver the shipments to the designated army supply points.[10]

c. In the event that there is no regulating station, division and corps may submit their telegrams direct to the army supply point, which in turn consolidates and forwards same to the army. The army may either submit its telegram direct to the Communications Zone depot, or to the depot through the Advance Section, Communications Zone.[11]

SECTION 2

USE IN THE EUROPEAN THEATER OF OPERATIONS

29. Procedure.

a. The preparation, routing, and use of the daily telegram in the European Theater of Operations followed generally the procedure prescribed by the War Department. Class I and III supplies were procured by means of daily telegrams which included the strength of the command and an outline of the Class III situation.[2] The field armies prescribed that divisions, for division and attached troops; corps, for corps and attached troops; and each unit of army troops would submit daily telegrams.[3] Telegrams were,

however, normally submitted to the supply points instead of direct to army.

b. After regulating stations were established, the Army Quartermaster submitted his daily telegram direct to the regulating station. With reference to the further routing beyond the regulating station and the manner in which supplies were naturally shipped from the Communications Zone forward to the armies, there was a gradual evolution to the system whereby the regulating station received the daily telegram from the armies and routed same to the depot which actually made shipment to the field forces. The evolution of the process was directed to the lessening of the interval between the time the army submitted the daily telegram and the time supplies were actually delivered.[12] During the early part of the campaign, even for Class I supplies, this interval ranged from eight to 15 days for the armies of the 12th Army Group.[7,8,9]

c. Outlined below is the history of the evolution of the procedure for preparing and routing the daily telegram in Communications Zone, European Theater of Operations:

(1) During July-October 1944, the daily telegram from the armies was submitted direct to Headquarters, Communications Zone. The critical supply situation prevailing at the time was the basis for adopting this highly controlled procedure. Class II supplies, in addition to Class I and Class III supplies, were ordered also by the armies in the daily telegram.[4] However, instead of calling for such supplies by item, the call, in accordance with the system of tonnage allocations prescribed at the time, was made for a certain number of tons of Class II items. Such a policy proved ineffective. The Chief Quartermaster stated: "Any demand for supply must be by item and not by ton. Personnel in the Communications Zone must be generally familiar with the requirements in forward areas, yet never can they anticipate the specific needs at the moment".[13]

(2) During September 1944, a device for facilitating the calls of the armies for Class II supplies was adopted in Communications Zone, European Theater of Operations. Class II Quartermaster Basic Maintenance Set was drawn up, listing the various Class II items and lettering them with an alphabetical system. The daily telegram then requested a number of basic maintenance sets, minus certain items not needed, plus certain items not listed in adequate quantities. This procedure eliminated the disadvantage of ordering Class II supplies by tons, but since the daily telegram was still routed direct from the regulating station to Headquarters, Communications Zone, the system was as highly controlled as before.[13]

(3) The system outlined above was predicated on the idea that the records in the Office of the Chief Quartermaster, Communications Zone, were sufficiently complete and up-to-date to enable the Quartermaster Supply and Distribution Division to receive the daily telegram from the armies and to parcel out to the various Quartermaster supply installations the demands of the armies. Such proved not to be the case in frequent instances. Directions for shipment were sometimes made by the Chief Quartermaster on depots whose stock conditions were insufficient for the shipments required. This was particularly true in Class II and IV supplies.[13,15] Adding to the difficulties of the situation, shortage of transportation did not permit adequate stocking of forward depots from port areas and, for the same reason, it was also impossible to make inter-depot shipment between forward depots.[13] Back-orders for Class II and IV items increased to serious proportions. The armies, in order to be certain of supply, re-requisitioned back-ordered items.[13,15] By December 1944 the situation was so serious that the 12th Army Group caused an investigation to be made by its own personnel (See Appendix 2). Representatives from the Army Service Forces in Washington visited the Communications Zone Headquarters to examine the procedure.[14,15]

(4) In December 1944, the Class II section was eliminated from the daily telegram on the basis that a daily call was a too frequent requisition for Class II supplies, back-orders being too numerous. The procedure was also adopted whereby daily telegrams were routed direct from the regulating station to depots previously designated by the Chief Quartermaster to supply each army. In addition, the Class III solid fuel section was eliminated from the daily telegram, and it was also prescribed that Class IV and Post Exchange items would not be included on the telegram.[13]

(5) Throughout the remainder of the campaign, the procedure adopted in December 1944 for the preparation and routing of the daily telegram was retained and used in supplying the armies.[13]

d. Commenting on the procedure finally evolved whereby the regulating station received the daily telegram and directed shipment from specific depots previously designated by the Chief Quartermaster, the ideal concept of the regulating station which would facilitate this procedure was outlined by the Chief Quartermaster in a memorandum to The General Board Service Section, 17 November 1945, on Broad Phases of Organization and Operation for Supply:[12]

"The teachings of the US Army that the impetus of supply shall be from the rear are sound. The connecting link between the Communications Zone and the Army or the Army Group should be an improved regulating station. The mission of the improved regulating station should be carefully redefined and broadened. It should be the contact agency with the Armies and the Army Groups. They need few troops. A small staff having a knowledge of all depots - knowing on which depot to place requisitions and being intimately associated with all phases of military transport, can, in my opinion, best accomplish the mission. The improved regulating station referred to by me herein must know at all times the status of requisitions placed - the status of supplies shipped, that is, their location enroute, their time of delivery to the Armies and other troops forward, etc. The regulating station as outlined by me should serve directly under, and receive its command orders from, the Commanding General, Communications Zone. Its technical information should come from the Deputy Chiefs of Service located at the Headquarters, Communications Zone."

30. Forms.

a. There was no form prescribed for the daily telegram by the War Department. Each army devised its own form for the use of its subordinate units (Appendix 3). This procedure was generally satisfactory from the standpoint of both the armies and the subordinate units, with the exception that the forms were changed from time to time and varied among the armies, thus causing confusion among the units. Some forms were clear and simple, while others gave breakdowns by types of rations and listed reserve and maintenance stocks. Others, later in the campaign, listed by category the personnel for whom rations were required.

b. In calling for supplies from the Communications Zone, the Army Quartermaster utilized no standard form. The Seventh US Army Quartermaster submitted his requests by letter (Appendices 4 & 5). Since the Army Quartermaster, unlike the Quartermaster or supply officer of his subordinate units, is concerned with stocking a number of installations rather than a single unit supply dump, and since he must maintain a certain level of supplies in order to furnish day to day requirements for immediate consumption, his daily call for supplies can not be reduced to a standard, simplified form suitable under all conditions.

31. Editing. The question of the authority or advisability of the Communications Zone to edit the daily telegram submitted by the field forces arose when the Communications Zone requested that Class II and IV supplies be separated on the daily telegram. The Quartermaster, Third US Army, stated "It would be difficult to explain the tactical reasons for which much of this equipment is required....",[6] and the Commanding General, 12th Army Group, in a letter to the Commanding General, Communications Zone, stated:[7]

> "This headquarters recognizes the fact that you, as the supply agency for this theater, must adopt measures which will insure an equitable distribution of the available supplies to all commands of the theater. This is accomplished, insofar as the elements of this com-

mand are concerned, if requisitions for supplies are kept within authorized allowances. Under existing instructions of this headquarters, elements of the 12th Army Group are not permitted to requisition items in excess of authorized allowances without prior approval of this headquarters. Therefore, the editing of requisitions by you is considered to be not only unnecessary, but could very well develop into procedure which would seriously limit the prompt shipment of supplies."

It was decided that the Communications Zone did not have authority to edit, and that the Army Quartermaster would be limited in his call for supplies only by his own judgment, his estimate of the situation, and by any limitations imposed by higher headquarters, based mainly on shortages in supply stocks and transportation.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

32. Conclusions.

a. That in a supply system featuring a central, highly controlled supply procedure, the success of the daily telegram in supply operations from the Communications Zone to the field forces demands an up-to-date, accurate stock control system in the headquarters exercising central control.

b. When the situation permits of decentralization, the greatest success in supply operations based on daily telegrams is achieved when the supply organization provides for a regulating station whose various sections are sufficiently informed on the local supply and transportation situation to permit routing the daily telegram direct to the supply installation capable of shipping the supplies requested..

c. It is not practicable to order Quartermaster Class II and IV supplies by means of the daily telegram.

33. Recommendations.

a. That in future operations similar to the conditions that existed in the European Theater of Operations, the supply organization be so constituted as to provide for routing the daily telegram direct from the regulating station to the supply installation designated to make shipment.

b. That Class II and IV supplies not be included in the daily telegram.

Bibliography

Chapter 3

1. Paragraph 16, FM 10-10 (Quartermaster Field Manual).

2. Quartermaster Service Reference Data, Volume II, OQM, ETOUSA, 1 January 1944.

3. Administrative Standing Operating Procedure, Third US Army.

4. Letter, Hq Ninth US Army, 400 GNMQM-3, 1 December 1944, Subject: Non-Shipment of Items Requested on Daily Telegram.

5. 1st Indorsement, Hq 12th Army Group, file 400.312 (G-4 Sup), 25 December 1944, to CG, Com Z, and "Memo for Record" attached thereto.

6. After Action Report, QM Section, Third US Army.

7. After Action Report, QM Section. 12th Army Group.

8. TWX, CX-828, 081040A February 45, First US Army to 12th Army Group.

9. Inclosure No. 7, to Ltr Hq 12th Army Group, file 400.312 (G-4 Sup), 28 October 1944, Subject: "Requisitioning and Movement of Supplies."

10. FM 100-10.

11. FM 101-10.

12. Operational Study Number 13 "Broad Phase of Organization and Operation for Supply", Hq TSFET, OTCQM, December 45.

13. Quartermaster Operational Analysis Study Number 5, "Quartermaster Supply Operations in the Communications Zone during Combat", Hq TSFET, OTCQM, December 45.

14. After Action Report, Quartermaster Section, 12th Army Group, August 1944-May 1945.

15. Study Number 27, Mechanics of Supply in Fast Moving Situations, file 401/4, General Board, USFET, APO 408.

CHAPTER 4

DEPOT OPERATIONS IN THE COMMUNICATIONS ZONE[1]

SECTION 1

DEPOT SYSTEM

34. General Mission of the Depot System. In the Communications Zone, European Theater of Operations, the depot system was the means by which each soldier was supplied every day with Quartermaster supplies, regardless of his position in the Theater of Operations and his assigned mission.

35. Classification of Depots.

a. Several different interpretations of depot classifications were published in the European Theater of Operations by various agencies. Each change in terminology caused confusion and necessitated a reeducation of all field and staff personnel. Classification of depots and depot terminology must be standardized and changes therein kept to an absolute minimum.

b. The War Department Field Manual 100-10 states: "Communications Zone depots are also designated as Advance, Intermediate or Base, dependent upon the Section in which located."

c. Standing Operating Procedure Number 7, European Theater of Operations, 19 March 1945 gives the following definitions:

"(1) Issue Depot. A depot normally in an advance section, assigned responsibility for storing supplies within prescribed levels and for issuing supplies required to meet the needs of:

(a) Armies and other troops and organizations in a designated area of the Combat Zone.

(b) Troops and organizations in a designated area of the Communications Zone.

(2) Filler Depot. A depot, normally in an intermediate section, assigned responsibility for storing the principal portion of theater supplies within prescribed levels and for:

(a) Replenishing supplies upon request from Issue Depots.

(b) Issuing supplies to troops and organizations in a designated area of the Communications Zone.

(c) Receiving and storing supplies

received from local procurement in the area.

(3) Base Depot. A depot, normally in a base section, assigned responsibility for:

(a) Receiving, classifying, and storing supplies shipped from ports or from local manufacturers.

(b) Serving as a warehouse to clear ports and for storage of excess theater stocks.

(c) Replenishing supplies of Filler Depots upon direction of the Chief of Service concerned.

(d) Issuing supplies to troops and organizations in a designated area of the Communications Zone.

(4) Key Depot. A depot assigned responsibility for:

(a) Centrally storing the entire Communications Zone stock of selected items and/or their components.

(b) Issuing supplies upon request from installations and organizations."

d. The Theater terminology as prescribed above is misleading from a Quartermaster standpoint, and tends to falsely imply the mission of the v rious depots. All Quartermaster depots have an issue responsibility. Base depots must issue in retail to troops in their locality. Furthermore, a base depot has the same type of mission as a filler depot inasmuch as supplies in filler depots are replenished by shipments from base depots. The War Department terminology more correctly designates the depots. However, the definitions as contained in Field Manual 100-10 should be made more specific and at the same time retain the necessary flexibility.

e. Classifying a depot as a key depot has caused confusion from a Quartermaster standpoint. The definition states that a key depot is responsible for storing the entire stock of selected items - the purpose being to concentrate those items which are required in small quantities such as flags, officers' insignia, etc. and those items which might be considered of a sensitive nature and easily pilferable, such as women's clothing, etc. The Quartermaster Service does not have a sufficient number of items requiring this centralized storage to necessitate a depot with the exclusive mission of recovering, storing, and issuing only those items. This being the case, it was necess ry to give a double classification - A key depot and a filler depot, etc. Furthermore, the classification of a depot as a key depot means nothing unless the selected items which are to be centrally stored there are defined. This points to the fact that it is the item which requires definition and not the depot. The mission of each depot should state the items

which are to be exclusively received, stored and issued by that installation.

f. Depot classifications for a Theater of Operations which would best fulfill the requirements of the Quartermaster Service are:

(1) Base Depot. A depot normally at or in the vicinity of a port having the responsibility for:

(a) Receiving, classifying and storing of supplies shipped from ports.

(b) Replenishing supplies of Intermediate and Advance Depots.

(c) Issuing supplies to troops and organizations in a designated area of the Communications Zone.

(2) Intermediate Depot. A depot normally in an Intermediate Section assigned the responsibility for storing the principal portion of Theater supplies within prescribed levels and for:

(a) Replenishing supplies upon request from Advance Depots.

(b) Issuing supplies to troops and organizations in a designated area of the Communications Zone.

(3) Advance Depot. A depot normally in an Advance Section, assigned the responsibility for storing supplies within prescribed levels and for issuing supplies required to meet the needs of:

(a) Armies and other troops and organizations in a designated area of the Combat Zone.

(b) Troops and organizations in a designated area of the Communications Zone.

36. Need for Port Depots. Whenever the transportation facilities for moving off loaded supplies from the port to supply installations outside the port area are insufficient to keep the ports clear, there is a need for a port depot. Without a port depot to inventory off loaded stocks at ports, these stocks cannot be considered available for supplying the troops until they are shipped to inland depots, warehoused, and inventoried. Prior to this, these uninventoried stocks were just so many tons, and not items as required by troops. In the European Theater of Operations transportation facilities were scarce and the Quartermaster service, together with other services, was given a daily allocation of so many tons for forward movement from port areas to inland depots. At the large port of Antwerp (J-6595) there was no port depot to segregate and inventory stocks that were

off loaded and awaiting shipment inland. With no knowledge of the composition of these off loaded stocks, the limited transportation facilities were often used to transport inland from ports items that were not needed at the time by the field forces, while other items for which a critical need existed were left unidentified at the port. In addition, bulk shipments of uninventoried tons of supplies from ports to inland depots often resulted in undesirable distribution of stocks. When transportation is short, inter-depot shipments cannot be made for the purpose of redistributing stocks.

37. The Depot System in Depth. As the line of communications lengthened, and it became necessary to supply the field forces by forward depots, the selective stocking of forward and intermediate depots was begun. Fast moving items were selected out of the mass of tonnage at the base depot and were stocked in forward and intermediate depots. The slow-moving bulk items remaining at the base depot were moved forward only as required. Generally, intermediate depots replenished the advance depots and stocked certain items that advance depots did not stock. However, it was not until about November 1944 that depot operations ceased to be tied down to the beaches and the intermediate depot system was set up.

38. Depot Missions.

a. In the European Theater of Operations the general administration of depots was governed by the Quartermaster Depot Operations Manual dated 1 December 1943, and by other storage pamphlets and appropriate texts. However, each depot had a specific and detailed mission that could not be set forth in publications in general terms. Consequently, a letter mission was prepared for each depot explaining in sufficient detail exactly the specific mission in each case. These letter missions were prepared by the Chief Quartermaster, so that the operation of the depot could be integrated in the entire depot system. These letters were simple and brief and provided for flexibility in the operation of the depot, and furnished essential information to the depot commander. (Appendix Number 6)

b. Experience in the European Theater of Operations has brought out certain essentials regarding depot missions. The mission must be prepared and published on the theater headquarters level. It must be flexible, simple, and brief. The depot commander must know the following facts:

(1) Tonnages to be received daily by source.

(2) Tonnages by Class that must be stored.

(3) Troops to be served on a retail basis and those to be served by wholesale bulk shipments.

(4) Whether the depot will store the entire theater stocks of a certain item.

(5) He must be given the means (basic model stock) by which he can calculate by item the quantity of stock which is to be stored.

SECTION 2

REQUISITIONING AND REPLENISHING PROCEDURE WITHIN THE THEATER

39. Centralization or Decentralization. In supplying field forces from the Communications Zone the broad policies relating to procedures to be used in requisitioning and replenishing operations are determined by the degree of centralized control exercised by the higher headquarters. Where the supply situation is critical, centralized control is essential. Where supply conditions are more favorable, a certain amount of decentralization is permitted. In the European Theater of Operations a policy of progressive decentralization of supply control was followed.

40. Progress of Decentralization.

a. Prior to 5 December 1944, when Circular Letter No. 97 was published by the Office of the Chief Quartermaster, highly centralized control of supply operations was a feature of the Quartermaster supply system in the European Theater of Operations. The Office of the Chief Quartermaster received through channels the daily telegram from the field forces and called on specific depots to make shipments. During this time supply was practically tied to the depots near beaches and ports, and the field forces were supplied largely by direct shipment from base depots through the Advance Section of the Communications Zone. This centralized control in the Office of the Chief Quartermaster made it necessary to maintain in that office the central stock record file of all depots under the Theater Quartermaster's control so that only those depots capable of making shipments to the advance depots and the field forces would be directed to make such shipments.

b. After 5 December 1944, a supply control considerably decentralized from that previously in effect was prescribed. The improving supply situation, largely the result of the opening of the Antwerp (J-6595) port, made this possible. In supplying the armies, the daily telegram was routed direct from the regulating station to depots previously designated by the Chief Quartermaster to supply specific armies. The advance depots were supplied Class I by intermediate depots on the basis of estimates submitted periodically by the advance section. Class II requirements for advance depots were obtained on requisition to the Office of the Chief Quartermaster. On the basis of estimates submitted to the Chief Quartermaster, intermediate depots supplied Class III (petroleum, oil, and lubricants) to advance depots. The flow of supplies to intermediate depots was controlled by the Chief Quartermaster in accordance with a general plan drawn up 1 December 1944.

c. On 9 February 1945, Quartermaster Circular Letter No. 14, was published prescribing further decentralization of supply control. Instead of the Chief Quartermaster designating specific depots to supply the field forces, the advance section was charged with the function of allocating advance depots to the supply of each particular army. Even the supply of controlled items was decentralized to the various sections of the Communications Zone. This degree of decentralization represented the

final system of control in the Communications Zone and it functioned satisfactorily.

41. Movement Allocation of Tonnage.

a. After the requisitioning procedure and depot replenishment system had been established, the problem involved the movement of supplies in order to fill the requisitions and replenishment demands. With transportation critical, there should be strict control of tonnage allocations. During the period June to October 1944 all tonnage movements were controlled by armies. The transportation for the movement of reserves that accumulated on the beaches was not available. Eventually transportation did become available for the gradual movement of supplies to intermediate depots. When most army requirements were being met from intermediate depots, a change was made in the tonnage allocation procedure. The problem then became one of allocating tonnage for the movement from ports forward, and from intermediate depots forward.

b. Allocations from Ports to Intermediate Depots.

Until 10 January 1945 allocations were made daily at meetings conducted by the Assistant Chief of Staff, G-4, Headquarters Communications Zone. The principal fallacy in the method of allocating this tonnage was that G-4 allocated the Quartermaster Service so many trains for each class of supply. The Quartermaster was not allocated the trains for shipments of classes as required. On 10 January 1945, letter, subject: "Procedure for Planning, Reception and Movement of Supply, Equipment and Personnel" published by Headquarters Communications Zone provided a more satisfactory basus for the allocation of tonnage. The following is quoted on overall movement plans:

"(1) On or before the 23d of each month, the Chief of Transportation will submit to the Acting Chief of Staff, G-4, Attention; Ports, Roads and Railroads Branch, recomendations for:

(a) Allocation of shipping to ports showing the number of ships and average daily tonnage to be discharged, by Class of supply.

(b) Plan for Port clearance and movement of supplies to depots showing origin, average daily tonnage, destination and type of transportation for each class of supply.

(c) Plan for movement of supplies from depots to forward destinations showing origin, average daily tonnage, destination and type of transportation for each class of supply.

"(2) (a) In the development of plans for movement, the Chief of Transportation will confer directly with supply services in determination of

allocation of ships by name and number to ports and in the determination of special requirements for movement of supplies from ports to depots."

o. Allocations from Intermediate Depots to Consuming Agencies. Class I and III supplies were handled on a daily telegram basis. The Commanding General, Advance Section, arranged for the transportation of Class I and III requirements from the advance depots in his area. Class II and IV and Post Exchange requirements were handled on a periodic requisitioning basis. The Commander of the Base Section in which the shipment originated was responsible for providing necessary transportation in accordance with the provisions of Circular Letter Number 14, Office of the Chief Quartermaster, 9 February 1945.

42. Documentation of Shipments. Documentation is the process of marking and recording shipments on various paper documents for the purpose of identification and control. Since it is impossible to supply tons of supplies to fill specific demands of the field, it is necessary that the tons be converted into items. The specific tons of each item should be known. By inventorying, supplies are converted from a tonnage to an item basis. Proper documentation provides a means of retaining this identity while the supplies are in transit between the depots or from the depots to the consuming agencies.

SECTION 3

INVENTORYING AND STOCK ACCOUNTING

43. General. The heart of all supply operations in a Theater of Operations is the principle of knowing what supplies are on hand and where they are located. Inventorying is a periodic activity; stock accounting is a continuous activity. The combination furnished the Chief Quartermaster with information that was essential to him in performing the following functions:

a. Advising the Theater of Operations Commander in formulating tactical plans.

b. Distributing stocks in the European Theater of Operations.

c. Advising personnel such as Army and Army Group Commanders on conditions and locations.

44. Within Depots. The methods of inventorying and stock accounting employed by depots in the European Theater of Operations followed the basic principles prescribed in War Department publications.

45. Reports to Central Theater Records.

a. The office of the Chief Quartermaster maintained the Central Theater record of Quartermaster stocks. Stock status reports were submitted periodically by Quartermaster depots in the Theater of Operations according to the follow-

ing schedule:

Class I Supplies	-	Weekly
Class II and IV	-	1st and 15th of the month
Class III	-	1st and 15th of the month

More frequent reporting was found to place too great a burden on the depot. Inventories were normally reported by the depots by item and quantity.

46. Reports to Other Agencies.

a. While the depot reported direct to the central records of the Office of the Chief Quartermaster, copies of the stocks status reports were also sent to the Quartermaster of the interested section of the Communications Zone. It was essential that the section Quartermaster be kept informed on the stock status in his own section.

b. In addition, there were certain items of which the stock position for the whole theater should be known from time to time by all sections of the Communications Zone and the armies. Accordingly, special stock status reports were from time to time disseminated by the Office of the Chief Quartermaster to interested agencies.

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

47. Conclusions.

a. The classification of depots set forth in European Theater of Operations Standing Operating Procedure No. 7, 19 March 1945, is not suitable for Quartermaster use.

b. The port depot in the European Theater of Operations was essential to efficient supply operations in the Communications Zone, and where it was not established efficiency of the supply system suffered.

c. During combat operations, the field forces receive increasingly efficient supply support when supply stocks are large and control of supply is decentralized. Decentralization of control of supply can be accomplished only when the lines of communication and channels of supply are sufficiently well organized to warrant such decentralization.

d. Regardless of the degree of decentralized control of supply operations, an up-to-date central stock accounting system is essential in the Office of the Chief Quartermaster of the Theater of Operations.

48. Recommendations.

a. That the classification of depots in the Communications Zone be redefined to indicate their general function as base, intermediate, and advance depots, and that pertinent War Department publications be amended accordingly.

b. That in operations similar to those in the Euro-

pean Theater, provision be made for the establishment of base depots at ports.

Bibliography

Chapter 4

1. Quartermaster Operational Analysis Study Number Five, dated 1 November 1945, Hq OTCQM, TSFET.

CHAPTER 5

QUARTERMASTER TRANSPORTATION

SECTION 1

QUARTERMASTER TRUCK COMPANY

49. Mission and Organization. The mission of the Quartermaster truck company, or troop-transport company, is to provide transportation for the hauling of cargo and for the movement of personnel by motor transport. It is a mobile, flexible unit, and is organized into a company headquarters and three operating platoons. Each platoon operates 16 trucks, two and one-half ton 6 x 6 cargo, with 16 trailers, 1-ton, 2 wheel, and each platoon has sufficient equipment to perform limited maintenance. The maintenance section, equipped with complete second echelon equipment, operates under the company headquarters.[1]

50. Allocation and Control.

a. In the Communications Zone the Transportation Corps assumed command and operational control of the truck companies.[2] In the Combat Zone companies were allocated by army group to armies, and armies to subordinate corps and divisions. In some instances allocation of companies was made direct from army group to division. The Army, Corps and Division Quartermasters normally retained operational control over the companies, subject to the allocation and dispatch control exercised by the G-4.[3]

b. Of the 464 Quartermaster truck companies in the European Theater of Operations, 170 were allocated to the 12th Army Group. The troop basis for this allocation was as follows:[3]

Type Unit	Basis of Allocation Number	Companies	Total Type Units in 12th Army Group	Total Companies Allocated
Army Group Hqs	1		1	1
Army Hqs	1		4	4
Corps Hqs	2		11	22
Divisions	3		44	132
Additional for new Armored Division	1		11	11
			Total	170

c. The 12th Army Group recommended an increase of 11 truck companies in the allocation based on the fact that each Armored division required, and had attached to it, two truck companies throughout the operation. These truck companies were organic in the old-type Armored divisions. During actual operations on the continent, however, the total allocation of 170 companies was never assigned to the group and serious motor transportation shortages existed throughout the operation.[4] This same shortage of truck companies, compared with proposed allocation, was experienced throughout the European Theater. Twelve companies were on the continent by 18 June 1944 and by the end of operations May 1945, there was a total of 164 companies assigned to units in the 12th Army Group.[3]

51. Methods of Operation.

a. Both in the combat zone and in the Communications Zone the truck companies were used for the transportation of equipment, supplies and personnel.[2] Companies were normally assigned to battalions for operations and control. In the Communications Zone companies were assigned to battalions and battalions to groups on a completely functional basis. Thus truck companies were not assigned to battalions which contained other type companies, such as bakery or gasoline supply, and truck battalions were not assigned to groups which contained other type battalions. In the Field Forces, companies were either assigned to battalions on a functional or geographical basis, or retained separately under control of the Army, Corps, or Division Headquarters concerned.

b. Truck companies furnished transportation for the movement of equipment and supplies, both in supply operations and in the tactical movement of organizations. They were also used for the movement of personnel, both in the tactical movement of troops, complete motorization of units, and in administrative movements of personnel and units.[2] When it was desired to completely motorize a division, six companies were normally required and allotted to Infantry and Airborne divisions. Two companies were normally required to supply extended movements of an Armored division.[3]

c. A typical breakdown of assignment of truck companies for service operation was that of the Ninth Army:[6]

Supplies	
Quartermaster	36 %
Ordnance	25 %
Engineer	11 %
Signal	3 %
Other	6 %
Personnel	
All Services	19 %
Total	100 %

52. Control and Dispatch.

a. The Quartermaster, 12th Army Group, coordinated Quartermaster transportation matters between the armies of the Group, furnished advice on the distribution of transportation units and furnished the basis when necessary for securing additional transportation units from the Communications Zone when needed.[14]

b. The method of control and dispatch among the field forces was similar throughout the armies with the exception of the Third and Seventh US Armies. Normally, the transportation section, G-4, obtained the allocation of Quartermaster transportation units from higher headquarters and allocated the units within the army. The Transportation Division of the Army Quartermaster Section effected the allocations made by the G-4 and directed the operation and maintenance of all Quartermaster transportation units assigned to the army. The Transportation Section, G-4, was normally staffed by a headquarters and headquarters detachment, Quartermaster group. All requests for transportation were processed through the G-4 for approval and to the Quartermaster

for dispatch.[15] In addition to the daily dispatch, companies were at times dispatched to Staff Sections or subordinate units on a permanent basis.

c. A daily motor transportation availability report was submitted by the Army Quartermaster to the G-4, showing the status of all Quartermaster trucks of the army. A weekly tonnage-mile report was submitted each Monday for transmittal to the 12th Army Group giving the total tonnage hauled and miles traveled during the week.[16]

d. In the First and Fifteenth US Armies the G-4 Transportation Section exercised supervisory control only over Quartermaster transportation operations.[2,17] In the Third US Army, the G-4 Transportation Section, which was staffed by a headquarters and headquarters detachment, Quartermaster group, exercised operation control over the Quartermaster transportation, while the Army Quartermaster maintained control only over those units assigned to Quartermaster work.[9] In the Seventh US Army all transportation operated directly under the Transportation Section, a separate special staff section organized for that purpose.[5]

53. Operations.

a. There was a constant and continuous shortage of trucks throughout the operations. Maintenance was generally poor, and spare parts at times hard to obtain.[2]

b. Due to the shortage of transportation, and based upon road conditions, the overloading of the cargo trucks up to 100 percent was authorized. The condition of the roads and terrain, and restrictions due to operations limited the use of trailers, and when used, loading was restricted to rated capacity.[6,7] Driver training was often found lacking, and qualified driver replacements were often difficult to obtain.[8] Those drivers actually assigned were too often of a type lacking in intelligence and sense of responsibility. Training consisted of on-the-job operations.[9,10]

c. In the operation in Southern France, Italian service unit personnel was extensively used to man the Quartermaster truck companies.[5]

SECTION 2

OTHER UNITS

54. Amphibian Truck Company. The organization of the amphibian truck company under the Quartermaster truck company table of organization and equipment was a temporary expedient pending experimentation and development. As a final organization it was a Transportation Corps company (T/O & E 55-37), with seven officers and 173 enlisted men, consisting of two platoons with three sections each, and with eight trucks, 2½ ton, 6 x 6 amphibian (commonly called DUKW's), per section. It was essentially a Harbor Craft company and operated principally with port battalions. Its function was to transfer cargo from shipside to shore dumps or beaches, where pier facilities were not available. Each company, over a period of 24 hours, was capable of

unloading approximately 1,000 to 1,500 tons of mixed cargo.[19] Amphibian trucks were used during the initial invasion of the continent under control of the Engineer Special Brigades. The first three weeks of the assault on France demonstrated beyond question the usefulness and dependability of the DUKW in the hands of experienced operators. Not only did they move cargo from ship to shore, but likewise transported cargo overland to dumps.[20] DUKW's were used with success on the Rhine River crossing for all types of cargo, personnel and assault teams, and were even used as artillery prime movers.[3]

55. Quartermaster Car Company.

a. The mission of the Quartermaster car company was to provide passenger service for the headquarters to which it was assigned.[11] It is organized into a company headquarters and four platoons. There are 44 trucks, one-quarter ton, and 44 trucks, three-quarter ton, weapons carrier, organic for passenger service in the company, with the provision that 24 five-passenger sedans may be substituted for a like number of trucks, one-quarter or three-quarter ton.

b. The car companies functioned under control of the Transportation Corps in the Communications Zone, and established headquarters garages and sub-garages as required.[12] In the field forces, these units operated under either the Army Quartermaster or the G-4. Usually a company was assigned to army headquarters under the Headquarters Commandant, and was not included in the daily motor dispatch operations of the Army Quartermaster or the G-4.[3,12] One platoon of a car company was normally attached to each corps headquarters for operations. The troop basis for allocation within the 12th Army Group was therefore one each for army and Army Group headquarters and one platoon for each corps headquarters. The number proved adequate throughout the operations.[3]

c. One corps reported that the car platoon personnel attached to the corps for operations lacked training in map reading and in driving in areas where no road signs were displayed. It also stated that only high type personnel skilled in map reading and in the use of small arms should be used in the combat zone.[13]

56. Separate Car and Truck Detachments.[3,21] (T/O & E10-500)

a. The assignment of car platoons to different corps resulted in dividing and splitting car companies between various and widely separated headquarters. Separate car platoons were therefore organized late in the campaign. The composition of these units was as follows:

Elements	Column of T/O	Strength Off	Strength EM
1 Platoon headquarters (separate)	AB	1	4
1 Automotive maintenance detachment	AJ		1
1 Car detachment	CA		9
1 Car detachment	CF		18
20 trucks 1/4-ton			
3 trucks 3/4-ton weapon carriers			

The employment and control of the separate platoon was identical with that of the organic platoon.

b. In addition to the separate car platoon, the corps headquarters were augmented with the following cells to meet general cargo and administrative transportation of the special troops of the corps headquarters:

Cell	Column	Personnel MI	Equipment
1 car detachment	CA	10	8 trucks, 1/4-ton
1 truck detachment	CD	9	1 truck, 1/4-ton 2 trucks, 3/4-ton, WC 4 trucks, 2½-ton, 6 x 6 cargo

SECTION 3

DISCUSSION

57. Discussion.

a. A complete and more detailed study of motor transportation is covered in General Board Study number 122, subject: "Operation, Organization, Supply and Services of the Transportation Corps in the European Theater of Operations", file 321/1 and study number 125, subject: "Motor Transport Service as a permanent part of the Transportation Corps", file 321/11. The Quartermaster study of motor transportation is therefore made on the broader phases of operations from a Quartermaster viewpoint.

b. Transportation within the armies, corps and divisions was subject to many of the same errors and deficiencies experienced in the higher levels and Communications Zone, but on a smaller scale. Probably, the root of the majority of deficiencies can be attributed to the lack of proper training and supervision of drivers and to the poor or low calibre material provided as drivers. Upon activation of truck and car units, too often the organizations or units charged with supplying the personnel for these units did not give sufficient consideration to the proper selection of drivers. In many cases individuals were incorrectly classified by the personnel sections and reception centers concerned. The training period was insufficient to train drivers adequately in preventative or first echelon maintenance. During the build-up period in the United Kingdom, and throughout the entire European campaign, it was practically impossible to obtain qualified driver replacements. This necessitated on-the-job training during actual operations. The First US Army before the invasion, realizing the necessity for two drivers per truck, authorized an increase of 24 additional drivers per truck company to accomplish that purpose. On 21 July 1945, the War Department published a new Table of Organization and Equipment 10-57, which also authorized 24 additional drivers per company when desired by the Theater Commander.

c. Mechanics within the companies were rarely of a satisfactory quality. The lack of necessary replacement

parts resulted in the operation of trucks without proper repairs, thus causing excessive wear on other parts.

d. The Quartermaster battalion, mobile, headquarters (T/O & E 10-56), was lacking in a motor officer to properly supervise and coordinate maintenance activities in truck companies. However, a motor officer was added after hostilities ceased, (change 2, T/O & E 10-56, dated 2 August 1945).

e. Generally, officer personnel in truck companies were not sufficiently trained in motor transportation and maintenance. Officers in some cases were assigned to Quartermaster units, after having become inefficient in other branches. Too many officers specially trained in other phases of Quartermaster operations found themselves assigned to truck companies. All officers, of all grades should be trained in motor maintenance and convoy operations.

f. In order to properly perform his supply mission, it was essential for the Division Quartermaster to have sufficient trucks under his operational control at all times. The primary function of the divisional Quartermaster trucks was the hauling of supplies, and the secondary function, when made necessary by operations or command decision, was the hauling of troops or temporary motorizing of units. Without these trucks organically under his control, the Division Quartermaster could not have accomplished his mission of supplying food, gasoline, clothing and equipment, and where necessary, other supplies to the troops. The same principal applied generally to corps and army Quartermasters. Corps Quartermasters normally had one or two truck companies attached under their control for the support of the corps troops and attached divisions. These truck companies were utilized for several purposes, such as, establishing forward corps supply points of all classes, maintaining these forward supply points, motorizing divisional or corps troop units, augmenting divisional quartermaster requirements, moving the corps headquarters, battlefield recovery, hauling ammunition, and such other requirements as arose from time to time. Army Quartermasters required sufficient transportation to maintain stocks in all depots and to keep depots and supply points within reach of the using units.

g. Truck companies are equipped with three tool sets, second echelon, number one (common) on the basis of one per platoon, and one tool set, second echelon, number two (common) for the maintenance section. Each company is also equipped with one truck, 3/4 ton, 4 x 4 weapons carrier, and one truck, 2½-ton, 6 x 6 cargo, with winch, for mounting super-structure, hoist and towing bar, for the maintenance section. The second echelon set number one is designed to be used by two mechanics and be transported in a 3/4-ton 4 x 4 weapons carrier with the necessary oils and greases to take care of 15 trucks. With platoons traveling in different directions, it is impracticable to give proper maintenance to each platoon. Each platoon should therefore be equipped with a 3/4-ton, 4 x 4 weapons carrier, to adequately perform maintenance of vehicles when operating individually in convoy and to properly maintain the tools assigned.

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

58. Conclusions.

a. That Quartermaster activities throughout the operation in the European Theater were handicapped due to the shortage of transportation both in the Communications Zone and in the army areas.

b. That, in general, officers, drivers and mechanics were inadequately trained, and that qualified replacement personnel were seldom available.

c. That division Quartermasters require sufficient organic transportation under their direct control to accomplish their mission, and that corps Quartermasters require sufficient transportation to provide close support to corps troops and attached divisions. Army Quartermasters must have sufficient transportation at their disposal to keep depots and supply points stocked and within reach of the using units

59. Recommendations

a. That, beginning with the activation of truck units, a more careful selection of both officers, drivers and mechanics be made.

b. That more time be given to the proper training of officers in motor maintenance and convoy operations; drivers in preventative maintenance and driving; and mechanics in motor and vehicle repair.

c. That replacement depots contain ample drivers and mechanics properly trained in maintenance and operation for replacement or augmentation purposes.

d. That each truck company be equipped with two additional trucks, 3/4-ton, 4 x 4 weapons carriers with winch, to provide a maintenance truck for each platoon.

e. That the separate Quartermaster car platoon be retained and organized under a separate table of organization and equipment.

Bibliography

Chapter 5

1. T/O & E 10-57

2. Preliminary Draft "QM Truck Company (Troop) or QM Troop Transport Company 10-57", OTQM, October 1945.

3. Notes on Service Troops, Organ Branch, G-4, 12th Army Group, 18 July 1945.

4. Weekly G-4 Periodic Reports, 12th Army Group, August 1944-May 1945.

5. WD Observers Report No. 838, ETOUSA (Seventh US Army) 15 April 1945.

6. WD Observers Report No. 933, ETOUSA (Ninth US Army) 10 May 1945.

7. WD Observers Report No. 930, ETOUSA (Ninth US Army) 7 May 1945.

8. WD Observers Report No. 730, ETOUSA (First US Army) 16 March 1945.

9. WD Observers Report No. 731, ETOUSA (Third US Army) 16 March 1945.

10. WD Observers Report No. 732, ETOUSA (Fifteenth US Army) 16 March 1945.

11. T/O & E 10-87

12. Preliminary Draft "QM Car Company, 10-87", OTQM, October 1945.

13. WD Observers Report No. 846, ETOUSA (QM Topic List) 20 April 1945.

14. WD Observers Report No. 981, ETOUSA (12th Army Group) 22 May 1945.

15. SOP No. 10, OQM, Ninth US Army, 24 March 1945.

16. WD Observers Report No. 756, ETOUSA (Ninth US Army) 24 March 1945.

17. WD Observers Report No. 967, ETOUSA (Fifteenth US Army) 22 March 1945.

18. Annex No. 2 to Consolidated Historical Report of the Transportation Corps in the European Theater of Operations, May 1942 - May 1945.

19. T/O & E 55-37.

20. Operation Report Neptune, Omaha Beach Provisional Engineer Special Brigade Group, 26 February - 26 June 1944.

21. T/O & E 10-500.

CHAPTER 6

QUARTERMASTER LABOR SERVICES

SECTION 1

QUARTERMASTER SERVICE COMPANY

60. Mission and Organization.[1] The mission of the Quartermaster Service Company (T/O & E 10-67) is to provide military personnel for general labor and for the supervision of labor when civilian or prisoner of war labor is utilized. The company is organized into a company headquarters and two operating platoons with a total strength of four officers and 208 enlisted men. Each platoon, with 80 laborers in addition to platoon overhead, is capable of operating independently and has a rated capacity of handling 400 tons of supplies each day.[1]

61. Equipment. Organizational equipment of the service company is confined to the equipment necessary for the administration of the company and for the use and protection of the individual soldiers. The major items of equipment are the following:[1]

a.	Trailer, 1-ton, two wheel, cargo	1
b.	Truck, 2-1/2 ton cargo	1
c.	Truck, 3/4 ton weapons carrier	1
d.	Truck, 1/4 ton	1

The company is completely lacking in mobility, and transportation must be furnished by higher headquarters or by the unit to which the company is attached. Inasmuch as transportation was critical throughout the campaigns in the European Theater of Operations additional trucks for the movement of the company were often difficult to obtain.[4] It is believed that the company would have been able to operate more efficiently if sufficient trucks had been assigned organically to the company to permit the shuttling of work details from the company bivouac area to place of employment. A total of four trucks, 2-1/2 ton cargo, would provide one truck for transporting labor details for each operating platoon and two for company headquarters. It is also believed that the company should be authorized one additional truck, 1/4 ton. With four officers assigned to the company, this additional vehicle would be available to the two platoon leaders for supervising and checking on labor details.

62. Allocation.

a. The troop basis in the European Theater of Operations provided for a total of 276 service companies, with 103 allotted to the 12th Army Group. The basis for this allotment was as follows:[3,4]

For each army, two companies - or a total of eight companies in the four armies of the 12th Army Group.

For each corps, one company - or a total of 11 companies for the corps in 12th Army Group

For each armored division, 1.5 company - or a total of 19.5 companies for the 13 armored divisions in the 12th Army Group.

For each infantry division, two companies - or a total of 64 companies for the 32 infantry divisions in the 12th Army Group.

b. At no time, however, were 103 companies assigned to the group. In September 1944, the 12th Army Group had a total of 30 service companies, of which 19 were assigned to the First US Army, 14 to the Third US Army and five to the Ninth US Army. It was considered that a minimum of 19 companies for each army was required for operations in liberated territory and 25 for operations in Germany.[4] Towards the latter phases of the campaign each of the three armies which crossed the Rhine River had approximately 25 companies assigned.[3]

c. Allocation of Quartermaster Service Companies within the 6th Army Group was limited. In the initial landing in Southern France in August 1944, the Seventh US Army was handicapped in labor operations on the beaches due to the small number of service companies available. Throughout this campaign the Continental Advance Section and The Delta Base Section of the Southern Lines of Communication depended heavily on Italian service units, prisoner of war labor units, and, to a limited degree, on civilian labor.[12,14]

63. Method of Employment.

a. The Quartermaster Service Company was normally employed in the European Theater of Operations to perform general labor and guard duty, supervise prisoners and prisoner of war labor, and to supplement or replace depot supply and railhead companies in supply operations.[2]

b. A typical example of the assignment of service companies was that of the First US Army on 7 March 1945 with a total of 21 companies available:[6]

(1)	Quartermaster depot operations	- 7
(2)	One to each of three corps	- 3
(3)	Cemetery work	- 2
(4)	Solid fuel labor	- 1
(5)	Class III operations	- 1
(6)	Signal supply operations	- 1
(7)	Ordnance depot operations	- 4
(8)	Engineer depot operations	- 2

At other times companies were assigned to augment labor at hospitals,[7] operate or supplement railheads and truckheads,[10] and supplement personnel of graves registration companies for field operations.

c. In the Communications Zone service companies were utilized primarily to guard and supervise working prisoners of war. As operations progressed deeper inside Germany,

the field forces found it impracticable to secure the area in the rear of the army service areas. This additional security mission was assigned to service companies. The company was employed to guard both the supply and service installations and the prisoners of war who were employed therein. Experience indicated that under normal conditions the service company could adequately guard and supervise 1,500 working prisoners of war.[11]

d. In addition to being attached for labor at Quartermaster depots, railheads or other installations, a limited number of companies were attached to Ordnance and Engineer services for general labor at ammunition and engineer depots. Some companies were also attached to provide labor for handling sensitive items which for security reasons could not be handled by prisoners of war or civilian labor.[2] In other cases specially qualified service companies were used to supplement or replace depot and railhead companies in supply operations.[11]

e. Normally within the armies, service companies were controlled by the Army Quartermaster and assigned to Quartermaster Battalions for administration and operations.[8,9] Army special staff sections in need of labor placed their requests with the Army Quartermaster. The Army Quartermaster allocated service companies to the staff sections either directly or through the battalion to which the companies were attached. The Quartermaster also assigned service companies to depots, railheads, and other army installations as required. In each case, whether working for a staff section or an installation, the service company operated directly under the staff section or installation concerned. In one army where the service company commander was senior to the railhead officer, or to the officer commanding the gas supply company to which it was assigned, the service company commander normally assumed control.[5]

SECTION 2

OTHER LABOR

64. General.

a. Civilian and other indigenous types of labor were utilized by the Quartermaster Corps to augment military labor in the European Theater of Operations for the following principal reasons:[11]

(1) A shortage of Quartermaster Service units.

(2) The necessity for furnishing supplies to personnel other than United States Military, such as: civilian employees, prisoners of war, and liberated manpower.

(3) The necessity for utilizing increasingly large numbers of Quartermaster service companies to guard prisoners of war and service installations.

b. The various categories of personnel used by the Quartermaster Corps in the Communications Zone and the Extent

to which each was employed at Quartermaster installations at the cessation of hostilities were as follows:[11]

Category	Percent of Total
United States Military	21 %
Enemy Prisoners of War	46 %
Civilian Labor	26 %
Italian Service Units	6 %
Liberated Manpower	1 %
Total	100 %

65. Civilian Labor.

a. On 26 May 1944, Headquarters European Theater of Operations published Standing Operating Procedure Number 29, entitled "Procurement, Utilization, and Administration of Civilian Labor in Liberated or Occupied Countries". Under these regulations the Corps of Engineers was charged with procuring civilian labor for the using services, and established regional labor offices and local employment offices throughout the area under control of the United States Forces. As a using service, the Quartermaster Corps was charged with:[12]

(1) Utilizing civilian labor as much as practicable under conditions that prevailed.

(2) Designating Labor Administrative Officers for designated projects or area.

(3) Submitting estimates for civilian labor requirements.

(4) Requisitioning and administering civilian labor personnel.

b. Each laborer was initially classified as unskilled, except in unusual circumstances, with a tentative classification indicated by the employment office. Classification was made by the using service after demonstrated skill on the job.[6]

c. Static labor was that labor which resided within the area where the work was performed and for which the United States Forces assumed limited responsibility for feeding, clothing, and sheltering. Mobile labor was that labor which was organized into mobile units under military control, subject to being moved from place to place, and for which the United States Forces assumed responsibility for clothing, feeding and sheltering.[11] The basic mobile unit was the mobile labor company, which originally consisted of five officers and 23 enlisted men with 300 laborers. Later, under the Military Labor Service Administration the company strength was changed to four officers and four enlisted men with 250 laborers. The company was divided into three platoons of four sections each. Each section was capable of operating independently. As the operations progressed into Germany, the companies were largely

composed of displaced persons of several nationalities.[6]

66. Employment of Civilian Labor.

a. The Quartermaster Corps, or other using service, prepared requisitions for civilian labor and processed the individual laborers. The using service completed the individual contracts, employment identification cards, and other records, and assumed control until the work was completed.[12]

b. Civilians were employed by the Quartermaster Corps in administrative capacities such as clerks, interpreters, key technicians and guards. They were also employed as laborers in depots, repair installations, hotels, messes and other installations. At the peak, approximately 58,000 civilians, including British clerical personnel hired on a contract basis, were employed by the Quartermaster Service in the Communications Zone.[11]

c. In the Southern France operation, civilian labor was difficult to obtain. The Base Purchasing Agent, a separate staff officer, was charged with the procurement of civilian labor, and the Quartermaster Corps was again merely a using agency. Although reliance was placed mainly on Italian service units and prisoners of war, the Quartermaster, Base Section, at one time employed 15,000 civilians in the skilled, unskilled and clerical categories.[14]

d. Civilian labor was normally not as efficient as prisoner of war labor, and the use of civilians usually meant a high rate of pilferage. They could be used, however, on projects where the use of prisoners of war was either impractical or restricted by the Geneva Convention, and, in addition, they required no guards.[11]

67. Military Labor Service. The Military Labor Service was established late in 1944 as a special staff section of Headquarters, European Theater of Operations, for the over-all staff coordination and supervision of labor organizations, exclusive of United States service units and static civilian labor. It recommended allocation, administration and procedures for the employment of Italian service units, prisoner of war work units, and for all other formally organized labor elements utilized by the United States Forces in the European Theater of Operations.[11]

68. Geneva Convention.[12,13] The Geneva Convention of 1939 governed the use of prisoner of war labor, and practically restricted the use of prisoners of war to the Communications Zone. Some of the restrictions as provided in the convention are as follows:

a. They can not be used at installations within 12 miles of the nearest organized enemy force.

b. They can not be used forward of the Communications Zone at any establishment which constituted legitimate objective for hostile aviation.

c. They can not be used to transport material intended for combat units. This was normally interpreted to permit loading and unloading of all material except arms and ammunition.

69. Prisoners of War.

a. The Provost Marshal was charged with the general administration of prisoners of war and with supplying prisoner of war labor to the using services as required. Prisoners were assigned either on a temporary or permanent basis. If temporary, the Provost Marshal retained administrative control while the using service assumed the responsibility of guarding and supervising the prisoners during the period of temporary assignment. If permanent, the using service assumed complete responsibility.[14]

b. Early in 1945, prisoner of war labor service units were organized to replace losses of United States units caused by redeployment to the Pacific Theater of Operations. The units were designated according to nationality and function, such as: "Prisoner of War Labor Company (German) Quartermaster Laundry". In April 1945, 26 companies were assigned to the Quartermaster Service in the Advance Section of the Southern Lines of Communication.[11]

c. The first prisoners of war employed were used as laborers in cemeteries in Normandy and as laborers in beach supply dumps in Southern France. Shortly thereafter, they were used in salvage and laundry activities, wood cutting, and in depots. Later, prisoners of war were classified according to skills. Tailors, cobblers, tinsmiths, and other skilled personnel were organized into salvage repair companies. Performance of prisoner of war labor was mediocre when employed in large groups, but in general, prisoners of war were superior to indigenous civilian labor in the quality of work produced. Approximately 115,000 prisoner of war were used by the Quartermaster Service at the peak of Operations in the Communications Zone.[11]

70. Italian Service Units.[11]

a. Italian personnel were organized into ten different kinds of Quartermaster Service units under standard Quartermaster Tables of Organization. At the peak there were 50 companies on duty in the European Theater of Operations and they supplied approximately six percent of the labor service in the Communications Zone for Quartermaster operations.

b. Originally, some Italian Service Units operated under the supervision of Engineer Technical Supervisory Regiments. Others were allocated direct to the services. When the Military Labor Service was organized, that agency supervised the Italian Service Units.

c. In general, Italian Service Units were found to be less satisfactory than other types of labor in the European Theater of Operations. Their greatest efficiency was achieved in the receipt, storage, and issue of gasoline and in laundry and salvage operations. They were rated at approximately half the capacity of the comparable United States Military unit.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

71. Conclusions.

a. That in the European Theater of Operations

at the cessation of hostilities more than 75 percent of the labor service of the Quartermaster Corps in the Communications Zone was performed by other than United States military personnel.

b. That the relative efficiency of the various groups of labor personnel was as follows:

(1) United States military units.

(2) Enemy prisoners of war.

(3) Civilian labor.

(4) Italian Service Units.

c. That the advantages of the use of labor other than U.S. military units outweighed the disadvantages of its use.

d. That the Quartermaster Service Company is a flexible unit capable of various operations, but completely lacking mobility.

72. Recommendations.

a. That additional transportation be assigned to the Quartermaster Service Company (T/O & E 10-67) to provide at least one truck, 2-1/2 ton cargo, for each platoon for transporting labor details, at least one additional truck, 2-1/2 ton cargo, for company headquarters, and at least one truck, 1/4 ton, for the use of the platoon leaders in checking and supervising labor details.

b. That pertinent doctrines, techniques and Tables of Organization and Equipment be amended by appropriate agencies of the War Department.

Bibliography

Chapter 6

1. T/O & E 10-67, 25 February 1944.

2. Initial Draft, Quartermaster Service Company Study, OTCQM, October 1945, submitted for General Board use.

3. Notes on Service Troops, Organization Branch, G-4, 12th Army Group, 18 July 1945.

4. War Department Observers Report Number 981, 22 May 1945.

5. War Department Observers Report Number 773, 9 April 1945.

6. War Department Observers Report Number 975, 22 May 1945.

7. War Department Observers Report Number 758, 24 March 1945.

8. War Department Observers Report Number 934, 10 May 1945.

9. War Department Observers Report Number 756, 27 March 1945.

10. War Department Observers Report Number 967, 10 May 1945.

11. QM Operational Study No. 11, "Use of Personnel Other than US Military in the European Theater".

12. ETO, SOP Number 29, 26 May 1944: Headquarters, ETOUSA, and changes.

13. Letter, Headquarters, ETOUSA, file AG 383.6 OpGA, subject: "Prisoner of War Labor", 21 September 1944.

14. History of Continental Advance Section, Communications Zone. ETOUSA. August 1944 - May 1945.

CHAPTER 7

SUPPLY AND SERVICES FOR THE UNITED STATES AIR FORCES AND THE SUPPLY OF OTHER THAN UNITED STATES ARMY FORCES

SECTION 1

SUPPLY AND SERVICES FOR THE UNITED STATES AIR FORCES, EUROPEAN THEATER OF OPERATIONS

73. General.[1]

a. Quartermaster supply to the United States Air Forces followed the same general procedure as supply to Army Ground and Service Forces. Commanders of Base Sections of Communications Zone on the continent and in the United Kingdom were responsible for the supply of all the United States forces assigned or within the geographical area, irrespective of whether such units were air, ground or service forces. Normally, Air Force units were assigned specific depots for supply, either in the Communications Zone or army areas. Normal requisitioning and supply procedures were followed in accordance with instructions issued by the Commanding General, Headquarters, European Theater of Operations.

b. Prior to D-Day it was decided that no Air Force units would stock or carry any level of Quartermaster supplies other than emergency stocks of rations, oil and lubricants. The Commanding Generals of the army areas and the commanders of Base, Intermediate and Advance sections of the Communications Zone were responsible for the supply of Air Force units located within their respective areas. Directives issued by Headquarters, European Theater of Operations, prescribed that the supply agencies concerned place supplies within 40 miles of the Air Force installations within their respective zones. The service team Quartermaster of the Air Force Service Command was responsible for picking up the supplies at the points designated by the supply agency.

74. Supply Operations.[1]

a. Normally, ration issues were made as directed by appropriate European Theater of Operations circulars and amendments. Rations were controlled by the application of the daily menu attendance figures. Operational rations were used by the Air Force principally as a travel ration by the Aviation truck companies and air combat crews on the move. Special allotments of shell eggs, oranges, powdered milk and sugar were furnished combat crews during air operations as a necessary augmentation, both from a medical and a morale standpoint. Special issues of candy and gum were made available for use by combat crews on long missions. A special box of rich candies was manufactured in England for this purpose, but investigation revealed that combat crews preferred regular candy bars available at post exchanges.

b. In requisitioning authorized supplies the air

base Quartermaster dealt directly with assigned depots. Controlled items, or items in short supply such as certain items of general purpose equipment, and items in excess of authorized allowances, were requisitioned through the Quartermaster, Air Force Service Command. The Ninth Air Force Service Command Quartermaster approved the requisition where appropriate and forwarded it to the Quartermaster, Communications Zone, for final approval and necessary action.

c. Class III requirements for each Air Force station were consolidated and submitted to the nearest depot or army supply point. Class III (aviation) requirements were consolidated by those Air Force units which were served by the Advance Section, Communications Zone and submitted to the Advance Section by means of a daily telegram which indicated the items and amounts desired at each supply point.

75. Discussion.

a. The application of ration factors during the food conservation program was worked out by the Ninth Air Force with considerable difficulty because personnel affected by different reduction factors, as well as exempted personnel, were eating in the same consolidated mess, making it physically impossible to differentiate between sedentary and hard workers.

b. The Quartermaster personnel in the material squadron (T/O I-458R) of the air service group were considered numerically sufficient. However, under the old table of organization for the air depot group, only 23 enlisted men and two officers were authorized for the Quartermaster depot platoon. This number proved insufficient to provide for peak loads and to care for distributing points which had to be established at air depot groups to cope with critical supply situations.

c. Service team Quartermasters at times experienced extreme difficulties due to the fact that they and the Air Force units which they supplied moved in rapid succession back and forth through army areas and Advance and Intermediate Sections of Communications Zone. In some cases, the service team Quartermaster would be in one army area while the combat units he served were operating in another area. This, together with the movements of the armies and sections of Communications Zone, resulted in the service team Quartermasters making many contacts with depots and other Quartermasters. In this connection, they learned where supplies were located on the continent, and, if supplies were not available at one place they would go to another depot. This resulted in considerable confusion which could not, under the system, be controlled by the Air Force Service Command because the service team Quartermaster did not normally go through the Air Force Service Command but dealt directly with the depots concerned. When supplies became critical it was impossible to control issues through normal channels and it was necessary for the Air Force to arrange for credits, except for Class I supplies, and to handle the issues through hastily established Air Force dumps.

d. Difficulties were encountered, in some army areas, by mobile sales store personnel refusing to sell to Air Force officers. Usually, this was straightened out when it was brought to the attention of the sales officer by either the Air Force Service Command Quartermaster or the Army Quartermaster. In some cases, Army Ground Force personnel were favored over Air Force personnel. Notices of the itinerary of army sales stores sometimes were not received by Air Force units until the store had left the locality and, on other occasions, were not received at all. This was primarily due to long channels of communications.

76. Quartermaster Services for the United States Air Forces.[9]

a. The methods and procedures for handling salvage collection and salvage repair in the Army Air Forces were essentially the same as that for other United States Army forces. Air Force units were not normally responsible for the collection and segregation of Air Force salvage. Scrap which accumulated at Air Force stations was disposed of as directed by the Communications Zone Section Commander in whose area the Air Force unit was located. Preliminary segregation and classification was effected by the station salvage officer who moved the salvage material to the appropriate Quartermaster dump or salvage collecting point as directed. Air Force installations maintained a Salvage and Conservation officer who supervised salvage activities with a view of conserving material as well as disposing of it. Unserviceable Quartermaster individual and organizational clothing and equipment at Air Force installations was processed through assigned depots in the base section. If replacement was required, the salvage items were turned in to a depot and a requisition for replacement in kind and quantity was submitted.

b. The evacuation of Quartermaster salvage was not normally a function of Air Force units. The Air Force was only responsible for forwarding salvage to base section depots or salvage collecting units, which in turn segregated and classified the items for evacuation as directed by that unit.

c. Salvage repair service for Army Air Force units was furnished by salvage depots and Quartermaster salvage repair units allocated by the Chief Quartermaster to units near Air Force installations. The salvage officer at Air Force installations maintained facilities within the station for minor repairs such as tent patching, but, in general, he secured replacements for unserviceable items of Quartermaster equipment while the salvage depots performed the necessary reclamation or disposal. Clothing repair facilities were allocated by base section headquarters and normally consisted of Quartermaster repair units or civilian agencies in Allied countries.

d. Quartermaster laundry service for Air Force units was normally secured through the Communications Zone Section Quartermasters or, in the United Kingdom, through base section Quartermasters.

Air Force units were assigned to Quartermaster mobile laundry installations in army areas or to civilian agencies in Allied countries where army facilities were limited. The Station Quartermasters at Air Force bases were responsible for the collection of laundry for all units at their stations and for delivery to the assigned laundry installation. All specifications as to the method of bundling, quantity of items, etc., were followed, and the paper work involved, especially where civilian agencies were concerned, was processed through the Station Quartermaster. Under reciprocal aid agreement in Allied countries, the civilian agency submitted a bill for services to the Station Quartermaster upon completion of the work. The Station Quartermaster authenticated the voucher and forwarded it to the base section for final auditing and payment.

e. Bath facilities were allocated to base sections by the Chief Quartermaster. Air Force units were assigned to installations within their respective base sections.

77. Discussion.

a. Shoe repair and laundry services often were not available to Air Force units in army areas because these services were normally placed for the convenience of armies, particularly to serve frontline divisions. During the advance into Germany, service team and air depot Quartermasters arranged locally with civilian contractors for laundry and shoe repair, took over and operated local laundries and shoe repair shops with civilian labor or, where this could not be done, they sent the shoes to be repaired and laundry to Belgium or France, sometimes for distances of several hundred miles.

b. Air Force combat units occupied either newly constructed landing strips or airfields taken over from the Germans which were, in most cases, destroyed and without bathing facilities, and in such cases bathing facilities were improvised.

78. Graves Registration Service.[10]

a. The methods, policies and procedures for Graves Registration Service for the United States Air Forces in Europe were essentially the same as that provided for Army Ground Forces.

b. The Graves Registration Service in the United States Air Forces in Europe operated under the Commanding General, Headquarters IX Air Force Service Command. This service consisted of a United States Air Forces in Europe Graves Registration officer who was located in the Quartermaster Section, Headquarters IX Air Force Service Command. There was also provided a command graves registration officer for each Quartermaster section of all major subordinate commands of Headquarters United States Air Forces in Europe. Graves registration officers were also provided for service groups, air depot groups, separate groups, and any unit not serviced by a Quartermaster service team. Normally, Quartermaster officers were appointed as graves registration officers and assumed

this responsibility in addition to their other duties.

c. When death occurred in the United Kingdom, the deceased's immediate commanding officer promptly evacuated the remains to the nearest military cemetery or to an approved civilian undertaker. If the remains were within 50 miles of a United States military cemetery they were normally dispatched to that cemetery. Local burials were authorized in emergencies when it was impossible to transport the remains to any one of the designated military cemeteries. For emergencies, small plots were reserved in various civilian cemeteries throughout the United Kingdom. In case of emergency burial in a local cemetery, the American Graves Registration Service was promptly notified in order that necessary action could be taken.

d. When death occurred on the continent in the European Theater of Operations, the normal method of evacuation to established military cemeteries was followed if at all possible. The remains were normally transported to the cemetery by unit transportation.

e. The methods, policies and procedures followed by Army Ground Forces on the continent were normally used by the United States Air Forces in Europe in the identification of deceased personnel and the handling of personal effects.

f. Experience indicated that all information of any assistance in identifiaction of unknown deceased should be collected in one place by a special research section under the Adjutant General Casualty Section. The section should have access to "Missing Air Crew Reports", Adjutant General Casualty Morning Report locator cards, teeth charts, fingerprints, and any other identifying material available.

SECTION 2

UNITED STATES NAVY

79. Authority to Supply.[2] On 6 November 1943, the Joint Logistical Staff Committee, European Theater of Operations, published a supply plan to govern US Army responsibility to US Naval Forces in Europe, which stated "The Commanding General, Services of Supply, is responsible for supplying to the US Naval forces in Europe those items which are common to the Army and Navy, and which are approved for such supply in the Army and Naval Forces in Europe". Under the plan the Chief Quartermaster was charged with supplying items of a Quartermaster nature as called for or directed.

80. Procedures.

a. The Navy prepared estimates of its requirements and submitted these from time to time to the General Purchasing Agent. The General Purchasing Agent furnished the Chief Quartermaster with a list of the Naval requirements pertaining to the Quartermaster service. The Chief Quartermaster indicated thereon which items would be procured from the Army in the European Theater of Operations

by Navy purchasing agencies, and the remaining items which would be requisitioned by the Navy from the United States by normal requisitioning procedure.[2]

b. Class I supplies were issued to the Navy on the same basis as for US Army units, with the exception that personnel on craft were given specified percentage increases. Class II and IV items were requisitioned by the Navy directly on Quartermaster depots.[3] All requisitions required the approval of the G-4 Section of the headquarters of the area in which the Navy unit was operating, and all requisitions for controlled items required the approval of the Chief Quartermaster. Class III requirements in large quantities also required the approval of the Chief Quartermaster.[4] Post Exchange supplies were furnished the Navy on requisition also, but on a cash reimbursement basis.[3]

81. Experiences in the European Theater of Operations.

At the end of hostilities in May 1945, the Quartermaster service was supplying all classes of Quartermaster supplies to approximately 30,000 Naval personnel.[5] The normal procedure was followed and no difficulties encountered. Supplies and equipment which were excess in the European Theater of Operations, and desired by the Navy, were transferred to the Navy upon the joint approval of the Senior Naval Commander and the European Theater Commander. These supplies available, but not in excess, were transferred to the Navy if the European Theater Commander determined that such transfer was necessary for the success of the operation.

SECTION 3

AMERICAN RED CROSS.[4]

82. Responsibilities for Supply.

a. The Chief Quartermaster was responsible for the procurement, storage and issue of supplies of a Quartermaster nature for the American Red Cross in approved quantities and subject to the availability of stocks. The Chief Quartermaster established credits in depots designated for Red Cross supply and notified the Red Cross representative as to when and where the credits were to be established.

b. The American Red Cross Representative, Headquarters, Communications Zone, submitted estimates for requirements to the Chief Quartermaster on a quarterly basis four months in advance of the period to be covered. The Red Cross also furnished the Chief Quartermaster with information as to where the credits were desired and a list of personnel authorized to draw against the credits established.

83. Classes of Supply.

a. Class I supplies were issued on the following basis:

(1) For use in American Red Cross clubs; these items were confined to the ingredients, except doughnut flour, necessary for making cakes, cookies, doughnuts and beverages. The doughnut flour was procured independently by the Red Cross and stored by the Quartermaster Corps. All other items were furnished from regular Class I stocks and transferred on a sales basis.

(2) For use in American Red Cross hotels; the Red Cross was authorized to draw rations for the total number of US Army enlisted personnel subsisting at such hotels, and for US Army officers, Naval personnel, and other personnel having a military status recognized by the War Department, up to 25 percent of the number of US Army enlisted men being subsisted at the hotel. Rations issued conformed to the US Army menus and were transferred to the Red Cross on a sales basis at 75 cents per ration, with the exception that no charge was made for rations representing half the strength of the US Army personnel subsisted at the hotel.

(3) For feeding civilian personnel; subject to the availability of stocks, the Red Cross was authorized to feed a limited number of civilian employees. In doing this the Red Cross either drew rations according to the current menu or purchased excess items of subsistence. The charge was 75 cents per ration.

b. The Quartermaster was authorized to issue items of standard individual and organizational equipment on memorandum receipt to the American Red Cross. The issues of individual equipment were restricted to Table of Equipment Allowances, and the issue of organizational equipment to the requirements previously submitted to and approved by the Chief Quartermaster. Controlled items and tentage required the approval of the Chief Quartermaster before issue could be made. A list of expendable items, setting forth the initial issue and the maximum 15-day replacement allowance for a 2,000 man club was published by the Chief Quartermaster. The items were restricted to those necessary for sanitary and police work on the club premises.

c. Petroleum, oil and lubricants were issued without charge from Quartermaster Class III dumps. Fuel for heating and cooking was also supplied without charge, but subject to established allowances and priorities.

d. Comfort articles were furnished on a sales basis for gratuitous issue to US military personnel or for use in clubs. Certain items of clothing and accessories peculiar to American Red Cross personnel were stocked at Quartermaster Sales Stores for sale to Red Cross personnel.

84. Accounting Procedure. Collection from the Red Cross for items sold was the responsibility of the Accounting Division, Office of the Chief Quartermaster. Doughnut flour and book matches and other similar items of Red Cross property stored by the Quartermaster were not entered on tallies with items sold. Gratuitous issues to the Red Cross were also placed on separate tallies. All tallies for items issued on a reimbursement basis were forwarded to the Accounts Division for collection. All property held by the Red Cross on memorandum receipt was recorded in the Supply Division, Office of the Chief Quartermaster, to whom all pertinent debit and credit tallies were forwarded.

SECTION 4

CIVIL AFFAIRS[5]

85. Mission and Authority

a. In a letter to the Secretary of War, dated 10 November 1943, the President of the United States formally charged the Army with the responsibility, until such time as appropriate civilian agencies were prepared to assume it, of shipping and distributing supplies for the relief and rehabilitation of liberated countries. Until that time, the army had recognized its potential responsibilities for a certain amount of civil relief to:

(1) Prevent civil unrest which would endanger lines of communications and channels of supply, and

(2) Prevent disease which might endanger troops.

However, full responsibility had never been clearly defined. In his letter to the Secretary of War, the President stated:

"Although other agencies of the Government are preparing themselves for the work that must be done in connection with the relief and rehabilitation of liberated areas, it is quite apparent if prompt results are to be obtained the Army will have to assume the initial burden of shipping and distributing relief supplies. This will not only be the case in the event that active military operations are under way, but also in the event of a German collapse. I envisage that in the event of a German collapse, the need for the Army to undertake this work will be all the more apparent.

Therefore, I direct that you have the Army undertake the planning necessary to enable it to carry out this task to the end that it shall be prepared to perform this function, pending such time as civilian agencies must be prepared to carry out the longer range program of relief.

You may take this letter as my authority to you to call upon all other agencies of the Government for such plans and assistance as you may need. For all matters of policy that have to be determined in connection with this work, you will consult with the State Department for any political advice, and upon the Treasury

for such economic and fiscal direction as you may need."

b. This letter brought up the problem of relief supplies for the people of Europe and envisaged primarily relief of those people residing in liberated countries. As the military operations progressed, the additional problem arose of furnishing relief to those people of Allied Nations who had been transported into Germany for slave labor and other purposes. The basic supply mission of Civil Affairs may therefore be stated as follows:

(1) To provide supplies necessary for immediate relief to the people of liberated countries.

(2) To provide the essential supplies necessary for the health and maintenance of displaced persons found inside enemy countries, and also those supplies necessary for the repatriation of these people back to their native lands.

86. Responsibility.

a. To accomplish the army's responsibility in the European Theater, a Civil Affairs section was organized under the G-1, Headquarters European Theater of Operations, and operated under and in accordance with the policies and directives issued by the European Theater Commander and by the Civil Affairs Division in the War Department. Civil Affairs was later given general staff status by inclusion on the general staff as G-5. It operated through all echelons down to and including divisions, and through local detachments set up in various parts of liberated and occupied countries. These detachments were known as Civil Affairs detachments when operating in liberated countries and as Military Government detachments when operating in occupied territory. The G-5 was charged with the responsibility for planning and estimating requirements; coordination with the services for procurement, storage and issue of the supplies; coordination with appropriate agencies of the governments of liberated and occupied countries for storage space and other matters pertaining to Civil Affairs, and with the local safeguarding and retail issue of the supplies to civilian recipients.

b. The methods, policies and procedures for Civil Affairs supply were published by the Commanding General, European Theater of Operations, as Standing Operating Procedure Number 28, dated 2 June 1944. In this, the supply objective was stated as follows:

"The primary objective of Civil Affairs operations is the effective control of the civilian population to prevent its interference with military operations and to make the maximum use of local resources for the benefit of these operations. A corollary of this objective is the furnishing of certain minimum supplies to the civilian population to establish adequate standards of public health and to prevent the civil population from becoming a burden upon the military. Of these minimum supplies the maximum amounts are to be obtained from indigenous resources, and only the

deficiency, if any, is to be provided from stocks under military control."

Under this procedure, and in accordance with instructions issued from time to time by Headquarters, European Theater of Operations, the Quartermaster responsib ilities for Civil Affairs were as follows:

(1) Determination of Requirements. No responsibility. Requirements were computed by higher authority and passed to the Chief Quartermaster for procurement.

(2) Procurement. A mechanical responsibility. Requisitions were placed on the source as designated by higher authorities for the quantities and items as designated by those authorities.

(3) Storage. Complete responsibility for all Civil Affairs items of a Quartermaster nature.

(4) Distribution. Full responsibility for distribution to depots from ports and between depots.

(5) Issue. Bulk issue to Civil Affairs detachments only. No responsibility for retail issue or distribution to the civil population.

87. Prior Planning.

a. Early in 1943 the United States and Great Britain began a study of the problem for civilian supply in liberated and occupied countries. The work was carried on under an Inter-Allied Committee known as the "Administration of Territories of Europe" (A.T.E.). Its object was to study the problem of providing food, medical supplies, and clothing for civilians in countries under Axis occupation. The committee agreed that stock piles created for Civil Affairs or relief purposes would be available for joint British and American use, with no division between United States and British responsibility. In their planning, the committee members used largely the American proposed basic ration for Class I requirements, while for Class II and IV requirements they utilized the British experience gained in handling relief in bombed areas of the United Kingdom. From this they determined the clothing, footwear, sanitary equipment and emergency feeding equipment that would probably be required. No reference was made to factual information available in the Office of the Chief Quartermaster, and the requirements as determined from British experience alone were published by Supreme Headquarters in a catalogue entitled "Catalogue Civil Affairs Stores and Supplies".

b. The requirements as estimated for food, clothing, blankets and emergency feeding sets were generally satisfactory. The requirements as estimated for sanitary and expendable supplies, tents and cots were not satisfactory, and in some cases the figures were lacking entirely. As a result, the Quartermaster service was often called

upon to furnish many of these items from regular army stock to camps for displaced persons. If supplies were available, this was not objectionable, but it was frequently necessary to obtain a command decision from Headquarters, European Theater of Operation, prior to the issue of certain items required for military operations. In a few cases Civil Affairs stock had to be issued to meet US Army requirements, and a great deal of administrative work was involved in accounting for the transactions to enable subsequent retransfer from army to Civil Affairs stock.

88. Rations.

a. The principal commodity supplied by the Chief Quartermaster through Civil Affairs channels was food. Flour, fats and carbohydrates formed the major components. For the most part, the items were identical with those found in the menus for prisoners of war, civilian labor, and other similar categories of personnel supplied by the Quartermaster. It was therefore necessary to establish and maintain separate records, separate stock piles of supplies in depots, and separate supply procedures for identical items.

b. Initially, it was necessary to develop a basic ration as a basis for the procurement of supplies. The Civilian Supply Branch, International Aid Division, Headquarters, Army Service Forces, Washington, D.C., based the requirements on the following factors:

(1) The ration had a nutritional value of at least 2,000 calories.

(2) All items on the United States schedule were already in use by the United States Army, in units and containers which the army was accustomed to handling.

(3) Initial shipment was to be made from regular army stocks, and increased production of these items would not disrupt the regular flow of army orders.

(4) Quantities of items were available in the United States without any serious drain on civilian supply in the country.

b. The studies of the joint committee and of the Civilian Supply Branch were combined by Supreme Headquarters, Allied Expeditionary Forces, and a unified program established. It was determined that from D-Day to D plus 90 supplies would be sent direct from the United States to the continent, simultaneously with shipments from the United Kingdom.

c. The ration as finally determined to be used as a guide in the procurement of Civil Affairs supplies contained approximately 2,000 calories and consisted of the following:

Item	Weight	Calories
Flour	15.00 ounces	1,515
Meat & Vegetable Stew	2.65	65
Salt	.50	--
Soup, dehydrated	2.00	178
Pulses	1.00	100
Cheese	.50	55
Fats	.50	127
Total	21.75 ounces	2,040

Supplemental Item	Weight	Calories
*Milk, evaporated	2.00 ounces	74
Sugar	.50	50
**Coffee	2.00 (per week)	--
*Vitamized chocolate	1.00	

*Supplement for children and nursing mothers. Furnished on a basis of 25 percent of the total fed.

**Coffee furnished on a basis of 75 percent of the total.

d. This basic ration was used only as a guide, and issue was made only of those items necessary in certain areas to supplement civilian stocks to bring the ration up to the prescribed standard. Substitution was frequent, particularly in the meat component of the ration. The United Kingdom substituted many items in order to use up the large stocks of canned meat that had been stock piled in the United Kingdom in the form of "Blockage" and "Invasion Reserve". All these canned meats, however, had been packaged for commercial use only, with resultant trouble and difficulty in handling, shipping and storage in continental depots. The commercial type packaging did not stand up which resulted in considerable loss. The issue did, however, carry over the civil affairs program until shipments from the United States, packaged the same as regular army supplies, began to arrive on the continent in sufficient quantity.

89. Requirements.

a. Requirements for all supplies were computed and approved by the G-5 Section, Supreme Headquarters, Allied Expeditionary Forces, inasmuch as requirements were common to both American and British Zones of Action. The initial requirements for the period D-Day to D plus 90 were estimated and forwarded to the Combined Civil Affairs Committee in Washington, D.C., for approval and necessary action. Requirements for later periods were not computed until operations had commenced on the continent, and were then based upon reports and recommendations of the field forces.

b. Each army through army group and Communications Zone reported their respective forecasts of requirements for the fourth, fifth and sixth months subsequent to the month in which the report was made. Thus, the requirements for the sixth month were twice revised before final determination and approval. The system gave Supreme Headquarters a continuously revised set of requirements. Requirements for 30-day periods, 120 days in advance, were consolidated,

screened, estimated and submitted by Supreme Headquarters to the Combined Civil Affairs Committee for approval and allocation.

90. Allocation. The Civil Affairs committee screened the requirements and determined which items should be approved and from what country procurement should be made. The Civil Affairs committee cabled the information to Supreme Headquarters and gave authority for the procurement and allocation as indicated. Based on this cable, Supreme Headquarters prepared allocation letters which showed the items and quantities authorized for procurement, and the zone in which the supplies were to be used. These letters were originally sent to the army groups, G-4 and G-5 Headquarters European Theater of Operations, and other interested parties (Appendix 7). After the 21 Army Group (British) released operational control of the United States Armies and the 12th Army Group and Communications Zone assumed responsibility for their control and support, the letters were sent to G-4 and G-5, Headquarters Communications Zone (Appendix 8). The main disadvantage of this system, particularly during the period of 21 Army Group operational control, was the lag in time in getting the allocation letters to the Chief Quartermaster, who was responsible for requisitioning the supplies.

91. Procurement.

a. When the G-5, Headquarters, European Theater of Operations, received copies of the allocation letters, copies were forwarded to the Chief Quartermaster through the G-4, Headquarters, European Theater of Operations. The Quartermaster did not initiate procurement on these letters, however, until instructed to do so by the G-4.

b. For those items to be procured in the United States the Chief Quartermaster prepared requisitions in the normal manner and forwarded them to the New York Port of Embarkation, which in turn forwarded them to the International Division, Army Service Forces. The International Division processed the requisitions and returned copies to the New York Port of Embarkation, which called the supplies forward and made shipment.

c. For those items to be procured in the United Kingdom, the Chief Quartermaster prepared a requisition on a special form and submitted it to the British War Office for action. The special form was so prepared as to enable the War Office and the Chief Quartermaster to consolidate all the information necessary on one sheet. The Chief Quartermaster listed the allocation authority, and the items and quantities of each required. The British War Office completed the form by showing the depot, place, item, type of package, and weight, and returned the form to the Chief Quartermaster. Based on the information contained in the form, the Chief Quartermaster prepared depot supply shipping data (DSSD) and submitted it to the Office of the Chief of Transportation for action.

92. Shipment of Supplies.

a. All supplies shipped from the United States were in packages specially marked for Civil Affairs to differentiate them from other supplies. The New York Port of

Embarkation shipped the supplies based on priorities established by the G-4, Headquarters, Communications Zone, who also designated, in conjunction with the Chief Quartermaster, the ports of entry and the Quartermaster depots to be utilized for storage. The shortage of shipping space and the congested ports of off loading prevented the Civil Affairs supplies from being placed in priority "A" as the need for military supplies was considered to be more urgent. Consequently, but few Civil Affairs supplies were received during the first six months of the operation. The documentation of supplies from the United States was the responsibility of the depot of shipping origin.

b. Supplies shipped from the United Kingdom were also specially marked. The G-4, Headquarters, Communications Zone, allocated shipping space for Civil Affairs supplies, and the Supply Section of the Civil Affairs Branch, Headquarters, Communications Zone, established priorities of certain supplies within the allocation. These priorities were given to the Chief of Transportation, and as the supplies were called forward on depot Supply shipping data, were loaded and shipped accordingly. On about 15 October 1944, the system was changed in that supplies which aggregated less than a trainload lot were shipped from the British depots concerned in the United Kingdom to United States Army depots for consolidation into one large shipment.

93. Distribution.

a. As supplies arrived at Quartermaster depots normal procedure was followed in accounting and reporting for Civil Affairs supplies. Commonly used items were not stored separate from Army stocks. Items peculiar to Civil Affairs, or food items below army standards, were stored separately. Separate records were kept of the receipt, storage and issue of all Civil Affairs items.

b. Issues of Civil Affairs supplies were made to Civil Affairs detachments, base section, armies and National Authorities (bureaus or agencies established by the existing Allied or liberated governments to administer Civil Affairs). All issues were made on requisitions approved by the Chief Quartermaster or on distribution directives issued by him. All issues were made from the depots under the same system as for regular army supplies, with the exception that two extra copies of the tally-outs were forwarded to the Chief Quartermaster for transmittal to the G-5, Headquarters, Communications Zone, for the maintenance of his records.

c. Requisitions were normally submitted by the various agencies to the G-5, Headquarters, Communications Zone, who screened, edited and transmitted the approved requisition to the Chief Quartermaster through G-4, Headquarters, Communications Zone. The Chief Quartermaster acted only on requisitions approved by the G-5 and G-4. Upon approval, the Chief Quartermaster checked availability of Civil Affairs stocks, determined if the shipment would be within the approved tonnage allocation, and either issued a distribution directive to the depot concerned for shipment or approved the requisition if pick-up was to be made at the depot.

94. Discussion. The Chief Quartermaster had the

responsibility of estimating food, clothing, tentage, insecticides and other similar type item requirements for United States military forces, Italian service units, liberated manpower units, civilian labor, enemy prisoners of war, liberated allied prisoners of war, and other similar categories of personnel. For these, Civil Affairs had no responsibility. Civil Affairs did, however, have the responsibility of estimating requirements of the same items for practically the same type of personnel. The division of responsibility was very difficult to draw, and the resulting procedures and circumstances created a system which lacked flexibility both from a staff standpoint and from field operations. While in a few cases it was necessary to utilize Civil Affairs stocks to meet United States Army commitments considerable quantities of Army supplies were issued to meet Civil Affairs responsibilities. This was particularly true in the supply of displaced persons in Germany. This was due not only to underestimation of requirements and to the low priority of that class of supply, but to the inability or difficulty in establishing the identity of an individual as a displaced person or as one of the categories for which the Army was responsible.

SECTION 5

SUPPLY OF ALLIED MILITARY UNITS[6,7]

95. Classes of Allied Military Units.

a. At the end of hostilities in May 1945, Allied manpower as indicated below was being supplied by the United States Forces:

French Military (including Moslems)	355,551
Continental Allied (liberated manpower)	79,617
Italian and Salvage Service Units	41,987
Total	477,155

b. On 3 December 1944, Supreme Headquarters, Allied Expeditionary Forces, prescribed classes of Allied military organizations based upon their formation and equipment. Military and para-military forces were divided into the following types:

(1) Type "A" forces were those regularly constituted armed ground forces activated, equipped, and supplied in accordance with approved rearmament programs and operating under the Supreme Command, Allied Expeditionary Forces.

(2) Type "B" forces were those military units raised from liberated manpower and equipped, in accordance with Combined Chiefs of Staff directives, for service and security missions in support of operations against the enemy.

(3) Type "C" forces were those para-military formations of liberated manpower not forming part of the regularly constituted

armed forces of liberated nations and not grouped under Type "A" and "B" forces.

(4) Type "D" forces included all military and para-military forces and agencies of liberated nations not included in other categories.

c. On 15 April 1945, the Commanding General, European Theater of Operations, further defined these classes as follows:

(1) Type "A" forces were regularly constituted army field and air forces organized and equipped in accordance with approved Combined Chiefs of Staff re-armament program and supplied on a basis comparable to equivalent United States and British Armed Forces, such as the First French Army.

(2) Type "B" forces were those organized under Combined Chiefs of Staff authority for equipping liberated manpower and for service on lines of communications. Principal forces in this category are light infantry battalions, pioneer groups and similar units.

(3) Type "C" and "D" forces were other military or para-military forces of liberated nations not included in types "A" and "B" such as French Forces of the Interior and French Army units not included in rearmament program.

96. Basis of Issue, Class I Supplies.

a. Type "A" units were originally supplied rations by United States commanders under whom the units functioned on a scale agreed upon between the liberated nations and the Communications Zone. The scale agreed upon was not to exceed the scale established for United States troops. Type "A" French units were later furnished a special French-Moslem ration established by the Chief Quartermaster. Post Exchange items were also issued on a modified scale.

b. Type "B" units under direct command of United States commanders were similarly supplied by the commanders concerned. Those Type "B" operational units not under direct command of United States commanders, but assigned missions in support of the Allied Expeditionary Forces, were furnished rations by the American commanders concerned only when employed outside the territorial limits of their respective countries. Type "B" units which were in training were supplied rations only when specifically agreed upon between the government concerned and the Allied Expeditionary Forces. Monthly estimates for units in training were submitted to Supreme Headquarters for screening and approval and establishment of priorities. Normally, the priority of supply for these units was the same as for Communications Zone troops, but when operational necessity demanded the units were supplied a special ration

established by the Chief Quartermaster with the exception of those units operating in the 6th Army Group area which fed the French-Moslem ration. Type "B" units operating inside Germany were given a modified Post Exchange issue. Those operating outside Germany were authorized no issue of Post Exchange items.

c. Type "C" forces were supplied rations insofar as availability permitted, from Communications Zone or army dumps when operating under direct United States command. Type "D" forces were supplied when specifically agreed upon between the government concerned and Supreme Headquarters, Allied Expeditionary Forces. Type "D" forces when supplied were fed under the same procedure as for Type "B" units in training. During later stages of operations, types "D" and "C" units, operating under United States control, except those of the 6th Army Group, were issued a special Continental Menu for Allied Forces operating with the United States. Units in 6th Army Group were furnished the French-Moslem ration. No Post Exchange items were authorized for these units.

97. Class III Supplies. Supply of Class III products was furnished in the same manner as for United States Forces to Type "A" units, operational type "B" units, and type "C" forces under direct command of a United States commander. Type "B" units in training and type "D" units were supplied when specifically agreed upon between Supreme Headquarters, Allied Expeditionary Forces, and the government concerned. If supplied, the procedure and priority system established for the supply of rations to type "B" units in training were followed.

98. Class II and IV Supplies.

a. Initial issue of clothing and equipment to type "A" forces was as prescribed by the Combined Chiefs of Staff. The War Department established the policies with regard to replacement and maintenance of Type "A" forces operating with United States Forces. Units in the approved French rearmament program established by the War Department received combat maintenance on the same basis as United States Forces.

b. Initial issue of clothing and equipment to type "B" forces was made by the Chief Quartermaster after approval by Supreme Headquarters, Allied Expeditionary Forces. Clothing and equipment required for maintenance by type "B" forces were supplied by the British War Office. The supplies were held in the United Kingdom until called forward by the Communications Zone. Responsibility for Class II and IV supply of these units was later placed entirely on the British War Office. Type "C" and "D" forces were given initial issues of clothing and equipment only when approved by Supreme Headquarters in accordance with agreements between the governments concerned and the Communications Zone. No replacement issues were authorized.

99. Operations.

a. The definitions of the various types of units

were adequate, as were the descriptions of the scales on which each general type was to be supplied. The greatest difficulty encountered by the Chief Quartermaster in the supply of these units, however, was in obtaining the proper classification and strength figures of the units involved. The Chief Quartermaster stated that the burden of manpower estimates fell almost entirely on his office, and that the importance of this function was never fully realized by the staff of Headquarters, European Theater of Operations. Prior to furnishing supplies to a unit, the Chief Quartermaster must know its category and its strength. Prior to the supply of a number of units it was essential that the Chief Quartermaster receive information as to number, category and strengths far enough in advance of issue to permit adequate stockage of depots to meet the requirements as they arose. Yet throughout most of the operations in the European Theater the Chief Quartermaster was furnished neither the strength of the unit, the classification, nor the scale of issue until directives were received from higher headquarters to make the issues.

b. The War Department, late in 1944, turned down a requisition submitted by the Chief Quartermaster covering supplies needed to replenish stocks issued to non US personnel, and directed that the requirements be resubmitted in project form. The Chief Quartermaster was unable to comply as he did not have the necessary troop strengths and classifications on which to base requirements. In an effort to obtain the information and establish a system for the flow of that information in the future, the Chief Quartermaster, in January 1945, notified the G-4 Headquarters, Communications Zone, of his need for information, and submitted to him the following chart which included all the information available to the Chief Quartermaster on the units to be supplied:

Category	Class of Supply Authorized for Issue	Strength known to the Quartermaster
(1) Liberated Manpower		
Type A	All Classes, QM	Unknown
Type B (Operational)	I and III	Unknown
Type B (In-training)	Unknown	Unknown
Type C	I and III	Unknown
Type D	Unknown	Unknown
(2) French Personnel		
Pioneer Companies	Unknown	22,000
Light Infantry Battalions	Unknown	5,200
Garde Mobile Gendarmeire	Unknown	3,000

Gendarmiere	Unknown	7,000
French Forces of the Interior.	Unknown	Unknown

(3) Belgian Personnel.

Belgian Light Infantry units	Unknown	Unknown
Belgian Fusilier Battalions	Unknown	Unknown

c. On 16 February 1945, the information desired was still lacking in the office of the Chief Quartermaster. He therefore wrote to the Commanding General, Communications Zone and requested the following:

(1) Complete clarification of the Quartermaster responsibility for the supply of non US units.

(2) Confirmation that the Quartermaster was to take no action in the program for re-equipping the French Army.

(3) Monthly periodic troop projection six months in advance.

(4) That no commitments of Quartermaster supplies be made without consulting the Chief Quartermaster to determine if the supplies required are actually on hand and can be allocated for a specific purpose.

d. In a letter on 5 March 1945, the G-4, Headquarters, Communications Zone, notified the Chief Quartermaster that the Control Division, Communications Zone, was conducting a study to determine which staff section would be responsible for the monthly preparation of manpower estimates. The previous day, however, the G-4 had requested information by 6 March 1945, as to the amount of clothing the Chief Quartermaster could furnish to allied military units, indicative of a still inadequate concept of the problem. The Chief Quartermaster replied that he could supply nothing, and again reviewed his difficulties in obtaining a proper basis for the supply of these units. The situation was clarified to some extent, but not completely, by the termination of hostilities in Europe.

e. Supplies and equipment furnished to military and para-military forces of liberated countries were transferred in accordance with lend-lease accounting procedures. In spite of lack of information as to strengths and types of units, military operations were not hindered through lack of supplies as sufficient stocks were on hand to fill basic needs. The issue of the United States uniform, however, to other military units, without being dyed or otherwise altered, had a distinctly deteriorating effect on the morale of the United States soldier and lessened his pride in the wearing of his own uniform. Such issues would not have been made had facilities and time been available to make the necessary alterations.

SECTION 6

CONCLUSIONS AND RECOMMENDATIONS

100. Conclusions.

a. Class II and IV supplies for the Air Forces would have been better controlled from an Air Force standpoint, had issue been made through the air depot groups. It would have been impractical for the Air Force to have handled other classes, due to the wide dispersion and regularly scheduled issue.

b. Quartermaster sales store service to the Air Forces would have been improved had the Air Force had at its disposal mobile sales stores on the same basis as the armies had them.

c. The lack of a sufficiently high priority for the movement of Civil Affairs supplies from the Zone of Interior to the European Theater of Operations considerably reduced the flow of such supplies from the Quartermaster Corps to Civil Affairs agencies in the European Theater of Operations.

d. The outstanding difficulty of supplying Allied military units by the Quartermaster Corps in the European Theater of Operations was the lack of timely information on the manpower basis and the scales of issue for such groups of personnel. The actual supply operations involving these units were performed through Quartermaster Corps channels and were satisfactory to the extent that overall military operations were not seriously affected.

e. The division of responsibility between the Quartermaster Corps and Civil Affairs for Civil Affairs supply was sometimes difficult to draw, and resulted at times in confusion and lack of efficiency.

101. Recommendations.

a. That in future operations the collection and dissemination of information and the formulation of broad plans for supply of other than United States Army Ground Forces be made the responsibility of one single central staff agency.

b. That consideration and study be given to the feasibility of the Air Forces drawing Class II & IV supplies from the Communications Zone in bulk, and storing and issuing such supplies at Air Force depot groups.

c. That consideration be given to the control of mobile sales stores by the Air Force for Air Force units, particularly those at some distance from the armies.

d. That in future operations, similar to those experienced in the European Theater of Operations, the Quartermaster Corps be charged with responsibility for the supply, including planning and estimating requirements, of all Quartermaster items for all categories of personnel being supplied by the U.S. Army. That the retail issue of such supplies for the relief of civilians and displaced persons be made the responsibility of Civil Affairs or similar agencies.

Bibliography

Chapter 7

1. Ltr, Hq United States Air Forces in Europe, subject: "Quartermaster Supply Operations in the Air Forces", undated. *(4)

2. Supply Plan to Govern US Army Responsibility to US Naval Forces in Europe, Joint Logistical Staff Committee, European Theater of Operations, 6 Nov 43. *(5)

3. "Technical Manual Number 3", Headquarters, Theater Service Forces, European Theater, Office of the Theater Chief Quartermaster, 15 Sep 45.

4. "Continental Operating Instructions", Office of the Chief Quartermaster, European Theater of Operations, 19 Feb 45. *(6)

5. Quartermaster Operational Analysis Study Number 12, subject: "Civil Affairs Operations", Office of the Theater Chief Quartermaster, Theater Service Forces, European Theater, November 1945. *(7)

6. "Quartermaster Operational Analysis Study Number 8", subject: "Manpower in Relation to Supply", Office of the Chief Quartermaster, Theater Service Forces, European Theater.

7. Administrative Memorandum Number 40, Supreme Headquarters, Allied Expeditionary Force, 3 Dec 44.

8. Ltr, WD, AG office, dated 7 Jun 44.

9. Ltr, Hq US Air Forces in Europe, subject: "Service Operations of the QM Corps", undated. *(8)

10. Report on Graves Registration Services within the US Air Forces in Europe, Hq USAFE, dated 25 Nov 45. *(9)

*Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (General Supply), file R 401/11.

PART THREE

CLASS I SUPPLY

CHAPTER 8

RATIONS

SECTION 1

TYPES OF RATIONS

102. Operational Rations.[1] Operational rations were issued under those conditions where the issue or use of a bulk ration was impractical. There were three principal types of operational rations:

a. Field Ration "C" was a cooked balanced ration in cans. Each ration consisted of three cans of prepared meats and vegetables, and three cans of crackers, sugar and soluble coffee. As this ration was not perishable, it was suitable for use as a unit or individual reserve ration.

b. Field Ration "K" consisted of three units, each containing one meal, packed in a rectangular container. This ration could be used to replace the C ration for special purposes.

c. The 10-in-1 Ration was a composite ration. Subsistence for 10 men for one day or for five men for two days was included in the package. There were four separate inner packages. Each package contained components of five rations and each set of two different packages combined to make five complete rations. The 10-in-1 ration provided a wide variety of food in five different menus.

d. Other rations included the 5-in-1, which was similar to the 10-in-1, and the 25-in-1, which consisted principally of fruit juice, soup, and other similar ration supplements. Both rations were mainly used to supplement the hospital ration.

103. Bulk Rations[1] Bulk rations were issued whenever possible in the European Theater of Operations, and were of two principal types:

a. Field Ration "A", which corresponded in general to the peace time garrison ration and was generally perishable. Being perishable, it was not suitable as a unit reserve ration.

b. Field Ration "B", which was the same as field ration A except that nonperishable items replaced the perishable items. This ration was suitable for unit reserve purposes.[1]

104. Supplemental Field Ration "D". The D ration consisted of three four-ounce bars of high melting point chocolate fortified with vitamin B-1. Originally, this ration was intended as a complete reserve ration, but was used principally in the European Theater as a supplement to the operational rations. There were occasions, however, when the D ration was used and consumed as a reserve ration.[2]

SECTION 2

OPERATIONAL RATIONS

105. Development.[2] The development of the operational ration was principally on a logistical basis, and was intended to provide sufficient food for a limited period. It was highly important that the ration be:

a. Easy to transport.

b. Simple to issue.

c. Compact to carry.

These logistical considerations were hazardous, for the character of the ration was based on the size of the box it had to fit, and not on the needs of the soldier.

106. Type 10-in-1 ration.[2] The need for a composite packed ration became evident when a considerable portion of the North African Invasion Task Force was supplied from the United Kingdom (See Appendix 9). Several million 14-in-1 composite rations were procured from the British Army, but were never popular with the United States troops. The 10-in-1 ration had a rather special purpose. It was used primarily as a substitute for the type "B" ration when it was not practicable to distribute a bulk ration. Due to its simplicity of structure of five menus, the 10-in-1 ration delivered a reasonable facsimile of the type "B" ration for as long as 30 days without monotony. The normal packing of the 10-in-1 ration made it necessary to open from two to four boxes in order to prepare a meal, depending upon the number of individuals to be served. Experience has indicated that it is highly desirable to pack all components of each meal in a separate container in the carton.[1] In comparison with other operational rations, the 10-in-1 ration was very popular for use as designed. It proved very satisfactory for troops working in groups of five man crews. The ration provided for the preparation of a cold noon meal and a hot breakfast and supper. Normally, troops indicated a preference for three hot meals instead of two, particularly under those circumstances which permitted the preparation of a hot noon meal.

107. Type "K" ration.[2] During the operations on the continent the type K ration was the most popular of the individual operational type rations. This was due to the substitution of attractive crackers for the original hard biscuits, and caramels and other confections for dextrose tablets. The K ration was nutritionally sufficient for limited periods of time. Infantry line companies in contact with the enemy preferred the K ration since it was more convenient to carry than other types. The ration could be easily broken down into its component parts, distributed about the person and consumed when the opportunity presented itself. It was normally eaten cold, but heating made it more palatable.

108. Type "C" Ration. The C ration was not generally liked by troops in the European Theater of Operations. It was acceptable when heated, and normally was not liked when cold. The original ration had three menus. Due to its bulk it was not entirely satisfactory under all field conditions. It was inconvenient to carry and the ration had to be consumed

at one sitting.[4] In the fall of 1944, however, an improved type C ration became available. Several excellent items of meat products were substituted for the stew type meats of the original ration. A variety of crackers replaced the original type C crackers. In addition, additional soluble coffee and improved confections were provided.[2]

309. Operational Use.

a. The 10-in-1, K and C rations were widely used and were supplemented whenever possible by the issue of fresh bread, meat and coffee. The D ration, though never popular, was at times used as a supplemental ration, as a substitute for coffee or cocoa, or as an emergency reserve. The 25-in-1 and 5-in-1 supplemental rations were used exclusively for hospitals during the early stages of operations on the continent. Research and development on all types of operational rations was continuous. Heat units were provided, special bulletins on food preparation and use were issued, and the type D bar was modified. The nutritional value and acceptability of each type ration was improved considerably. The following chart shows the change in caloric content:[2]

Ration	1943	1945
10-in-1	3408	4044
"K"	2756	2830
"C"	2685	3709

Average requirements per man per day: 4,000 calories.

b. Comments by the various Division and Corps Quartermasters indicated their likes and dislikes in type operational rations, as follows:

(1) Seventh Armored Division.
"Operational rations were used during the entire period (8 August 1944 - 8 September 1944) and consisted of C's, K's and 10-in 1's. Units at times would refuse to accept C rations, as they stated the men refused to eat them".[6]

(2) 30th Infantry Division.
"Types K and 10-in-1 rations were not in many instances issued as requested and type C rations were substituted therefor. The type C ration is not considered satisfactory for the Infantry soldier".[7]

(3) 35th Infantry Division.
"In the fast moving warfare across France, the 10-in-1 ration was a more practical type of ration due to being compact and more easily prepared in a short time. The K ration has been preferred by line companies of Infantry when in contact with the enemy and especially during river crossings or on a jump-off. The packages were easily stuffed into a pocket and this type

ration could be consumed with little or no preparation. The C ration has not been generally desired by troops of this division and has been used only as a substitute for K ration when they were hard to obtain. Front line troops do not like the C ration due to its packaging and troops further in the rear who can build a fire to heat the C ration generally can be fed the B ration.".[8]

(4) XIX Corps.
"Packaged or operational rations consisting of C, D, K and 10-in-1 were used exclusively until 13 July 1944 when the B type was brought to the continent. American troops did not thrive on operational rations alone, but on the 10-in-1 ration no weight was lost. It was determined that the C ration was more practical for Armored elements, and the K for Infantry".[9]

c. In addition to the studies made in the European Theater of Operations, a War Department Equipment Review Board which convened at Headquarters, Army Ground Forces, Washington, D. C., on 19 August 1944, made a complete study of all types of rations. It recommended that the number of types be decreased, and that the conditions under which each was to be used defined more clearly. It also recommended that the C and K rations be combined, that the weight and volume of packaged rations be reduced, and that acceptability be primarily characteristic of all rations.[5] The recommendations were generally in accordance with ideas gathered from experience in the European Theater.

SECTION 3

BULK RATIONS

110. Field Ration "B"[2]

a. The first American troops arrived in Northern Ireland on 26 January 1942, and were subsisted entirely on British rations. These rations were later modified into a British-American ration, and finally eliminated entirely. Plans for the invasion of the continent called for the initial use of operational rations to be followed later by the B ration and finally by the A ration when practicable. The B ration was to equal the A ration in all respects, with the exception that non-perishable components were to be substituted for perishables. The B ration menu, which formed the basis for procurement in the United States, had three important defects:

(1) Stew type meat made up 41 percent of the meat, poultry and fish components.

(2) Milk products were insufficient.

(3) There was frequent repetition of unpopular components of the then current operational ration.

b. Efforts were made to correct the defects or to minimize their effect. On D plus 32 the first B rations arrived on the continent. On D plus 39 shipments

of fresh meat and butter began to arrive and a partial conversion to field ration A was made at that time.

111. Field Ration A.

a. The A ration was planned to meet the same standards of the garrison ration issued in the United States. Circular Number 13, Headquarters, European Theater of Operations, gave the following characteristics:[2]

(1) Fresh meats, dairy products, vegetables, fruits and other perishables to be used as much as possible.

(2) To contain approximately 4,000 calories.

(3) To equal or exceed the recommended dietary allowances.

(4) To successfully maintain the health and morale of the troops.

b. In order to insure proper preparation and conservation, menus were prepared and distributed through Class I supply points as a guide to mess sergeants. Schools were established and menu teams went into the field to instruct in proper preparation. A condiment kit was issued to provide all messes with a basic stock of condiments, but it was not until late in the operations that proper and complete distribution was made.[2]

c. Ration issue experience in the European Theater of Operations beginning with July 1944 indicates that a high proportion of type A or B ration was consumed. The following chart shows the percentages of C,K, 10-in-1 and type A or B ration that were issued:[2] (Appendix 12)

Date	Type A/B	Type C	Type K	Type 10-in-1
June 1944		14	15	71
September 1944	58	18	10	14
December 1944	87	03	05	05
March 1945	88	04	05	03
June 1945	94	01	03	02
September 1945	92	02	04	02

Considering the condition of the highways and the railroads, the often inadequate port facilities, and the difficulty in maintaining a balanced ration, the consistent issue of a high percentage of type A or B ration throughout the war was a tremendous undertaking. Some of the success may be attributed to the "Balanced Commodity Loading" of rations at the New York Port of Embarkation.[10]

112. Ration Accessory Convenience Packets.[2] The RAC kits (Appendix 10) as they were called, made tobacco, candy and toilet articles available for issue as part of the field ration. This gratis issue was to continue until Post Exchanges could be opened. A composite pack of 200 balanced

rations of tobacco, candy and toilet articles was very easy to handle and issue. Separate packs of three types: 200 tobacco rations, 400 candy rations, and 800 toilet article rations, caused complications in supply. The initial allowance of one razor blade per man per week was insufficient and subsequently changed to three blades per man per week.

113. Perishables.[2] The success of the A ration depended largely on the procurement of perishable items. The Quartermaster Corps procured, received, stored and issued fresh meats and dairy products at cold storage plants, and distributed fresh meats and dairy products in mobile reefer vans from base depot cold stores to supply points. Local procurement of vegetables and fresh fruits was made wherever possible, and shipments of all types of perishables were made from the United States. Transportation difficulties and the lack of proper refrigeration facilities for transport made it impossible at times to issue perishable items to front line troops. When proper facilities were available, such issue was made.

114. Dehydrated Foods.[2] The use of dehydrated foods to conserve shipping space and to facilitate distribution became almost essential. Dehydrated foods were issued with both the field ration A and the field ration B. In general, dehydrated foods were not popular, and mess sergeants and cooks were not properly instructed in their use and preparation. Dehydrated potatoes and vegetables reconstituted fairly well, and the preparation of dehydrated eggs improved considerably. Dried whole milk powder was fairly well accepted, and 50 percent of the European Theater milk requirements were requisitioned in that form.

115. Rations for other than US Forces.[2] As the operations progressed the Quartermaster Corps became more and more involved in feeding prisoners of war, displaced persons, civilian labor and other nationals. Originally, in the interest of food conservation, the following menus were devised:

a. Allied Nationals.

(1) Civilian employees

(2) Liberated manpower

(3) French Expeditionary Force

(4) Italian Service units

(5) Russian Nationals

b. Enemy Nationals.

(1) Working prisoners of war

(2) Non-working prisoners of war

(3) Hospitalized prisoners of war

Each menu prescribed a different caloric content. The several menus, however, were never issued, as the number and variety proved too difficult to handle. A continental allied menu replaced the five menus for Allied Nationals, while the other menus remained in effect.

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

116. Conclusions.

a. Of the operational rations, the 10-in-1 ration was the most popular with the soldier. It has a higher caloric content than any of the other type operational rations and was used principally as a modified B ration.

b. The K ration, though containing fewer calories than the C ration, was more acceptable to the soldier. The K ration is packaged to facilitate carrying, distribution and consumption.

c. The C ration is bulky and awkward to carry and normally required heating. Under conditions where it is possible to heat a C ration, the 10-in-1 ration can normally be prepared.

d. While the operational rations were essential under many circumstances, every effort to issue the A or B ration was made.

117. Recommendations.

a. That studies and research into dehydrated foods and operational rations continue.

b. That the recommendations of the War Department Equipment Review Board, Headquarters, Army Ground Forces, be generally accepted, and that a suitable operational ration be developed which will be nutritionally acceptable and contain a sufficient variety in meals, while still combining the military characteristics of a flat, minimum weight and minimum volume package.

Bibliography

Chapter 8

1. FM 100-10
2. US Army Subsistence Experience in European Theater dated 1 November 1945. (Furnished for General Board use)
3. Ltr, Hq Seventh US Army, 21 Apr 45, subj: "Operational Rations". *(1)
4. AGF Report No. 751, 23 Mar 45.
5. War Department Report of Board of Officers Convened to Study the Equipment of the Post War Army, dtd 20 Jan 45.
6. Summary of QM Activities, 7th Armored Div for period 8 Aug 44 - 8 Sep 44. *(2)
7. After Action Report of QM, 30th Inf Div dtd 4 Oct 44. *(3)
8. Report of Operations of the 35th QM Company during the period 7 Jul 44 to 1 Feb 45. *(4)
9. Operation of XIX Corps - Normandy Campaign (undated)
10. QM Operational Analysis No. 5, dated 1 Nov 45, OTCQM,TSFET.

* Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class I Supply), file R 401/11

CHAPTER 9

OPERATING PROCEDURE, PROCUREMENT AND ISSUE

SECTION 1

COMMUNICATIONS ZONE

118. Organization and Mission.[1] The Chief Quartermaster, European Theater of Operations, was responsible for the procurement, storage and issue of all goods to the United States Forces and, where so directed by the Commanding General, European Theater of Operations, to personnel other than United States military. In the performance of this mission the following divisions of the Office of the Chief Quartermaster were principally concerned:

a. Subsistence Division.

b. Procurement Division.

c. Storage and Distribution Division.

The Procurement and Storage and Distribution Divisions were concerned with all classes of supplies. The responsibilities of the Subsistence Division were confined to Class I Supplies.

119. Functions.[1]

a. The Subsistence Division was charged with the following primary functions:

(1) To secure by requisition all Class I supplies from the United States, from the British, and from other sources through the Procurement Division.

(2) To maintain balanced stocks of Class I supplies in depots in accordance with prescribed levels, and to recommend to the Storage and Distribution Division the distribution of Class I supplies to accomplish this purpose.

(3) To supervise and assist in the efficient use of Class I supplies, including preparation of menus and the formulation of mess policies.

(4) To develop specifications for items procured in the United Kingdom.

b. The Procurement Division was charged with making all local purchases as requested by the Subsistence Division, and with checking all requisitions on the United States to determine which items were procurable from local sources.

c. The Storage and Distribution Division was charged in general with furnishing technical guidance for the operation of the depots, coordinating the distribution

of the supplies to the depots, and formulating plans for the receipt, storage and issue of the supplies.

120. Procurement.

a. Class I supplies were obtained from the Zone of Interior by requisition and prearranged schedules of shipments. These were augmented by exploitation of local resources in Allied and neutral countries, as well as from captured supplies. The maximum procurement in the United Kingdom, from late 1942 until D-Day, amounted to approximately 30 percent of requirements for the United States Forces. This procurement was based principally on the "A" ration for consumption in England and amounted to 38 staple items and 24 perishable items. Procurement in the United Kingdom for shipment to the continent after the invasion was based on 10 staple items and five perishable items.[2]

b. Procurment in France and Belgium was limited principally to fresh potatoes, vegetables and fruits. Food processing and manufacturing services were also obtained in these countries for the production of items such as yeast and spaghetti from raw materials furnished by the United States Army.[2] Other neutral or occupied countries furnished certain items of food as follows:[2]

(1) Spain and Canary Islands - tomatoes, onions, bananas, dried fruits, and fresh citrus fruits.

(2) Denmark - butter, eggs, and carcass pork.

(3) Portugal - sardines in brine, green coffee, cocoa beans, and dried figs.

(4) Holland - potatoes and onions.

(5) Norway - frozen cod fillets.

c. Lend-Lease was employed in all the transactions in the United Kingdom, France, Belgium, and Luxembourg until the termination of Lend-Lease, September 1945. The United States Commercial Corporation, operating from the State Department, dispatched special purchasing missions to the neutral countries of Spain, Portugal and the Canary Islands, and the liberated countries of Holland, Denmark and Norway, to buy subsistence and other commodities with the direct purpose of keeping these supplies from falling into enemy hands, and at the same time to supplement the "A" rations of the United States troops. Liaison was maintained by the Procurement Division, Office of the Chief Quartermaster, European Theater, with the General Purchasing Agents of the United States Commercial Corporation, in the various countries.[3]

d. Procurement of subsistence items from the United Kingdom was effected on an allocation basis of all available supplies in the United Kingdom, whereas in France and other liberated countries subsistence items were drawn from civil economy . supplies which were declared surplus to civilian needs by the food ministries of the respective countries.[3]

121. Storage.

a. The storage of perishables in the United Kingdom was handled almost entirely by the British Ministry of Food and by commercial agencies under its control. On the continent there was an extreme shortage of cold storage facilities, particularly during the early stages of the invasion. This was due chiefly to the destruction of cold storage plants by enemy and Allied action, and to the inability to quickly rehabilitate the plants. Construction and rehabilitation was undertaken as soon as practicable but, until satisfactory facilities were obtainable, reefer vans hauled perishables direct from the ships to the supply points. The use of reefer vans, however, due to the long haul, was not satisfactory for the proper care and maintenance of perishable items.[2]

b. As the operations progressed, more and greater facilities for cold storage became available. With the liberation of Paris (S-0040) cold storage capacity became adequate for the first time.[2]

c. Since fresh fruits and vegetables obtained from local sources were not normally received until ready for issue, little or no storage was required. Fresh fruit and vegetables from other sources were stored in closed warehouses, when available and if made necessary by weather conditions. When closed storage was not available, the Wem style stacks, 14 feet by 20 feet, with tarpaulin covers, were used.[4,5] These stacks were generally the shape of a storage tent and easily put together. In some instances two or more of these stacks were joined together for better storage or for heating when necessary. After the invasion was well under way, 90 percent of all perishables, other than refrigerated perishables, were stored inside.[5] The Wem stacks were used for the remaining ten percent.[5]

d. There was a limited amount of spoilage among nonperishable items which were packed prior to late 1943. Moisture, in some cases, deteriorated the shipping carton and caused cans to rust. Citrus juices sometimes developed pin holing from the inside due to the action of the citric acid on the metal. There was also some loss due to the deterioration and loss of paper labels from the cans. The majority of these difficulties were corrected by the development and use of a moisture proof carton. Also, a new laminated asphalt craft bag was used for coffee, flour, sugar, salt, and dried vegetables. This type of bag practically eliminated loss from storage and moisture. An inside lacquered can for citrus juices eliminated loss from pin holing, and the label defect was eliminated by painting or stenciling the contents on the outside of the cans.[5]

e. Approximately ten percent of the A or B ration components such as coffee, flour, sugar and dried vegetables were stored inside. All operational rations, and the remaining components of the bulk rations, were stored outside in stacks and covered with tarpaulins.[5]

122. Distribution.

a. The initial Class I supplies for the invasion of Europe were brought in by ferry craft such as landing craft, tank, and amphibious DUKW's. After a sufficient

number of trucks were ashore they assisted the DUKW's in establishing the first operational dumps. Five mobile refrigeration companies, fully loaded with perishables arrived on the continent in the middle of July 1944 and were used for direct delivery to the army supply points. The first railroad train for Class I supplies was used on 12 August 1944, and as operations progressed additional railroad stock was utilized as it became available.[6]

b. Class I supplies were distributed to the several armies, based upon requirements contained in the daily telegram. The Chief Quartermaster designated the depot or depots responsible for the supply of each army. The daily telegrams were sent through the regulating stations, after their establishment, to the depots concerned. The depots procured the supplies and shipped them to the armies, through the regulating station, by means of the daily train.[7] These trains were so loaded that they could be broken down into six to ten sections, each section carrying a fully balanced number of rations to be diverted to the various army supply points. This system was not always satisfactory as cars were loaded from several different points and assembled into a single train when loading was complete. Cars sometimes became mixed and caused the receipt of unbalanced rations.[6]

123. Control of Issue.

a. Efforts were continuously made to maintain the ration issue within authorized allowances and to avoid waste whenever possible. Army Quartermasters were required to include in the daily telegram the number of rations by type required, any augmentations authorized, and the amount of any excess stocks on hand. Inasmuch as it was impracticable to make a head count during combat, the morning report strength was shown in lieu of the head count, and Army Quartermasters were required to justify requests for requirements in excess of that figure.[8] The Chief Quartermaster devised a ration return for Communications Zone troops which included the same requirements. This form was revised from time to time in accordance with the situation, and was required of all units after cessation of hostilities.[2,7]

b. As a further precaution against the building up by armies of stocks in excess of maintenance and reserve requirements, the Chief Quartermaster established credits in the supplying depots against which the armies were authorized to draw. The credits were flexible and could be increased at the discretion of the depot commander upon request of the Army Quartermaster. This plan was effective and reduced the amount of supplies the armies received against the daily telegram, while at the same time it allowed the depot stocks to build up.[6]

c. Operational rations were the only available rations from D-Day until 2 July 1944 when the first issue of bread was made. During the first week in July fresh meat and butter were added and by the middle of July local purchasing added fresh potatoes, carrots, turnips and cabbage. On 10 July (D plus 32) 1944 the first "B" ration was issued and by D plus 90 most of the troops were subsisted on a rapidly improving "A" ration.[2] Difficulties were encountered during the latter part of July in main-

taining a balanced "B" ration in each supply point and dump. The situation was relieved when the armies broke out of Normandy and by necessity were required to use the operational rations. Again, during the German breakthrough in the winter of 1944-1945, supplies and daily trains were disrupted. The Third US Army drew "A" rations to meet 90 percent of its requirements at that time, but the First and Ninth US Armies, due to the disruption of the daily train, were required to draw deeply into their reserve stocks. These two armies subsisted, during the early stages, exclusively on operational rations. The large number of prisoners captured after the armies crossed the Rhine caused another critical shortage to exist. Operational rations were issued for initial use since cooking equipment was not available. After cooking equipment was provided, the prisoners were fed according to the prescribed prisoner of war menus. This relieved the situation.[6]

d. The adoption of "balanced commodity loading" of ships at the New York port contributed more to feeding of balanced rations than any other single factor. This system of loading all components of the "A" or "B" ration, in the correct proportion, in a single ship permitted the entire load being assigned to any one depot.[9]

e. Due to the large number of unreported or improperly reported shortages or substitutions in the rations which occurred at supply points and depots, the Chief Quartermaster required a daily comprehensive report in order that he be kept informed and could take such corrective action as necessary.[2]

124. Over Issues.

a. Although the Quartermaster service made continuous effort to keep ration issues within authorized allowances, there were several factors which contributed to over issue:[2]

(1) Division commanders were authorized to augment the rations for their troops when in contact with the enemy.

(2) Troops often consumed four operational meals a day in lieu of three.

(3) Several categories of personnel, such as prisoners of war, guides, interpreters, drivers and hungry civilians were often fed by combat troops. In many such cases no reports of the numbers fed were made.

(4) Food waste normally increased when organizations were on the move.

b. The number of rations issued divided by the actual strength gives an index of over issue (See Appendix 11). The index of over issue by month in the European theater shows that the highest rate of over issue occurred during periods of maximum operational activity:[2]

Month	Index	Situation
June 1944	1.02	The greatest portion of the troops were still in the United Kingdom, and therefore subject to control.
September 1944	1.32	The transfer of a great deal of United Kingdom strength to the continent plus the great operational activity of these months raised the over issue index to its all time high.
February 1945	1.04	The comparative stability of the fall and winter are reflected in rapid drop in overissues from its September peak.
April 1945	1.20	The intense activity of the drive into Germany is reflected by high over issues.

SECTION 2

FIELD FORCES

125. Organization and Functions. The Army Class I sections normally operated as part of the Supply Division, Office of the Army Quartermaster. It was charged with the technical supervision and coordination of Class I activities within the army as directed by the Army Quartermaster.[10,11] In the performance of its mission, the Class I section was charged with the following principal functions:

a. Determine Class I requirements, and coordinate the procurment, storage and distribution of Class I supplies based upon the availability of transportation, levels prescribed, and on the current military operational situation.[12]

b. Recommend the distribution of Class I supplies within the army as to type and percentage of each type, the source, the daily train shipments, and the reserve stocks.[11]

c. Recommend the location of railheads, truckheads and dumps.[10]

d. Supervise bakery production and cold storage activities.[12]

e. Maintain accurate records on consumption and Class I supplies.[10]

f. Receive and consolidate unit daily telegrams and prepare and submit the Army telegram.[10]

126. Operations.

a. Rations were requested by means of the daily telegram and were shipped to army supply points by the daily train.[13] The subordinate units normally submitted

their telegrams to the issuing supply point 48 hours in advance of drawing.[10,14] The supply point consolidated requests and submitted the total requirements to the Army Class I Section for the preparation of the army telegram.[11]

b. Armies normally operated one main dump and a minimum of one supply point per corps.[13] This was based on the principle that a base railhead should be set up to handle all rations and to be responsible for providing balanced rations in the forward supply points. The location of supply points was dictated by the tactical situation and availability of transportation facilities.[10] The primary consideration for the location of the railhead or supply point was the necessity for hard standing, a separate entrance and exit, and a good road net. The selection and location of the army railhead was made by the Army Quartermaster. The selection and recommendation of the location of the advance supply points was normally left to the Corps Quartermaster and railhead officer concerned.[15]

c. It was found that supply points could operate nearer to the front lines than was generally believed possible or advisable.[16] There were many times, however, when the tactical situation progressed so rapidly or the transportation was so critical that the round-trip distance between combat troops and army supply points equalled as much as 300 miles. In such cases, advance distributing points, stocked with operational rations only, were established by Corps Quartermasters as far as 100 miles forward of the closest army supply point.[17]

d. Supply points were normally operated by Quartermaster Railhead Companies.[11] Quartermaster Bakery Companies supplied the supply points daily with the fresh bread and coffee requirements.[13,14]

127. Issues. Railhead companies were responsible for making complete and proper issues, and for maintenance of accurate records pertaining thereto. Rations were issued on tally-out forms, and copies of tally-outs, together with corresponding ration returns, were submitted to the Army Quartermaster each day for record and comparison.[13] Bread was normally issued with bulk rations on the basis of 45 pounds per 100 men, or as a supplement to the operational ration on the basis of 30 pounds per 100 men. Fresh coffee was issued when available in lieu of canned or soluble coffee.[14] The normal issue was based upon eight pounds per 100 men. During cold weather, and when there was a shortage of tea and cocoa, the issue was raised to 12 pounds per 100 men.[2] The regular condiment issue was made in bulk at ten-day intervals. The issue was often delayed, or missed entirely, due to the rapid movement of troops, the opening and closing of supply points, and the limited transportation available to move the supplies forward.[18]

SECTION 3

CATERING SERVICE, BAKERS AND COOKS SCHOOL, AND MESS TEAMS

128. Organization.[2] An attempt was made on the con-

tinent to develop a catering service which would train cooks, bakers, mess sergeants and mess officers, particularly in the preparation of new types of foods. This plan did not progress very far, though a need for such a service existed. In lieu of a catering service, a bakers and cooks school and mess teams were established. Each mess team, composed of one officer, one dietician and eight enlisted men (cooks, bakers and mess sergeants), went into the field and rendered service to many units desiring their assistance in establishing messes. The mess teams were available to armies, corps, divisions and section commanders on request, with priority to field forces. Prior to D-Day, and while troops were in the United Kingdom, model messes were established by the Quartermaster Corps. New units were encouraged to visit these model establishments prior to opening messes of their own.

129. Functions and Operations of Bakers and Cooks Schools and Mess Teams.

a. The Bakers and Cooks School, which originally opened in England in September 1942, moved to France in April 1945 where it was made a quartermaster responsibility, and in September 1945 it moved to a central location in the American Zone in Germany. The schools trained a total of 6,163 students in cooking and mess management, who were drawn from all types of organizations and units on the continent and in England.

b. In October 1944 six mess teams were set up and trained, taking to the field after a 30-day course of instruction in cooking and mess management. The number of teams were doubled in January 1945 and after VE-Day increased to 23 mess teams. These teams had, in general, the following duties:[19]

(1) To assist an organization commander in supervision and operation of his mess.

(2) To instruct and work with the mess personnel of an organization in their unit kitchens.

(3) To consult with the mess officer on the planning, superivision and inspection of his mess.

(4) To advise all mess personnel regarding the function of the several types of rations and most effective ways of utilizing the type "A" and "B" rations.

(5) To assist all mess personnel on problems of substitution and the necessity for adherence to the monthly menu.

(6) To instruct in the proper preparation of dehydrated foods.

(7) To acquaint all mess personnel with recommended procedure for the efficient care and operation of standard field mess equipment.

130. Discussion.[2]

a. The mess team operation in the European

Theater was distinctly a success. In addition to their normal function of instruction, mess teams took hold of several major messing jobs and carried them through to success. Some examples are:

(1) When supplying hot food to reinforcements enroute by train became a problem, the pilot models of the kitchen cars were designed and built by the messing organization. The troop train menu was demonstrated in actual use by a mess team which made several troop train trips.

(2) Mess teams did much of the pioneer work in opening messes in the huge staging areas in late December 1944, January and February 1945.

(3) Mess teams were called upon to solve the almost inconceivable messing problems encountered in receiving German prisoners of war in temporary enclosures with no equipment whatsoever.

(4) After VE-Day eight teams were sent to Germany to work with occupational force organizations which had heavy losses of experienced mess personnel as a result of redeployment.

b. The successful operation could have been improved with more attention devoted to straightening out supply point operation as a part of the mess team function. By the time they had worked a week or ten days in an area a mess team commander should be able to form a sound opinion as to the accuracy and completeness of the issues of its supply point. The mess team commander's mission could have been expanded with benefit to include a day with the personnel of the supply point in each area covered, emphasizing the importance of accurate issues and especially instructing in theater issue policy.

c. The establishment of a Catering Service, along the lines of the British Army system (See Appendix 13), would certainly insure that a higher percentage of professional civilian cooks entering the army would be directed into messing work. Further, it would guarantee that training effort would be expended only on personnel which would remain in messing work. From the standpoint of command, its implications would be that instead of transferring an unsatisfactory cook to guard duty, a commanding officer would request a replacement from the Catering Service pool and, upon his arrival, return the unsatisfactory cook to the pool for retraining and reassignment.

SECTION

CONCLUSIONS AND RECOMMENDATIONS

131. Conclusions.

a. The operating procedure, procurement and

issue of Class I supplies by the Communications Zone, European Theater, proved to be basically sound and highly practical in principle and in operation.

b. Purchase of subsistence items in the United Kingdom, on the continent and from indigenous sources relieved greater shipping facilities for other needs and gave troops foods they otherwise could not have had.

c. With the development of the new type packaging and canning, many man-days of labor were saved and losses from spoilage were reduced to a minimum.

d. Mess teams proved to be a help in organizations fortunate enough to have their services.

132. Recommendations.

a. That packaging and canning methods be further developed.

b. That a Catering Service be established in the Subsistence Branch of the Office of the Quartermaster General and that it be developed along the lines of the British system.

Bibliography

Chapter 9

1. Quartermaster Service Reference Data Vol II, Headquarters Services of Supply, European Theater of Operations, 1 Jan 44.

2. US Army "Subsistence Experiences in the European Theater", World War II, 1 Nov 45.

3. Ltr fr Hq TSFET, OTCQM, dated 13 Dec 45, subj: "Comments on Quartermaster Supply Study, Chapter II - Operating Procedure, Procurement and Issue". *(7)

4. Technical Manual #3, Depot Operation Manual, Hq, ETOUSA, OCQM, Feb 45.

5. Interview with Col J. M. Kenderdine, QMC, Chief of Storage and Distribution Division, Office of Chief Quartermaster, United States Forces, European Theater, dated 3 Dec 45. *(5)

6. Advance Section Communications Zone Operational History of Quartermaster (28 Dec 43 to 28 Jun 45).

7. Quartermaster Operation Analysis (Study #3 Level of Supply), Hq Theater Service Forces, European Theater, Office of the Theater Chief Quartermaster.

8. Annex "E" to European Theater of Operations, Standard Operating Procedure No. 7, undated.

9. Quartermaster Operational Analysis, OCQM Study #5, 1 Nov 45.

10. War Department Observers Report #930, 10 May 45.

11. Standing Operating Procedure, Quartermaster Section, Fifteenth US Army, dated 1 Sep 44.

12. War Department Observers Report #834, 15 Apr 45.

13. War Department Observers Report #773, 9 Apr 45.

14. War Department Observers Report #758, 24 Mar 45.

15. Report of 560th QM Railhead Company, 17 Oct 45.

16. V Army Corps, After Action Report, 6 Jun 44 to 31 Dec 44. *(23)

17. Quartermaster History within XIX Corps, 5 May 45.

18. Seventh Army Quartermaster Information for G-4 Periodic Report, for 7 Jan 45 and 7 Apr 45. *(6)

19. Continental Operating Instructions, European Theater of Operations, Office of the Chief Quartermaster, 19 Feb 45.

* Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class I Supply), file R/401/11.

CHAPTER 10

OPERATING FACILITIES

SECTION 1

REFRIGERATION UNITS

133. Quartermaster Refrigeration Company (Fixed) T/O & E 10-217.

a. Organization and Mission. The company with an aggregate of 142 enlisted men and five officers operated and maintained Corps of Engineer refrigeration equipment and civilian refrigerated storage plants.[1] It was organized into three platoons: a headquarters platoon, a butchery platoon and a cold storage platoon with attached personnel from the Veterinary Corps for meat inspection purposes.[2] Under many conditions it was not necessary to activate the butchery platoon.[1]

b. Use. The capacity of the company was determined by the particular situation, since the available storage facilities governed the amount that it could handle. When Engineer collapsible refrigeration boxes were used the company served as many as 120,000 troops.[1] Under conditions wherein the company personnel acted in a supervisory capacity and employed civilians and prisoners of war, approximately 650,000 troops were supported.[3] This company was not used in the Combat Zone, but it did meet all expectations in connection with the use of collapsible refrigeration boxes.[3]

c. Maintenance.[4] The Quartermaster responsibility in maintaing refrigeration facilities was limited to the repair of the refrigeration units cooling the mobile vans. All of the remaining maintenance responsibilities were divided among the other services. The responsibilities of the Corps of Engineers, for example, included:

(1) Repair to existing cold storage and ice facilities.

(2) Operation and maintenance of all static refrigeration plants.

In the European Theater of Operations Engineer personnel were preoccupied with other activities which were basic in advancing the war effort, hence their responsibilities were assumed by the using unit or other Quartermaster agencies.

134. Quartermaster Refrigeration Company (Mobile) T/O & E 10-247.

a. Organization and Mission. The Quartermaster Refrigeration Company (Mobile) was organized into three platoons of three sections each. Each section and platoon was capable of operating independently.[5] The mission of the company was to transport fresh meats and other perishables from the advance depot or other point where fixed refrigeration was provided to the division or army supply points.[6] When the turn around time between the loading point and the

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

supply point was not longer than one day, one company was considered capable of providing perishables to an army of nine divisions.[7] To accomplish this the company was equipped with 30 trucks, 4 to 5-ton, tractors and 30 semi-trailers, 10-ton, 2 wheel, van-type, refrigeration, on the basis of three per section and one per platoon headquarters.[5]

b. Operation. The use of the Quartermaster Refrigeration Companies (Mobile) fell into three categories: transportation of perishables, static storage or a combination of the two. While the use as both static storage and transportation of perishables was considered the normal employment, there were not always sufficient refrigerated vans assigned to an army to permit this type of operations. As a result, it was often necessary to transport the perishables to a supply point and deposit the loads into any available static storage or on the ground. In such cases the arrival of the refrigerated vans was timed for the late afternoon of the day prior to issue.[8] When no cold storage was available at the supply point, the Fifteenth US Army adopted the system of hauling perishables by cargo vehicles from the fixed cold storage point to the mobile refrigeration unit located at the supply point.[9]

c. Adequacy. The adequacy of this type company depended invariably on the distance the vans were required to move. When fresh meat was delivered to the area by Communications Zone facilities, the mobile company was generally able to deliver the rations to the supply points. When the companies went beyond the army area to obtain the perishables, it was frequently necessary to transfer supplies to cargo trucks in the army area for delivery to supply points.[5] Additional vans could have been utilized by each army.[10]

d. Civilian Refrigeration Equipment. Wherever possible, civilian equipment was used to augment military facilities. The type operating unit available and the type of personnel employed varied. In some instances operations were conducted entirely by civilian personnel. Where facilities were so located that a Quartermaster railhead or truckhead could advantageously use them, Quartermaster personnel operated them and employed prisoner of war or civilian labor, if available, for augmentation. On other occasions personnel of the Quartermaster Refrigeration Company (Fixed) were utilized, either for the complete operation of a civilian installation or for the supervision of operations. Maintenance and repair became the responsibility of the using unit.[4]

e. Discussion. Refrigeration facilities on the continent were not entirely satisfactory. The mobile refrigeration companies did an admirable job, but the use of the vans for static storage cannot be justified. The mobility of the company must be utilized to the fullest extent by hauling from static supply points to army supply points delaying only for the maintenance of vans. The organization of the company under Tables of Organization and Equipment 10-217 is entirely satisfactory. Such is not the case, however, with the Refrigeration Company (Fixed). The butchery platoon was dropped from the company. This left 45 men in the company headquarters and 65 men in a cold storage platoon for the operation of a cold storage plant. Such a large plant failed to materialize in northern Europe, but many small plants were located and utliized. It was necess-

ary to break the fixed company into three or four detachments. A more useful organization in the European Theater of Operations would have been a company of four officers with a headquarters of 15 to 20 men and three 32-man operating platoons.[4]

SECTION 2

BAKING AND COFFEE ROASTING

135. Quartermaster Bakery Company, Mobile (Special) T/O & E 10-147 S.

a. Organization and Mission.[11] The company has an authorized strength of two officers and 82 enlisted men and consists of a company headquarters and one operating platoon. The company headquarters supervised the operation and was responsible for all administrative duties pertaining to the company. The platoon, the basic operating unit, was composed of a platoon headquarters and three sections. Its function was to supply fresh bread and coffee to troops in the Combat Zone. The coffee roasting section, the fourth section of the company, consisted of six enlisted men with coffee roasting equipment. This section was improvised as part of the Bakery Company in the European Theater of Operations and the men taken from the headquarters section.

b. Operations. The special Quartermaster Bakery Company operated with British equipment. All operating equipment was trailer mounted. With the four prime movers, four-ton cargo, to haul heavy equipment, and the eight trucks, 2½-ton, cargo, to motorize the remaining equipment and personnel, the company was completely mobile. When in operation the cargo vehicles hauled ingredients and the finished product to supply points.[9] Having technical equipment which required the one platoon to operate as a unit, the company lacked flexibility. It had to cease operations completely when required to move, but when an army had sufficient bakery companies to leap-frog one over the other, this was not an objectional characteristic.[10] Forward bakeries during the forward movement of an army augmented the rear area bakeries, while the bakeries in the rear moved forward. This sytem required a minimum of moving and reduced the hours of production lost.[12] Normally, one bakery company was assigned to each supply point or two bakery companies to each railhead company in support of a corps.[12] In one army, however, the bakery companies were organized into a bakery battalion and furnished bread and coffee to the supply points from a central point.[13] This was the type of operation envisaged by War Department publications.[14] The coffee roasting and grinding equipment, trailer mounted, unlike the bakery equipment, was of American manufacture. When sufficient green coffee beans were available fresh coffee was furnished to the same number of troops to whom fresh bread was supplied.[15]

c. Capacity. The capacity of the company depended on the number of hours each day it operated. The recommended production was based on two eight-hour shifts each day, while the maximum production was based on three eight-hour shifts each day. The production per day was as follows:[2]

Item	Unit	Recommended	Maximum
Bread	Company	21,000 lbs.	30,000 lbs
Coffee	Company	3,200 lbs.	4,800 lbs

d. Maintenance. Spare parts for three months maintenance were furnished with the British equipment. In addition, the companies were backed up with a twelve-months supply of parts in the Quartermaster Spare Parts Depot at Isle of St. Germaine (S-0040) in Paris, France.[16] Diesel fuel was used for the bake ovens, and a special type soft coal, at times difficult to obtain, was used in the coffee roasting equipment.[17] Sufficient and qualified personnel were authorized to perform first and second echelon maintenance. Higher echelon maintenance repair was accomplished by the Central Salvage Depot or by field service teams from the Communications Zone.[17]

e. Discussion. A Quartermaster Bakery Company (T/O & E 10-147) with American ovens and machinery, was originally intended for use in the European Theater of Operations. It was flexible but not mobile.[18] It had twice the number of personnel as the special company and used 16 ovens as compared with three ovens used by the special company. The production capacity of the two companies, however, due to the difference of equipment, was the same. Upon arrival in the European Theater of Operations each American equipped company was reorganized into two Bakery Companies (Mobile) Special. None of the American equipped companies were used with any of the armies in the European Theater of Operations.[18] One was used in the Delta Base Section to furnish bread for the redeployment center. The most valuable characteristic of the special Quartermaster Bakery Company is its self-sufficiency for transport. Possibly the most impressive feature of the bakery companies' record on the continent was an almost total absence of major problems. The planning was evidently sound. The issue rate of roasted and ground coffee, however, was higher than planned. The normal issue rate for two meals daily is eight pounds per 100 rations.[4] During cold weather it was necessary to issue on the basis of 12 pounds per hundred rations. This load could not be carried by the coffee roasting equipment, and civilian roasting installations were necessary to assist in meeting the demand.

SECTION 3

QUARTERMASTER RAILHEAD COMPANY (T/O & E 10-197)

136. Mission. The mission of the Quartermaster Railhead Company was to provide personnel to operate railheads, truckheads and navigation or beachheads.[19] It was charged by the War Department with the receipt, issue and evacuation of all Quartermaster supplies.[20] In the European Theater of Operations, however, this unit was normally confined to the receipt and distribution of Class I supplies.[20]

137. Organization. The company is organized into a company headquarters and two platoons, with an aggregate [illegible] of 173 enlisted men and four officers.[21] The platoon was the basic operating unit and was normally divided into three

sections for convenience in staggering working hours and for the purpose of handling specific commodity classes of supplies.[22] Commanded by a lieutenant, the platoon has 74 enlisted men including one platoon sergeant, three section leaders, three checkers and one storekeeper.[21]

138. Flexibility. The organization of a railhead company into platoons and sections gave the unit sufficient flexibility to establish and maintain more than one distributing point. When movement was necessary one platoon continued operation of the old supply point while the other platoon opened a new supply point. This allowed the issue of the remaining supplies at the old supply point while supplies were received and issued at the new location. The "leap-frog" method of movement of supply points was necessary in a fast moving situation.[23]

139. Equipment. In addition to the normal organizational equipment the railhead company was authorized sufficient technical equipment to efficiently carry out its mission. The pumps, gasoline, dispensing, and the gasoline drums were not used by the railhead company as the company did not normally handle Class III supplies.[9] Material handling equipment included two hand trucks and two steel plates. The steel plates were to be used as ramps between box cars and warehouses. In the type of operations encountered in the European Theater of Operations the steel plates were not needed. Roller-type conveyors were a necessity.[24] The office machines consisted of two typewriters and two computing machines, non-listing. It has been recommended that the company be authorized two computing machines, listing. The listing type machine is needed in order to check the accuracy of reports maintained.[24]

140. Capacity. The railhead company, handling all classes of Quartermaster supply, had a rated capacity of 30,000 men.[24] The troop basis of the 12th Army Group was one company per 50,000 men for Class I supplies.[25] Normal issues of a company were from 100,000 to 145,000 rations daily, and under exceptional circumstances over one-quarter of a million rations a day were issued for short periods of time. In the army area it was found that one railhead company handling Class I supplies could support a "type" corps of three divisions.[26]

141. Mobility. The organic transportation of a Quartermaster Railhead Company is insufficient even for administrative purposes. It was contemplated that additional transportation would be made available as required.[27] The amount of transportation necessary depended upon the type of operations involved. For the internal administration of the supply point only a few additional trucks per platoon were needed.[24] However, in a fast moving situation where the supply points were located at great distances from the army depots, additional transportation to the extent of at least one Quartermaster Truck Company was normally made available to the railhead company before it could operate efficiently.[10] The lack of mobility is clearly indicated by the following comments from unit Quartermasters:

a. 79th Infantry Division: "During the breakthrough to northern France and Belgium, the Army Class I railhead was about 100 to 150 miles behind the forward units.....Our ration trucks took two days to make the trip

to army truckheads and return to Class I breakdown area".[28]

b. 4th Armored Division: "Class I supply points during the dash to the Rhine were at times nearly 150 miles behind our control point and approximately 200 miles behind our forward elements".[29]

c. 83d Infantry Division: "During the drive to the Elbe, Division Quartermaster trucks continued to haul "A" rations from Munchen-Gladbach (F-0909). This involved a distance of 20 miles extending to 150 miles, as the division moved further into Germany".[30]

142. Operations. The railhead company normally issued rations to using units at the supply point. Operations were generally efficient and the organization adequate. The platoon sergeant, or railhead foreman, supervised the receipt, unloading, issue and loading of the supplies. The chief storekeeper in each platoon calculated the proper breakdown and was charged with the accuracy of all reports and inventories. Efficient checkers were essential as they formed the contact between the company and the drawing units and were charged with making complete and proper issues. The laborers were utilized in the loading, unloading and warehousing of supplies. The tables of organization and equipment, however, do not provide sufficient laborers for all types of operations, and augmentation by Quartermaster Service Companies or prisoner of war labor was often necessary. It was at times recommended that the ratings of various classes of personnel, particularly storekeepers and checkers, be made more commensurate with their responsibilities.[19, 24]

143. Discussion. The function of the Quartermaster Railhead Company in the European Theater of Operations was the receipt, storage and issue of Class I supplies. It was well suited for this function except for the lack of vehicles. Those companies assigned to armies were often operating two or more supply points. Transportation available to this company was often insufficient for internal company administration. It is highly desirable that the officers selected for Quartermaster Railhead Companies be of superior ability. The proper breakdown of rations, the intelligent substitution of items, and a thorough broad-minded knowledge of current menu instructions require an especially well-qualified officer. The enlisted assistants in a railhead company must also be well trained. In the European Theater of Operations they became specialists as storekeepers, checkers or clerks.

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

144. Conclusions.

a. Quartermaster Refrigeration Units. The technical equipment and personnel were sufficient to accomplish the designated mission. The transportation and distribution of perishable items was carried on with slight delays dependent mostly upon the tactical situation.

b. Quartermaster Bakery Companies. The equipment and personnel of the Quartermaster Bakery Company, Mobile (T/O & E 10-147 S) did not entirely prove adequate to accomplish the designated mission.

c. Quartermaster Railhead Company (T/O & E 10-197).

(1) The Quartermaster Railhead Company (T/O and E of 10-197) in the European Theater of Operations did not handle all classes of supply, and its actual capacity for Class I supply exceeded its rated capacity.

(2) The personnel employed during operations developed into specialists in many instances, and the responsibility and grade of personnel was not always commensurate.

145. Recommendations.

a. Quartermaster Refrigeration Units. That an additional Quartermaster Refrigeration Company, Mobile (T/O & E 10-247) be provided per army to allow for necessary static storage and proper mobility.

b. Quartermaster Bakery Companies.

(1) That the bakery company be organized into two platoons in order to provide greater flexibility, and that it be provided with the British type equipment utilized by the Quartermaster Bakery Company, Mobile, (Special).

(2) That additional equipment be provided so that the rated capacity of each platoon will be raised to 20,000 pounds of bread operating on two eight-hour shifts.

(3) That one coffee grinding and roasting section be authorized per platoon with sufficient mobile equipment to furnish fresh coffee for the number of troops to whom fresh bread is furnished.

c. Railhead Company (T/O & E 10-197)

(1) That the mission of the unit be limited to the receipt, storage and issue of Class I supplies with a rated capacity of handling 75,000 to 100,000 rations.

(2) That the company be made more mobile by the authorization of sufficient vehicles to motorize personnel and equipment.

(3) That the equipment used to handle Class III supply be deleted from the Table of Organization and Equipment, and that labor-saving and office machinery be authorized.

(4) That one railhead foreman per platoon be auth-

orized to supervise railhead operations, and that the grade of the checkers and storekeepers be increased commensurate with the responsibilities of their jobs.

d. That pertinent doctrines, techniques and Tables of Organization and Equipment be amended by appropriate agencies of the War Department.

Bibliography

Chapter 10

1. T/O & E 10-217.

2. Quartermaster Service Reference Data Volume III dtd 15 Dec 42 *(8)

3. Report, Office Chief Theater Quartermaster, subject: "Quartermaster Refrigeration Company (Fixed) T/O & E 10-217". (Undated)

4. US Army Subsitence Experience in European Theater of Operations, dtd 1 Nov 45.

5. 12th Army Group Study, Quartermaster Refrigeration Company (Mobile) T/O & E 10-247.

6. TM 10-615, Quartermaster Handbook, Refrigeration Company (Mobile) T/O & E 10-247.

7. T/O & E 10-247 dtd 25 Feb 44.

8. Army Ground Forces Report Number 834. *(9)

9. After Action Report, Headquarters Fifteenth US Army, dtd 31 Jul 45. *(10)

10. Ltr, Third US Army dtd 22 Sep 45, subject: "Ideas on Quartermaster Organization". *(11)

11. T/O & E 10-147 S, Quartermaster Bakery Company, Mobile (Special), dtd 2 Oct 43.

12. Army Ground Forces Report Number 773 (First US Army) dtd 9 Apr 45. *(12)

13. Army Ground Forces Report Number 933 (Ninth US Army) dtd 10 May 45. *(13)

14. FM 10-10, paragraph 64, dtd 2 Mar 42. *(14)

15. 12th Army Group, Report on the Quartermaster Bakery Company, Mobile (Special) T/O & E 10-147 S.

16. Ltr, 1st US Army Group, 1 Mar 44, 1st Ind. paragraph c, file AG 413 OPGD. *(15)

17. Office of Chief Quartermaster, Technical Manual Number 1, paragraph 21, dtd December 1944.

18. 12th Army Group, Final After Action Report, paragraph II, Section III, paragraph 11. *(16)

19. Paragraph 1, TM 10-379, Quartermaster Handbook, Railhead Company, T/O & E 10-197, dtd 4 Nov 43. *(17)

20. Paragraph 8, Section III, paragraph II, 12th Army Group, Final After Action Report, period 19 Oct 43 to 30 Apr 44. *(18)

21. T/O & E 10-197, Quartermaster Railhead Company, dtd 17 Feb 45 *(19)

22. Paragraph 54, FM 10-10, Quartermaster Service in Theater of Operations, dtd 1942.

23. Paragraph 17, Chapter 13, Third US Army, Final After Action Report, period 1 Aug 44 to 9 May 45. *(20)

24. Ltr, Headquarters 560 Quartermaster Railhead Company, dtd 1 Sep 45. *(21)

25. 12th Army Group, Field Service and Operations Report, July 1945.

26. Report of 560th Quartermaster Railhead Company, dtd 17 Oct 45. *(22)

27. Paragraph 17, TM 10-379, Quartermaster handbook, Railhead Company, T/O & E 10-197, dtd 4 Nov 43.

28. History, 79th Infantry Division, dtd 7 Jun 45.

29. Operations of 4th Armored Division, dtd 12 Jun 45.

30. Quartermaster History, 83d Infantry Division, period 5 Apr to 15 Oct 44.

* Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class I Supply), file R 401/11.

PART FOUR

CLASS II AND IV SUPPLY

CHAPTER 11

QUARTERMASTER CLASS II AND IV OPERATIONS, COMMUNICATIONS ZONE

SECTION 1

MISSION, ORGANIZATION AND FUNCTIONS

146. Mission and Organization.[1] The Chief Quartermaster, European Theater of Operations, acted in a dual capacity as the Chief Quartermaster, European Theater of Operations and as Quartermaster, Communications Zone. He was charged with the overall responsibility for the procurement, storage, distribution and issue of Quartermaster supplies to all troops in the European Theater of Operations. The responsibility for Class II and IV supply was placed with the Supply, Procurement, and Storage and Distribution Divisions of the Office of the Chief Quartermaster. The Procurement and Storage and Distribution Divisions were concerned with all classes of supply. The Supply Division was concerned only with Class II and IV and Post Exchange supplies. It was organized into the following five branches:

a. Sales Store Branch.

b. Clothing and Equipment Branch.

c. Regular Supplies Branch.

d. Distribution Branch.

e. Post Exchange Branch.

147. Functions.[1]

a. The Supply Division, as a control and operating agency over Class II and IV and Post Exchange supplies, had the following functions:

(1) Made estimates of requirements.

(2) Prepared requisitions either on the United States or from British sources.

(3) Studied and recommended replacement factors on Class II and IV supplies.

(4) Maintained a balanced stock of Class II and IV supplies.

(5) Recommended to the Storage and Distribution Division the distribution of incoming Class II and IV supplies.

(6) Requisitioned sales store items from the

United States or by local procurement.

(7) Arranged for the publication of Theater allowances of Class II and IV supplies, principally for expendable items.[2]

(8) Inaugurated a system of rationing for Sales Store items.[2]

d. The Procurement Division checked all requisitions on the United States to determine which items could be procured locally. It arranged for the local procurement of supplies and followed requisitions to insure production and delivery. It prepared all reports on status of supplies procured in the United Kingdom, and determined what items of supply were obtainable from local sources.

e. The Storage and Distribution Division furnished technical guidance for the operation of depots, coordinated the distribution of supplies to the depots, determined the model stocks to be carried, formulated plans for the receipt, storage and issue of supplies, and established procedures for all movements of supplies pertaining to task force operations.

SECTION 2

DETERMINATION OF REQUIREMENTS

146. Initial Issue.[3] Troops normally arrived in the European Theater of Operations completely equipped with prescribed allowances of clothing and equipment, with the exception of certain items of organizational equipment. When new items arrived on the continent and when units or reinforcements arrived without prescribed items of clothing and equipment, it was necessary to stock items for initial issue. The initial issue factor was calculated from the actual troop basis for the European Theater of Operations and was expressed in quantity per thousand. Due to the numerous and different types of units on the continent, an initial issue factor which was based on the European Theater of Operations as a whole was not satisfactory when applied to an individual unit. It was only satisfactory when applied to a large troop basis composed of representative units of the ground, air and service forces.

149. Replacements

a. After initial issue was made, many items of clothing and equipment were lost, worn out, captured, abandoned or pilfered. Losses were frequent. The changing weather conditions and rapid advances during combat caused many combat troops to discard clothing and equipment which impeded fighting ability, comfort or mobility. Continued use and handling of heavy items, such as typewriters, field ranges, field desks and other similar items caused considerable loss and damage. In each case, replacement had to be made and, at the same time, stocks had to be held down to actual requirements.

b. Consumption records based on experience formed the principal basis for determining replacement requirements. Replacement factors were derived from these records and were expressed in the average monthly percentage rate at which an item could be expected to exhaust its life.

Thus a coat, mackinaw, which had an average length of life of one year, or an annual replacement of 100 percent, when divided by 12 months gives a replacement factor of 8.3 percent per month. The basic formula for the development of the replacement factor of an item was as follows:

$$\frac{\text{Quantities issued for replacement purposes during one month}}{\text{Quantities in the hands of troops}} = \text{Monthly percentage factor}$$

c. The computation of the formula presented many difficulties. Since it was impossible to obtain an accurate count of the exact number of an item in the hands of troops, the number was derived by multiplying the initial issue factor by the European Theater of Operations manpower figures. These manpower figures were not accurate but the method proved generally satisfactory. In the determination of the number of replacement issues made, the total monthly issue of an item had to be modified by certain applicable factors, such as initial issues made, issues to agencies other than United States Forces, and quantities returned to stock through salvage channels. Still other factors had to be considered in the final derivation of the replacement factor, and the factors as mathematically derived were frequently altered, based on the short supply of an item which failed to meet requirements of the troops in the field and on the seasonal variations which caused a change in requirements for items such as woolen underwear and winter clothing.

d. Replacement factors were never considered completely accurate and were subject to constant study and change. They did, however, represent the average anticipated requirements over a long period of time and served their purpose in the determination of overall range requirements.

150. Tariffs.[10] A size tariff is a schedule or table showing the average quantity of sizes of an item required to properly fit a given number of men. Normally, tariff tables cover only the popular sizes, or those sizes which will fit the majority of individuals in the army. A supplemental size tariff is a similar table but is confined to the odd and unpopular sizes required for those men who cannot be fitted by the normal size tariff. European Theater of Operations experience indicated that 98 percent of the total requirements were met by the normal tariff table. Both tables are computed and based on records covering long periods of time, and were used in determining size requirements of clothing. Certain other considerations, however, such as the supply difficulties involved in an excessive number of sizes and the possibility or feasibility of combining, substituting, and reducing the number of sizes, were taken into account before the size requirements were determined.

151. Stock Levels.

a. The War Department prescribed as the initial levels of Class II and IV supply in the European Theater a 45 day minimum level and 75 day maximum level of supply.[4] The 45-day minimum level was found to be inadequate due to the difficulties and time factors involved in the distribution

of sized items. Also, unit post exchanges operated on a 30-day basis, and inasmuch as it required 30 days to distribute supplies from a port to the nearest depot, a minimum level of 60 days supply was indicated.[5] The Chief Quartermaster recommended in February 1944 that the minimum level be increased from 45 to 60 days.

b. Model stock levels were prescribed and established for each depot.[6] A model stock was defined as the estimated quantity of specific items required to supply a given number of men for a definite period of time. (Appendix 14) Levels were changed from time to time as the tactical situation or mission progressed. Levels in intermediate and base depots were maintained by distribution directives issued by the Chief Quartermaster. Levels in advance section depots were maintained either by distribution directives or by requisitions submitted to intermediate depots designated by the Chief Quartermaster for that purpose.[8]

c. Advance depots carried a limited stock of fast-moving supplies, and were located well forward so as to supply the immediate needs of the armies. Stocks were kept at such levels as to permit the supply and yet keep pace with the movements of the army. Intermediate depots carried balanced stocks of Class II and IV supplies. Base depots normally carried limited model stocks and unbalanced stocks in all classes which were available for shipment forward. Filler depots were those intermediate or base depots which were designated to maintain prescribed levels in advance section depots.[8]

SECTION 3

REQUISITIONING PROCEDURES

152. Phases of Supply.

a. The War Department established three phases of supply for overseas theaters:[9]

(1) Automatic supply phase, which continued until inventory control procedures were established.

(2) Semi-automatic supply phase, in which certain supplies were automatically furnished based upon the material status reports, while other supplies were furnished by the responsible ports of embarkation based upon theater requirements.

(3) The third phase places the overseas command on a full requisitioning basis, and was authorized only when levels of supply in the theater had been stabilized and control procedures established.

b. The automatic supply phase, begun in the European Theater of Operations in January 1942,[7] was unsatisfactory to both the New York Port of Embarkation and to the Chief Quartermaster. Full responsibility for supply did not lie with the European Theater of Operations Commander; he did not have complete knowledge at all times as to the status of incoming supplies; and the special requirements

as determined and directed by him, in addition to the necessity for bringing supplies to the proper levels, forced a system of requisitioning regardless of existing instructions.[8] The automatic supply phase was discontinued in October 1942 when the Chief Quartermaster submitted a quarterly requisition based on the semi-automatic phase, which continued until April 1945 when the European Theater of Operations entered the last phase of supply.

153. Requisitioning Periods.[8] The Chief Quartermaster experimented with monthly, quarterly, and semi-annual requisitions. The monthly system of requisitioning required that a complete review of the stock levels be made at least once every thirty days, and insured a positive method for detecting errors and stock deficiencies. It also eliminated the necessity for a large number of interim requisitions. The quarterly requisitioning procedure, utilizing outdated inventories, forced the Quartermaster to submit numerous interim requisitions to correct deficiencies. However, the static conditions that existed prior to March 1944 showed that a quarterly review of items was satisfactory.[2] A requisition for a period longer than a quarter of a year could be utilized only for supplies consumed at a specific rate regardless of the situation and was therefore not feasible for the greater portion of Quartermaster supplies and equipment. The principal advantage gained from the quarterly and semi-annual period was that it furnished the Quartermaster General with a projected forecast of requirements that were incorporated into the long range procurement planning program. The monthly period of requisitioning was found to be the most satisfactory and feasible when supplies were consumed at an uneven rate and the stock position was not secure.[2]

154. Requirements.

a. The manpower figure for the European Theater of Operations, while adequate for the computation of the replacement factor, was not satisfactory from a requisitioning standpoint.[8] The figures were basic and contained neither all the various categories nor a breakdown of military strengths. As a result, the Chief Quartermaster compiled his own troop strength basis until the War Department furnished a complete troop list for operations and supply which included agencies other than United States.

b. The computation of replacement requirements was made by multiplying the manpower (average monthly man-days) by the appropriate replacement factors, which gave the average replacement requirements for the requisitioning period. In addition to replacement requirements, requirements were computed for incompleted initial issue, for items in excess of authorized allowances, and for items for issue to other than United States forces. This total, plus any special requirements that arose, gave the total requirements for the requisitioning period.

c. The total requirements, however, were subject to modification by the total assets on hand. The total assets included the inventoried supplies on hand in depots, supplies in European ports, supplies in transit between ports and depots and between depots, and all supplies that were on ships in water under European Theater of Operations jurisdiction. The net requirements were obtained by subtracting the total assets from the total requirements. The

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ports of entry for the supplies, and the measurement and long tons to be delivered to each port, were computed and noted on each requisition.

SECTION 4

CONTROL AND DISTRIBUTION

155. Distribution Directives.[9]

a. Distribution directives were prepared in the Office of the Chief Quartermaster, directing shipment of supplies as indicated, and were based on stock levels in the various depots and on the requirements of the field forces as indicated in daily telegrams, requisitions, or in estimates of the situation. The directives were forwarded directly to the shipping depots through the appropriate section Quartermasters. Copies were furnished to the consignees, and to the appropriate section Quartermasters.

b. The issuing depot, base depot company, or other Quartermaster unit concerned took the necessary action to prepare and ship the supplies as called for, and extracted unavailable items to the Office of the Theater Chief Quartermaster for determination of availability from other sources. Distribution directives were returned daily by the issuing depots to the Chief Quartermaster giving a complete report as to the action taken during the preceding 24 hours. Subsequent shipments were reported on other copies of the directives furnished for that purpose.

156. Controlled Items.[9] Items were designated as controlled either because they were in short supply, suitable only for restricted use, non-standard, or in experimental stages of development. Supply of controlled items was delegated to base section Quartermasters in the form of credits, based on estimates of controlled item requirements, submitted by the section Quartermasters.

157. Items in Excess of Authorized Allowances.[9] Requests for non-expendable items in excess of authorized allowances were submitted for approval to the Commanding General, Communications Zone, through command channels. Requests for expendable items in excess of allowances were submitted through technical channels. Requests were screened and edited based on stocks on hand, stocks due in, and on future needs as against the immediate necessity for the items as stated. Approval or disapproval was given or recommended as indicated.

SECTION 5

CONCLUSIONS AND RECOMMENDATIONS

158. Conclusions.

a. That the automatic supply phase was unsatisfactory because the European Theater Commander had insufficient control over incoming supplies.

b. Inadequate categorization and breakdown of manpower figures proved a constant source of difficulty.

159. Recommendations.

a. That in future operations, the automatic supply phase of supply operations, if and when utilized, be modified to give the Theater Commander partial control and complete information as to the status of incoming supplies. An overseas theater must be supplied by means of requisition; complete automatic supply should not be utilized.

b. That during operations a monthly requisitioning period be used, but after cessation of hostilities a quarterly requisitioning period be used.

c. That a central agency be designated to compile and maintain accurate and current manpower figures in a Theater of Operations in order to more efficiently determine requirements.

Bibliography

Chapter 11

1. QM Service Reference Data, Volume II (Revised), 1 January 1944.

2. Hq TSFET, OTCQM, Ltr, subj: "Comments on QM Supply Study", dated 13 December 1945.

3. QM Service Reference Data, Volume I, 1 October 1945.

4. WD Ltr, dated 20 January 1944. *(1)

5. Hq European Theater, Ltr, dated 29 February 1944. *(3)

6. WD Cir No. 203, dated 1944.

7. WD Cable 432, GHQ, dated 30 June 1942.

8. Topic No. 61, Hq Theater Service Forces, Office of the Chief Quartermaster (Informal Study for General Board Use). *(4)

9. Continental Operating Instructions, ETO, OCQM, 20 November 1944.

10. QM Service Reference Data, Volume IV (Revised) 1 October 1945.

* Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class II & IV Supply), file R 401/11.

CHAPTER 12

CLASS II AND IV OPERATIONS, FIELD FORCES

SECTION 1

QUARTERMASTER, ARMY GROUP

160. Mission. The mission of the Army Group was primarily tactical. The Quartermaster was mainly concerned with the overall planning and establishment of policies relating to Quartermaster supply and with the necessary supervision to insure that the plans and policies were followed and carried out.[1,2] There was no Class II and IV section as such in either army group. The Supply Division, Quartermaster Section, in the 12th Army Group, and the Quartermaster Sub-section, G-4 Section, in the 6th Army Group, performed such Class II and IV functions as were necessary.[2,3]

161. Functions.[3] The Army Group Quartermaster kept himself informed at all times on the status of Class II and IV supply. His principal functions were:

a. To maintain close contact with the Army Quartermasters and with the Quartermasters of Communications Zone and Advance Section, Communications Zone.

b. To prescribe or make recommendations for the levels of supply to be maintained by the various armies.

c. To insure the proper maintenance of these prescribed levels.

d. To make recommendations on the establishment of priorities for issue of critical items and on the allocation of tonnage to the various armies.

e. To allocate Quartermaster units to the Army Quartermaster as required in the performance of his supply missions.

f. To plan and estimate Quartermaster Class II and IV operational requirements.

g. To supervise the distribution of Quartermaster supplies.

The Quartermaster of the 12th Army Group exercised control over a wider scope of activities and responsibilities than did the Quartermaster of the 6th Army Group, due mainly to the difference between their organizations and to the wider scope of the 12th Army Group itself. Their principal missions and functions were, however, relatively the same. In Class II and IV supply they were not operational, but acted in a coordinating and supervisory capacity only.

SECTION 2

CLASS II AND IV SECTION, QUARTERMASTER SUPPLY, ARMY

162. Mission and Organization.[4] The Quartermaster Class II and IV Section operated as a part of the Army Quartermaster Supply Division under the direct supervision of the Army Quartermaster. It was charged with the overall supply of Class II and IV items to all troops under Army control. It had no prescribed table of organization but normally consisted of two officers and eight enlisted men. In the performance of its supply functions, the section was charged with the following responsibilities:

a. Preparation of all Class II and IV plans, reports and correspondence.

b. Maintenance of authorized stock levels.

c. Preparation of estimates for Class II and IV requirements.

d. Requisitioning of army requirements.

e. Responsible for the efficient operation of the Army Class II and IV Depots.

f. Control and allocation of items in critical short supply.

g. Liaison with the Communications Zone, Advance Section, Communications Zone, Army Group, and subordinate units of the army on all Class II and IV matters.

h. Control of Quartermaster sales store operations.

163. Methods of Operation.

a. In general, it was the responsibility of the Commanding General, Communications Zone, to push supplies forward to the army by whatever means of transportation was available, based upon requirements as estimated or requisitioned by the armies. Supplies were stocked in army depots, maintained at prescribed levels and issued to using units upon requisition. The Class II and IV Section was responsible for maintaining a current Class II and IV plan to meet changing situations and for accurately estimating requirements to fill the needs of using units.

b. During the initial stages of the continental operation, all supplies were brought to the beaches under control of the First US Army. Class II and IV supplies were shipped to the continent in beach maintenance and beach follow-up sets, the composition and planning of which had been coordinated by the Chief Quartermaster, European Theater of Operations, and the Quartermaster, First US Army. The supplies were controlled and issued by the Quartermaster, First US Army, until the latter part of July 1944 when the Advance Section, Communications Zone, arrived and assumed control.[1] The Third US Army prepared pre-scheduled requisitions for supplies to be shipped to the continent, broken down by days in accordance with tonnage allocations.[5] In Southern France, the Seventh US Army maintained control of beach supply operations until D plus 24, when the Continental Base Section of Communications Zone assumed control.[6]

164. Requisitioning Procedure.[1]

a. During the early stages of the continental

campaign, the armies requested Class II and IV supplies by requisition. In September 1944 the policy was changed. Requirements were included on the daily telegram, with no formal requisition required. Some confusion resulted due to the arrival of supplies in the army area without advance notice and in quantities which could not be checked against the daily requests. Also some shipments were duplicated due to failure of units to remove items from daily telegrams after the intial request.[7]

b. In December 1944, due to the unsatisfactory results obtained, Class II and IV supplies were deleted from the daily telegram. Requisitions were submitted instead to the Quartermaster, Advance Section, Communications Zone, for requirements covering a ten-day period.

c. Early in 1945 other changes were instituted. The maintenance of the backlog record of items not available was discontinued. Requisitions were submitted every 20 days for requirements computed on a 30-day basis. This assured the Army Quartermaster of at least a 10-day stock level at all times. To simplify and coordinate supply, a conference was held each requisitioning period. Those attending included the army Class II and IV officer, supply officers of Communications Zone depots and representatives of the Chief Quartermaster, European Theater of Operations.

165. Stock Levels and Allocations.

a. The 12th Army Group authorized a 30-day level of Class II and IV supplies for the armies under its control.[8] The 6th Army Group authorized a 15-day level.[9] These levels were never constant due to the short supply of many items and to the necessity for increasing or decreasing the amount of stock on hand as the tactical situation progressed from static to mobile and back to static.

b. Class II and IV supplies received a low priority on shipping and transportation. This caused many items to fall short of requirements, and the lack of supply discipline among all troops resulted in further shortages.[10] The Army Groups, therefore, instituted the procedure of allocating critical and controlled items to the armies, based on the missions and needs of each.[1] The armies in turn controlled issues to the using troops.

c. When transportation was short a system of control by allocating tonnage was introduced. This restriction required the Army Quartermaster to submit his requirements by tonnage, listing the items by class required. Due to the low priority given to Class II and IV supply and its resultant low tonnage allocation, a further shortage of this class of supply developed.

d. In October 1944 the Seventh US Army foresaw the need for winter clothing and raised the priority of Class II and IV supply to a level equal to that of Class I and III.[11] In December 1944 the heavy combat losses sustained by the United States forces, with the resultant urgent need to reequip the units, caused a first priority to be given to Class II and IV supply. The necessary shipments were accomplished in ten days.[2]

SECTION 3

OPERATION OF ARMY CLASS II AND IV DEPOTS

166. Mission. The army Class II and IV depot, operated by the Quartermaster depot company, supply, under the direction and technical supervision of the army Class II and IV officer,[12] was charged with the responsibility of carrying model stocks of supplies for a certain number of troops for a given period of time; to supply, either directly or through distributing points, all troops assigned to the depot for supply; and to receive, store and issue additional supplies over and above model stock levels in order to fully utilize all storage facilities.[13] The normal delivery of Class II and IV supplies to the using units was made at the Army Class II and IV depot. Under unusual circumstances, delivery was made to units if transportation facilities were available.[14] During one phase of the Third US Army's operations, sub-depots were established for the purpose of receiving, consolidating and forwarding to the main depot unit requisitions for supplies. The supplies were trucked to the sub-depots and issued to the units at those points.

167. Location of the Depot.

a. The location of Class II and IV depots presented a problem throughout the continental campaign.[5] Factors considered in selecting a proper site included:[13]

(1) Type of terrain, drainage and accessibility.

(2) Sufficient amount of open and closed storage.

(3) Transportation facilities, rail and road.

(4) Security (dispersion and camouflage).

(5) Layout plans, to include aisles and roadways.

b. Even should a site be found to meet all these conditions, it was still unsatisfactory if it was not within easy reach of the using units. The depot company is not mobile without the attachment of additional trucks, and the low priority given to Class II and IV supplies made the movement of the depot difficult under the best of circumstances. During August and September 1944, the round-trip distance between the combat troops and the army depots amounted to as much as 360 miles, and even then 50 percent of the unit trucks dispatched to the depots were wasted because of inadequate stocks.[15] In April 1945, many army depots were completely out of reach of the units that had crossed the Rhine. The units were utilizing their own available transportation for Class I, III and V supplies, and round trips to the depots were as much as 500 miles.[16] Bridge facilities were also inadequate at this time. On 31 March 1945 the Quartermaster, Seventh US Army, decided to move the army depot, starting with the immediate movement by truck of certain critical items. Transportation shortage, however, necessitated the use of slower rail facilities and the move was not completed until May, by which time the troops had moved so far ahead that even at its new location the depot was out of reach.[6]

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

168. Depot Procedure.

a. A strict system of stock control within the depot was essential in order to insure that stocks were kept at the proper levels to meet the unit requirements.[17] All supplies received were promptly tallied in, including the complete description and quantity of each item received. They were stored and segregated by class. Particular attention was given to critical items to prevent any loss through negligence or improper storage.[13] Spot-check teams were used in some cases to insure care and neatness in tallying outgoing and incoming supplies, and to rectify errors made in nomenclature and figures. A system of records, which reflected amounts on hand, amounts due in, and amounts due out, were kept at most depots and included the following:[17]

(1) Stock record cards.

(2) Back-order cards for special items only.

(3) Maximum and minimum levels to be maintained.

(4) Daily report of change on master chart for forwarding to the headquarters supply section.

(5) Credit register of controlled items which had been released to the units.

(6) Reports of shortages submitted to headquarters supply section.

(7) Stock record adjustment chart.

b. Stock record cards were normally maintained in a manner as explained by a Fifteenth Army Depot Commander:[18] "Stock record cards are filed by class alphabetically within each class. All credit vouchers are consolidated on a daily master voucher, which is a printed form listing all items in the same order as they are filed in the stock record cabinets. The business day runs from 0700 to 0700. Quantities are posted to the master voucher as requisitions are filled. At the end of the business day totals are extended for each item and only the total is posted to the stock record card. This operation reduces the number of personnel posting stock records, as the cards are posted only once a day and the posting to the cards is done in a consecutive manner. Stock record cards never fall behind issues by more than twenty-four (24) hours. The master voucher is given the voucher number of the last credit voucher posted to it for reference purpose. This same form is used to prepare the ten (10) day stock status reports and physical inventory reports".

c. Physical inventories varied within each army, but at least one inventory per month was mandatory. The Quartermaster of the Ninth US Army prescribed that a permanent inventory section be established as depot activities required and that each item be physically inventoried every two weeks.[13]

169. Processing of Requisitions.

a. Each army required that requisitions be properly prepared and certified, and consolidated by the high-

er headquarters of the requisitioning unit. Requisitions were edited at the depot for the purpose of ascertaining their correctness and that the items requested were authorized. The quantities of items were not questioned unless they appeared excessive, but they were reduced as depot stocks required. The procedure for submitting requisitions and drawing supplies varied among the armies. No depot schedules were established during the early months of operations in the European Theater of Operations with the result that when a stalemate was reached the depots were flooded with requisitions.[16] In January 1945 the Third US Army established a drawing schedule for its units, and other armies adopted similar measures.[5] The Ninth US Army required that requisitions be submitted 24 hours in advance of drawing.[19] Requisitions for controlled items were submitted to the Army Quartermaster for approval, and requests for equipment in excess of authorized allowance and for Class IV supplies were submitted through command channels. In the First US Army all requisitions of divisions required the approval of the Army Quartermaster, whereas smaller units were allowed to draw direct. Normally, however, depots were authorized to approve and process all requisitions for equipment within authorized allowances. All other requisitions required the approval of the Army Quartermaster or his representatives.

b. The variations in depot procedures among the armies often proved a handicap to the combat units. The necessity for obtaining the approval of the Army Quartermaster, who was normally located at some distance from the depot caused a considerable delay. The Quartermaster of the 35th Infantry Division stated:[20] "In one Army, supplies could be drawn daily, or as needed; in another, one day each week was designated. In one army the requisition was submitted to the issuing depot and honored at that point, while in another army it was necessary to submit the requisition to the Army Quartermaster for approval 48 hours prior to drawing time. This plan caused a delay in replacement --".

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

170. Conclusions.

a. That throughout operations in the European Theater of Operations the tactical situation normally dictated a low priority for Class II and IV supply. This priority, combined with the shortage of transportation, was normally too low to permit efficient operation and to insure adequate supply to the units when required. On those occasions when the tactical situation permitted or required a higher Class II and IV priority, the efficiency and speed of supply increased in proportion.

b. That different methods, procedures and schedules regarding requisitioning and drawing of supplies adopted by the various armies caused additional delay and confusion among the combat troops.

c. That the inclusion by army of Class II and IV

supplies on the daily telegram was unsatisfactory, and that the 20-day requisitioning period system, as finally developed, proved effective.

d. That depot procedure, including records and stock control measures, was as efficient as could be expected under the existing circumstances.

171. Recommendations.

a. That appropriate agencies of the War Department give further study to the feasibility of prescribing a standard procedure of army depot operations in regard to methods, policies and scheduling of units. That the procedure be so devised as to keep transportation, personnel, movement, delay, and confusion to a minimum, and that it be published as a guide to Army Quartermasters.

b. That the method prescribed by the War Department of calling forward Class II and IV supplies by the armies by means of requisition be further developed to include the 20-day requisitioning period as outlined herein.

Bibliography

Chapter 12

1. 12th Army Group Quartermaster "Final After Action Report".

2. 6th Army Group G-4, "Office Memorandum No. 13, "Standing Operating Procedure", dated 1 March 1945.

3. First US Army Group Quartermaster, "Standing Operating Procedure", 6 June 1945.

4. Seventh US Army Quartermaster Section "Operations".

5. Third US Army, "After Action Report".

6. Seventh US Army Quartermaster "Record of Events".

7. 12th Army Group Quartermaster "Memorandum for Record", dated 19 September 1944.

8. Change 2, 24 November 1944 to Headquarters 12th Army Group "Standing Operating Procedure", 18 October 1944.

9. Headquarters 6th Army Group, "Administrative Instructions No 5", dated 20 November 1944.

10. Letter, Seventh Army Quartermaster to Beach Group Quartermaster, subject: "Report of Inspection", 26 August 1944.

11. Seventh US Army Quartermaster "Tonnage Bid for Period 8-15 October 1944".

12. Fifteenth US Army Quartermaster "Class II and IV After Action Report", 31 July 1945.

13. Ninth US Army Quartermaster "Standard Operation Procedures No. 7, Class II and IV Supply", 7 December 1944.

14. First US Army "Standing Operating Procedure for the Quartermaster Depot".

15. 30th Infantry Division "After Action Report".

16. XIX Corps, "After Action Report".

17. War Department Observers Army Ground Forces Report No. 923, "S-4 Topic List", 9 January 1945.

18. War Department Observers Army Ground Forces Report No. 923, "Quartermaster Depot Company, Supply", 10 May 1945.

19. Ninth US Army, "Administrative Instructions No. 2", 4 January 1945.

20. 35th Infantry Division, "After Action Report".

CHAPTER 13

QUARTERMASTER DEPOT COMPANY, SUPPLY, T/O & E 10-227

SECTION 1

MISSION AND ORGANIZATION

172. Mission. The Quartermaster depot company, supply, is the administrative and technical unit for operating a Quartermaster supply depot other than motor transport and remount. It handles any particular class of Quartermaster supply as required by the circumstances. It operates as a unit in either the Communications Zone or in the combat zone. It is designed to operate as an independent unit in charge of a small branch depot or under the control of a headquarters and headquarters company, Quartermaster base depot, for sub-depot operations at a major Quartermaster branch depot. It can operate as separate platoons, each platoon operating a separate Quartermaster depot.[1]

173. Organization.

a. The company is composed of a company headquarters which performs the normal administrative, mess, and supply functions for the company, and three operating platoons. Each of the three platoons is organized into two sections: a depot headquarters section, consisting of one officer and 17 enlisted men; and a storage section, consisting of one officer and 33 enlisted men. The depot headquarters section furnishes the personnel required to handle the clerical work of the depot and maintain the depot utilities. The storage section furnishes personnel for the receipt, storage, warehousing and issue of supplies. Normally, the company is organized along commodity lines, with each platoon assigned to a particular class or grouping of supplies.[2]

b. The table of organization and equipment authorized only the minimum amount of personnel, transportation, and major items of equipment. The major items of office equipment, including computing and duplicating machines, typewriters, and a 300 pound capacity platform scale, are normally sufficient for depot operations. The company is not mobile, and does not have sufficient labor organically to handle all the depot supplies. With its normal capacity to supply and maintain 60,000 men under combat conditions, the attachment of one truck company and two service companies is normally required.[3]

SECTION 2

EMPLOYMENT IN THE EUROPEAN THEATER OF OPERATIONS

174. Communications Zone.

a. The advance planning for the troop basis of depot supply companies in Quartermaster operations on the continent raised several divergencies of opinion. The need

for dispersion and the locations of the troops had to be considered as well as the rated capacity of the company. The actual requirements were estimated higher than the theoretical rate for the size of the forces involved, and it was decided that 37 companies would be required to receive, store, and issue Quartermaster supplies for all general and Quartermaster branch depots.

b. The company was normally utilized either by assignment to a headquarters and headquarters company, Quartermaster base depot, for sub-depot operations at a major Quartermaster branch depot, or by placing the company in charge of an independent Quartermaster depot. Control was exercised by the Quartermaster, Communications Zone, either direct or through the advance, intermediate, or base sections to which the companies were assigned. In operating Communications Zone depots the companies handled Class I, II and IV supplies for as many as 100,000 men.[4]

175. Combat Zone.

a. An allocation of depot supply companies to the several armies, based on the rated capacity of the company, would have given each army an average of five companies. Instead, each army was assigned two companies. That number proved sufficient.

b. Employment of the companies varied to some extent within the armies, although in general the methods of employment, missions, and functions were the same throughout. The company was the base for supply operations of the Army Quartermaster Service. It was used for the operation of the army Class II and IV depots, and in some cases for the operation of Class I depots or dumps. Normally, the company operated as a unit, but there were occasions when it was necessary to utilize individual platoons as separate operating units. Although the depot supply company was normally assigned to a Quartermaster group under army control, the standing operating procedures of the various armies placed the responsibility for the efficient operation of Class II and IV depots on the army Quartermaster Class II and IV officer. The Quartermaster group or battalion to which the company was assigned exercised administrative control only. Army retained operational control.[5] The company, operating as a unit and handling only Class II and IV supplies, supplied between 150,000 and 200,000 men. The Quartermaster of the 12th Army Group recommended that the capacity of the company for Class II and IV supply be standardized at 150,000 troops.[6]

c. The First US Army normally operated one Class II and IV depot, utilizing one depot supply company with one or two service companies for labor. The second depot company operated Class I depots, with two to four service companies attached for labor.[7] The Third US Army employed its two companies for Class II and IV supply, each operating a depot with one or two service companies attached. During the phase of the operations, however, the two companies combined to operate one depot, but established subdepots at Class I supply points.[8] The Seventh US Army operated only one Class II and IV depot, with one service company attached.[9] The Ninth US Army operated one Class II and IV depot, utilizing one company with one or two service companies attached. When a second depot company

was assigned, it was employed in operating a Class I storage supply point, normally with three service companies attached.[10] The Fifteenth US Army employed one company in the operation of two Class II and IV depots, with one service company attached to each depot for labor.

d. The table of organization provides for the attachment of one truck company to the depot supply company for operations, but due to the low priority given to Class II and IV supplies, the armies were inclined to allocate all available transportation for the movement of troops and other more vital classes of supply. Normally, truck companies were not attached to depots, and difficulty was experienced by a lack of transportation when it became necessary to move the depot. The Quartermaster, Third US Army, stated: "Our Class II situation would have been solved during the drive across France and into Germany if the depot supply companies had been provided with trucks as a part of their regular equipment. The inclusion of 48 trucks in each of the above units will effect a great improvement in Quartermaster supply."[11]

176. Adequacy of Personnel and Equipment. The organization of the depot company was adequate to enable it to perform its mission. Due to large scale supply operations in Communications Zone, the activities of the company when employed in the Communications Zone were frequently limited. In the combat zone its functions were diversified and many. The internal organization of the company was frequently changed to meet existing conditions, but the most frequent and lasting change was the assignment of packers as checkers, due to the heavy demand in that line of work. A transportation section was also organized in a Fifteenth Army depot to maintain all records on mail and truck shipments.[12] Throughout the European Theater of Operations it was found that depot personnel arrived on the continent with insufficient training and there was little time for training after arrival. Outstanding deficiencies included lack of trained personnel to handle the transportation problems and the problem of handling personal effects and baggage.[13] The company had no organic materials handling equipment, but the Communications Zone maintained a sufficient stock in a central base depot from which the armies drew their requirements.[14]

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

177. Conclusions.

a. That the organization of the depot company, supply, is adequate and flexible.

b. That the company was normally employed in the European Theater of Operations to handle Class I and Class II and IV supplies.

c. That the company has insufficient transportation organically for normal routine requirements in connec-

tion with depot operations.

178. Recommendations.

a. That the Quartermaster depot company, supply, be redesignated Quartermaster depot supply company.

b. That the rated capacity for handling Class II and IV supplies be placed at 150,000 troops.

c. That additional transportation be assigned the company organically to enable it to do normal daily routine hauling in connection with depot operations.

d. That pertinent doctrines, techniques and Tables of Organization and Equipment be amended by appropriate agencies of the War Department.

Bibliography

Chapter 13

1. Field Manual 10-10, Quartermaster Service in Theater of Operations, 2 Mar 42.

2. Technical Manual 10-230, Depot Company, Supply, 24 July 43.

3. Table of Organization and Equipment 10-227, 6 Sep 43. *(5)

4. Communications Zone Quartermaster Report on "Quartermaster Depot Company, Supply".

5. Fifteenth US Army Quartermaster "Class II and IV After Action Report", 31 July 1945.

6. 12th Army Group Quartermaster "Final After Action Report".

7. First Army Weekly Quartermaster Operations Report to 12th Army Group.

8. Third Army Weekly Quartermaster Operations Report to 12th Army Group. *(8)

9. War Department Observers Board Report, No. 834, 14 April 1945.

10. Ninth US Army Quartermaster Operations Report to 12th Army Group, (undated). *(9)

11. Letter, Third US Army Quartermaster to the Theater Quartermaster, 22 Sept 1945, subject:"Some Ideas on Quartermaster Organizations." *(10)

12. War Department Observers Army Ground Forces Report No. 923, "Quartermaster Depot Company, Supply", 10 May 1945*(6)

13. Memo to Fifteenth US Army Class II & IV Officers, dated 15 August 1945, subject: "Comments on Training of Depot Supply Company." *(7)

14. Letter, Headquarters Communications Zone, 16 March 1945, subject:"Allocations and Requisition Procedure for Materials Handling Equipment."

* Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class II & IV Supply), file R 401/11.

CHAPTER 14

BEACH MAINTENANCE SETS AND BEACH FOLLOW-UP SETS

SECTION 1

CHARACTERISTICS AND USE

179. Basis.[1] In February 1944 the Chief Quartermaster, European Theater of Operations, in planning for D-Day, made arrangements with the Quartermaster, First United States Army, for the shipment to the continent of Class II and IV supplies in sets which were to be amphibiously packed. The plan called for the shipment of the initial supplies in sets that were to be skid-loaded, while the follow-up supplies would be shipped in composite sets. The maintenance during the early stages of the operation was to consist of Quartermaster items essential to combat and were to be gradually increased in variety and quantity as the operation progressed and the requirements for additional items arose. The plan was approved and placed into operation.

180. Description and Composition.[1]

a. Skid-loading may be defined as a method of loading in which the supplies are crated and mounted on skids or runners, similar to those of a sled, which enables the load to be dragged or pulled over sandy terrain with comparative ease. The skids keep the supplies off the ground, thereby eliminating the possibility of damage from ground water.

b. Beach maintenance sets were composed of selected quantities of essential Class II and IV supplies loaded on skids, each set normally containing 23 skids. These supplies were assembled, loaded and shipped as a composite unit. Each set contained 75,000 man-days of supply which was segregated, insofar as possible, by like commodities by skids. The loads were maintained on the skids by the utilization of open crates built onto the skids. The supplies were safeguarded against the elements by tarpaulins over the crates for additional protection. The beach maintenance set was therefore a composite grouping of essential supplies, loaded for fast movement and segregated by commodities to facilitate issue or storage.

c. Follow-up maintenance sets were similar to the beach maintenance sets, but were composed of a much wider selection of items. They were not skid-loaded, but each set contained 450,000 man-days of supply.

181. Preparation of Sets.

a. Approximately 61 beach maintenance sets were assembled at five different depots in the United Kingdom for delivery to the continent. The follow-up maintenance sets were also assembled in the same depots. Supplies were packed and shipped in case lots if the difference between the case lots and the amounts required were less than 10 percent either way.

b. A typical skid contained the following items:

(Skid #14) ITEM	QUANTITY	No.Pkgs.	WEIGHT (lbs)
Trousers,wool,OD	420	7	850
Undershirts,wool	400	4	325
Suspenders,belt	140	2	160
Bag,canvas,field	50	1	103
Batteries,hand, electric	180	2	350
Candles	450	1	75

Special and parachutist clothing was included in every fifth set. Nurses clothing was packed on every 20th set, and blank forms were on a single skid included in every fifth set.

c. Skids were prepared for and constructed under the following specifications:

Average net weight of skids	1,838.0 pounds
Cubage per skid	146.1 cubic feet
Net weight per set	31,943.0 pounds
Ship tons per set	84.0 ship tons

These skids were top-heavy and were difficult to handle; they should be designed so as to give a more balanced load.[2]

d. Several problems were encountered in the assembling and shipping of these sets, and in view of the shortage of time, immediate steps had to be taken to insure that the deadlines were met. The major problems included:

(1) The design, construction, loading and marking of the skids and crates; and assembly of the required sets.

(2) Segregation of skids by set in the depots.

(3) Inspection of all phases of the program.

(4) Short supply of certain items.

(5) Late arrival in the United Kingdom of a few key items from the United States.

(6) Establishment of priorities between the skid loading program and the normal requirements of supplies for other purposes.

(7) Last minute requests from the Quartermaster, First US Army, for the inclusion of new or additional items in the sets.

Three depots were designated to complete the construction of all skid crates and to deliver them to the loading depots. Qualified officers from the Office of the Chief Quartermaster were dispatched to the depots to aid, supervise and coordinate the manufacturing, loading and assembling of the sets in the order of their out-loading schedule. Critical items were trucked from ports to depots and from depot to depot to complete the sets in the order of their calling up for shipment. Coordination was effected between divisions in the Office of the Chief Quartermaster to establish priorities among the supplies.[1]

SECTION 2

OPERATION

182. Amphibious Packing. In addition to and simultaneously with the construction of skid loads, preparations were made for the amphibious packing of Classes I, II and IV supplies for the period D plus 14 through D plus 60. Inspection of the facilities for off-loading and the storage conditions on the continent immediately subsequent to D-Day resulted in the decision to amphibiously pack all Quartermaster supplies for the period through D plus 60, placing a heavy additional burden on the Quartermaster personnel and facilities. Packing and crating schools had, however, already been established, packing and crating supplies were available, and a method of repairing damaged or unserviceable containers agreed upon and placed in effect. The containers were so constructed that they would be able to withstand over-the-beach-handling, momentary immersion, and at least 90 days of exposed open storage without breakage or damage to the contents.

183. Phasing of Maintenance Sets. The planned phasing of the sets as desired by the Quartermaster, First US Army, and the shipments as actually made coincided very closely. Extremely rough weather in the early stages of the operation resulted in a delay in the shipping of some of the sets as originally scheduled. Subsequent shipments, however, rectified this lag and the sets were completely shipped by the end of each period as planned for particular types of sets. The planned shipping schedule for the beach maintenance sets and the follow-up maintenance sets was as follows:[1]

Beach Maintenance Sets.

Day	No. of Sets	Day	No. of Sets
D plus 4	2	D plus 10	6
D plus 5	3	D plus 11	6
D plus 6	5	D plus 12	7
D plus 7	5	D plus 13	7
D plus 8	6	D plus 14	8
D plus 9	6		

Follow-up Maintenance Sets.

Day	No. of Sets	Day	No. of Sets
D plus 15	1	D plus 21	2
D plus 16	2	D plus 22	0
D plus 17	2	D plus 23 through D plus 41	1 each day
D plus 18	2		
D plus 19	2		
D plus 20	2		

184. Results.

a. The utilization of the maintenance sets for shipping supplies across the beaches was a complete success. The contents were carefully selected by the Quartermaster, First US Army, and the Chief Quartermaster. The sets were brought to the beaches under the control of the First US Army immediately following the assaults. Issues were made

to the troops without formal requisition or depot procedures. Remaining stocks were eventually collected and processed into depots where they were augmented by the bulk shipments that followed.[3]

b. In a report on the operation, the Commanding General, First US Army, stated:[4]

> "It has been previously stated, for the first ten days the Quartermaster Class II & IV supplies which arrived on the continent were in the form of Beach Maintenance Sets. The possession of these sets was quite adequate to this end. No requisitions for any items contained in these sets were turned away; on the other hand, no large surpluses accumulated at any time. The items which they contained were essential rather than ornamental and the factors were accurate. Considering the conservation of supplies and tonnage which was effected by the use of these sets, it is considered that their design was one of the 'highlights' of the entire operation".

c. The difficulties encountered through the decision to amphibiously pack all supplies for the period through D plus 90 were overcome by utilizing the facilities of all depots in the United Kingdom on this work. Supplies were distributed among depots as required. Personnel of depots not familiar with amphibious packing were given special instructions in waterproofing supplies. Close liaison was maintained throughout. The mission was accomplished, with only a small amount of tonnage shipped to the continent without being amphibiously packed.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

185. Conclusions.

a. That the use of beach maintenance sets and follow-up maintenance sets in the early stages of landing operations on the continent and the amphibious packing of all supplies proved of definite value.

b. That no appreciable quantities of supplies had to be shipped over to supplement the sets.

186. Recommendations.

a. That beach maintenance and beach follow-up sets be utilized in the early stages of future amphibious operations.

Bibliography

Chapter 14

1. Topic No. 37, Headquarters, Theater Service Forces, European Theater, Office of the Chief Quartermaster, subject: "Supply Planning for Continental Operations". (Informal Study for General Board Use.) *(20)

2. Hq TSFET, OTCQM, Ltr, subject: "Comments of QM Supply Study", dated 13 December 1945. *(27)

3. 12th Army Group Quartermaster "Final After Action Report". *(21)

4. Report on Operations, First US Army, Annex 12-14, Section III, "The Operations".

*Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class II & IV Supply), file R 401/11.

CHAPTER 15

CLOTHING AND EQUIPMENT

SECTION 1

ALLOWANCE AND MAINTENANCE

187. Allowances. The initial allowances of individual and organizational clothing and equipment, as prescribed by the War Department, are contained in appropriate tables of organization and equipment, tables of basic allowances, and table of equipment number 21.[1] The Commanding General, European Theater of Operations, authorized and published from time to time special allowances, in addition to those prescribed by the War Department, for troops in the European Theater of Operations. Requests for additional items, or for items in excess of authorized allowances, were submitted through command channels to the Commanding General, Communications Zone, for approval prior to issue.[2]

188. Adequacy of Allowances. The allowances as prescribed by the War Department and as modified in the European Theater of Operations were generally adequate. There was a need for special items required by special types of personnel such as armored, airborne, and tank destroyer, and in addition, a definite need for winter clothing. Many items of clothing and equipment were in critical short supply at various times due to low priority, enemy action or to lack of supply discipline. Some items were consistently in short supply, which indicated either that the initial allowance was too low or that production or repair facilities were inadequate. The most outstanding of these items were:[3]

Outfits, cooking, one burner

Outfits, cooking, two burner

Outfits, cooking, 20-man

Field Ranges[4]

Heater, water, immersion type

Mess equipment, all types

Tentage

Certain items of combat clothing

Winter clothing

Messing equipment was often in short supply because during combat operations units were frequently split up into smaller detachments or combat groups. Organizational allowances were not adequate to permit the issuance of this type of equipment to these detachments. This was especially notable among Military Police and similar units which operated in small groups.[4] Special and non-tariff sizes of clothing and footwear were often difficult to obtain in army areas, although there were sufficient stocks on the continent. Units were ultimately authorized to draw special and non-tariff size clothing and footwear for storage in unit supply for issue as required.

189. Classes of Clothing and Equipment.[5] Clothing and equipment was classified in the European Theater of Operations in the order of serviceability into four categories as follows:

a. Class A clothing and equipment included all new items and those which were slightly used but not substantially distinguishable from new.

b. Class B included that which, although not new or Class A, still retained combat serviceability.

c. Class C included that which could be made combat serviceable by reclamation and repair.

d. Class X included that which was usable but did not have combat serviceability for extended field use. Clothing and equipment was segregated and issued by classes in order to obtain the maximum use of supplies on hand.

190. Maintenance.[3]

a. It was the responsibility of each soldier to maintain, by normal care, the clothing and equipment issued to him. Supply discipline extended through all echelons and proper care and maintenance was a command responsibility. Quartermaster laundry and repair units, while not always easily accessible to combat troops, were available and provided cleaning and repair service.

b. Three salvage repair companies were normally provided for each army. They proved adequate for the repair of shoes, although they did not meet expectations in the repair of other types of Quartermaster equipment. Shoes were tagged with the individual's name, rank, serial number and organization to insure return to the original owner. Repair of tentage and webbing was adequate, but lack of spare parts and proper facilities seriously hindered the proper maintenance of items such as immersion type heaters, typewriters, mess equipment, and one and two burner stoves.

191. Substitution and Elimination.

a. In order to increase production and supply of Quartermaster items which proved more satisfactory and essential than the others, a study was made to eliminate as many of the less satisfactory and non-essential items as possible. Items considered for elimination were those which, although eliminated, would produce the least detriment to the success of future operations. They were divided into the following two categories:[6]

(1) Those items which would be non-essential from a technical viewpoint.

(2) Commonly used items which records revealed to be in slight or decreased demand.

b. The matter of eliminating non-essential items was of extreme importance to the combat forces. It was apparent to Supreme Headquarters, European Theater of Operations, that continued production and supply from the United States of all items being used in the European Theater was impracticable, and that in order to provide sufficient quantities of

the most needed items the elimination of non-essential items was necessary. The British Army, for example, adopted the basic fundamental principles of simplicity and uniformity at the beginning of the war. Consequently the British uniform for all components of the army, which consisted basically of only 11 items, remained unchanged throughout five and one-half years of combat.

c. As a result of a study directed by Supreme Headquarters, European Theater of Operations, the 6th and 12th Army Groups made the following recommendations:

Item	6th Army Group	12th Army Group
Clothing, Bakers & Cooks	Eliminate	Eliminate
Case, Canvas Dispatch	Eliminate	Eliminate
Chinaware	Procurable locally	No comment
Enamelware	Procurable locally	No comment
Stove, cooking 2 burner	Eliminate	Retain
Dubbing, 4 oz can	Issue 2 oz can only	Issue 2 oz can only
Tent, Pyramidal	Substitute, Tent squad	Retain
Tent, Wall, small	Substitute, Tent squad	Retain
Tent, Kitchen, Flyproof	Substitute, Tent squad	Retain

d. Surveys were conducted throughout the field forces to further determine possible sources of elimination or substitution. The surveys indicated the following:

(1) Poncho was desirable as an issue item.[7]

(2) Leggings were unsatisfactory and disliked.

(3) Overcoat was often discarded.[8]

(4) Combat boot with the reverse leather soaked up water and was cold.[7]

(5) Raincoats were unsatisfactory due to lack of uniformity in sizes and materials.[9]

(6) The cushion sole sock was in great demand since it was warm and comfortable and the new type did not shrink when washed.[7]

(7) Leather palmed glove did not last. The glove shell, leather with insert was far more satisfactory and recommended as a substitute.[7]

(8) Pile jacket was popular, but it and other outer garments were not sufficiently wind resistant and water repellent.[8]

e. A board of officers convened at Headquarters Army Ground Forces, Washington, D.C., in August 1944, to study the equipment of the post war army. This board considered the army requirements in all theaters.[10] Its findings were generally similar to those in the European Theater. The board recommended that outer clothing be developed which would provide an adequate uniform for dress, combat and fatigue. This uniform was to consist of a maximum of general purpose garments for issue to the greatest number of troops possible. The board recommended further that research continue to improve the type, quality and characteristics of clothing and equipment.

SECTION 2

WINTER CLOTHING[11]

192. Problem Involved. During the three year period in European Theater of Operations efforts were consistently made to develop a winter combat uniform suitable for all troops under the climatic conditions prevailing. Different types of uniforms, including 70 different basic items, were issued. The supply and distribution problem was almost insurmountable. Supply was not adequate, and combat troops were not adequately clothed for winter. The Commanding General, European Theater of Operations, therefore called a conference on 29 January 1945, for the purpose of eliminating unsatisfactory items and determining upon a single winter combat uniform suitable for all components. Representatives of the Chief Quartermaster, the 12th Army Group, the 6th Army Group, the Quartermaster Air Service Command, the War Production Board, and other agencies were present at both the initial conference and at the final conference held in March 1945. The various items of uniform were discussed and studied in detail, and the final recommendations adopted by the conference are as follows:

a. Jackets. Of the six different types of jackets issued during the winter of 1944-45, only two were recommended to be retained:

(1) Jacket, field wool - 1 per individual.

(2) Jacket, combat winter, with hood - 1 per individual.

It was recommended that the combat jacket be modified to include breast pockets, and that the outer fabric be made of tough, wind resistant and water repellent material.

b. Trousers. Of the seven types of trousers issued, only two were recommended to be retained:

(1) Trousers, wool 18 oz - 2 par individual.

(2) Trousers, combat winter - 1 per individual.

It was recommended that the combat trouser be made tougher, more wind resistant and water repellent, and that it be modified to include cargo pockets.

c. Underwear and Shirts. That woolen underwear and flannel shirts were considered generally satisfactory. It was recommended, however, that all three garments be

treated for shrinkage resistance and that the wool content of the underwear be increased to a minimum of 50 percent. In order to reduce the problem of supply it was also recommended that underwear be sized only as small, medium and large.

d. Headgear. That the cap, field, cotton, with visor, be retained and all others be eliminated.

e. Gloves. That the glove, wool, leather palm, was unsatisfactory for use in the European Theater of Operations, and that the mitten, trigger finger with insert, was suitable for only a small percentage of troops. It was therefore recommended to eliminate all but the following three items:

(1) Glove, shell, leather - 1 per individual

(2) Glove, insert, wool - 2 per individual

(3) Glove, leather, heavy - 2 per truck driver or individual performing manual labor.

f. Footwear. That footwear be limited to the following:

(1) Boots, service combat (Modified) - 1 per individual

(2) Shoepacs or overshoes - 1 per individual

(3) Socks, wool, cushion sole. - 3 per individual

(4) Socks, wool, heavy or wool, ski. - 3 per individual

g. Overcoats and Raincoats. That a soldier in combat, clothed as recommended, would not require an overcoat, but would require protection from rain. Troops on furlough, and those engaged on sentry duty or in sedentary activities, would require additional warmth. It was therefore recommended that such issues be restricted to one nylon poncho and one trenchcoat per individual.

h. Sweater. It was unanimously agreed to retain the sweater, high neck, and to issue it on the basis of one per individual.

i. Miscellaneous. That miscellaneous items such as trouser suspenders and mufflers be eliminated but that the sleeping bag and two wool blankets per individual be retained.

193. Results. The adoption of the recommended winter uniform would provide a suitable uniform for troops in the European and other theaters with similar climatic conditions. It would simplify supply and distribution, eliminate 21 items currently issued, reduce the number of required sizes by 59, and reduce the number of basic fabrics from ten to four. By the addition of a necktie and a wool garrison cap, it could be converted to a non-combat uniform which would measure up to a high standard of military appearance. For special operations or unusual conditions the uniform might require additions, but no changes. For example, snow camouflage could be quickly provided by the addition of trousers, parkas and mittens, over white.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

194. Conclusions.

a. That the clothing and equipment, and allowances were generally satisfactory, but there were too many items to insure proper supply and distribution.

b. That there is a definite need for a basic uniform and for continued research and development to develop better and more adaptable clothing and equipment.

195. Recommendations.

a. That a basic combat, dress and fatigue uniform be adopted for all components of the Army. The combat uniform to consist of the following:

(1) Steel helmet, liner and cap, field, cotton.

(2) Combat shirt and trousers (one light wool combination and a heavier wool fabric for cold weather. Same standard color for both).

(3) Combat boots.

(4) Underwear and socks of a high wool content for winter; cotton for summer.

(5) Muffler and highneck sweater.

(6) Overcoat of the trench coat type.

b. That research and development continue towards the development of better and more adaptable clothing and equipment.

c. That the recommendations made by the Board of Officers convened at Headquarters Army Ground Forces, Washington, D.C., in August 1944, to study the equipment of the post war army be generally accepted.

Bibliography

Chapter 15

1. AR 615-40, Sec I, Par 1a and b, Par 2.

2. QM Technical Cir Ltr, No. 19, 16 March 1945. *(22)

3. 12th Army Group SOP. *(23)

4. Hq TSFET, OTCQM, Ltr, subject: "Comments on QM Supply Study", dated 13 Dec 45.

5. Hq Com Z, ETO, Technical Manual No. 2, December 1944.

6. SHAEF Committee on Deletion of Non-Essential Items.*(24)

7. AGF Report No. 786, 7 Apr 45.

8. WD Observers Report No. 677, 23 Feb 45. *(25)

9. AGF Report No. 487, 2 Jan 45. *(26)

10. Seventh US Army Quartermaster "Tonnage Bid for Period 8-15 Oct 44".

11. Memorandum, subject: "Winter Uniform", to the Quartermaster General through the Surgeon, European Theater of Operations, from the Chief Quartermaster, Headquarters, Communications Zone, dated 9 May 1945.

*Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class II & IV Supply), file R 401/11.

CHAPTER 16

QUARTERMASTER SALES OPERATIONS

SECTION 1

QUARTERMASTER SALES COMPANY, T/O & E 10-157

196. Mission Prescribed and Actual. The Quartermaster sales company was designed to make available for sale to officers only, certain items of clothing and uniform accesories and to sell certain merchandise such as post exchange items to both enlisted men and officers.[1] Actually, it sold items of clothing and equipment to officers, nurses, officers of the Women's Army Corps, civilians of officer status, and authorized Allied officers. The distribution and sale of post exchange items were handled through other channels.[2] The company operated both in the combat zone and in the Communications Zone, establishing a static store as a base and dispatching mobile stores to other areas.[3]

197. Organization.

a. The company is composed of a company headquarters and three operating platoons. Each platoon in turn is organized into four operating sections. Each section is capable of independent action and has a capacity of 10,000 troops.[1] Its mobility is restricted to the one truck and trailer authorized for the transportation of both personnel and stock.[4] The company is flexible, but the amount of stock that can be carried is limited and short of normal requirements.[5]

b. The company headquarters performed the usual administrative and housekeeping functions for the company as a whole, supervised the sales activities and handled the property and money accounts of the operating platoons and sections.[3]

198. Experience in the European Theater of Operations.

a. Troop Basis. The troop basis for the assignment of the sales company during operations was two platoons per army.[6] During the initial phases of operation on the continent sales companies were not available in sufficient number for such an allocation, and front line units invariably reported that no sales facilities were available. Even later, when sufficient numbers were available, it was found that the allocation was inadequate and that at least one company per army was required.[2]

b. Operation. In the combat zone the responsibility for the efficient operation of the sales unit rested with the Army Class II and IV officer. Administrative control was exercised by the battalion or group to which the unit was assigned. The general method of employment in each army, with the two platoons assigned, was to establish a static store operated by one platoon, and to dispatch a mobile store, operated by the remaining platoon, to the outlying units. This mobile unit, by utilizing the transportation of both platoons and therefore carrying a

larger stock than would otherwise have been possible, visited division, corps and army areas. The platoon operating the static store was ordinarily installed in or near the army depot area, making sales and procuring and storing stock for the mobile unit.[2] The operation within the Communications Zone was similar, with the exception that the majority of stores were more or less static, and that in more permanent installations, permanent or semi-permanent stores were established. The commanding generals of sections were authorized to establish and close sales stores as required upon approval of the Chief Quartermaster.[7]

SECTION 2

SALES STORE OPERATIONS

199. Operating Units and Personnel. The Quartermaster sales company was the nucleus for the operation of sales stores on the continent. Civilians were generally hired as clerks to assist in the operation of the large static installations. Occasionally, provisional sales units were organized within combat units to augment the Quartermaster sales store facilities. The 1st Infantry Division developed an organization which made purchases from the army sales store on a consolidated division order, and then broke down the items to unit supply officers for resale to the officers of their respective organizations.[8]

200. Sales Procedures and Accounting.[9] Sales procedure, accountability, and the appointment of sales officers are covered in appropriate War Department regulations. The procedures in the European Theater of Operations generally followed these regulations, and were further covered by regulations published in circulars of the European Theater of Operations.[9] Sales officers were appointed, bonded, and made financially accountable. The accounts were subject to monthly audit by the Sales Audit Division. Normal procedures were followed in sales inventories, deposits of funds, and adjustment of accounts.

201. Procurement of Stocks.[7] Requisitions for sales store items were submitted to the Chief Quartermaster by each section Quartermaster not later than the 20th of each month for the following month's requirements. The Quartermaster of the Advance Section included the requirements of the armies in his requisitions. Based on the above requisitions, credits were established at the assigned depots in the form of credit letters issued to Section Quartermasters by the Chief Quartermaster. At the end of the period unused credits were automatically cancelled.

202. Rationing.[7] Rationing of sales store items was set up as a measure to secure more equitable distribution of items in short supply. Ration cards were issued to those eligible to make purchases. If, in the judgment of the Chief Quartermaster, the supply situation required, he could increase or decrease the ration; make special distribution of rationed items without reference to the ration card; suspend rationing on any particular item or items; and classify sales, varying the ration by type of purchases to secure a more equitable distribution of the available supply to all personnel authorized to purchase.

Because of limited transportation facilities on the continent, it was extremely difficult to maintain balanced stocks in all Quartermaster sales facilities. Sales officers could reduce the established rations consistent with existing stocks to achieve an equitable distribution of supplies.

203. Prices.[10] The selling price of all items was at cost plus three percent overhead. The price list of all sales items was published by the Office of the Chief Quartermaster from time to time, and all prices listed included the overhead.

204. Additional Services Rendered. Sales stores were normally not set up to render additional services such as tailoring and shoe repair. Tailoring service was sometimes given in large or static installations where civilian labor and facilities permitted. Shoe repair service was also given in some cases by arrangement with a nearby salvage repair unit. Shoes were accepted at the sales store, taken to the repair unit, and generally returned within a week.[11] Prices charged were governed by appropriate War Department Circulars.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

205. Conclusions.

a. That the sales company is a flexible and efficient unit, but lacks the necessary transportation to carry the required amount of stock.

b. That its mission in the European Theater of Operations was to operate as an officers sales store for the sale of clothing and non-issue equipment.

c. That the allocation of two platoons per army was inadequate.

206. Recommendations.

a. That the sales company be made more mobile by the organic assignment of additional transportation.

b. That provisions be made for tailoring and for shoe repair service within the company.

c. That pertinent doctrines, techniques and Tables of Organization and Equipment be amended by appropriate agencies of the War Department.

Bibliography

Chapter 16

1. FM 10-5, QM Operations, 29 April 1943.
2. 12th Army Group Study, "Quartermaster Sales Company". *(12)
3. Field Manual 10-10, Quartermaster Service in Theater of Operations, 2 March 1945.
4. T/O & E 10-157, 28 May 1943. *(13)
5. Fifteenth US Army Quartermaster "Class II and IV After Action Report", 31 July 1945.
6. 12th Army Group Quartermaster "Final After Action Report". *(14)
7. QM Technical Cir Ltr, No. 14, Hq Com Zone, ETO, OCQM, 14 March 1945. *(11)
8. 1st Infantry Division, "After Action Report". *(15)
9. Hq ETOUSA Cir No. 46, 23 April 1945. *(16)
10. Office of the Fiscal Director, Sales Audit Branch, ETO, Ltr to all sales officers, ETOUSA, subject: "Quartermaster Sales Store Accounts", 1 July 1944. *(17)
11. Ninth US Army "Quartermaster Sales Store Operations". *(18)

* Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class II & IV Supply), file R 401/11.

PART FIVE

CLASS III SUPPLY

CHAPTER 17

PETROLEUM, OIL & LUBRICANT OPERATIONS

SECTION 1

INTRODUCTION

207. General.

a. The victorious strategy and tactics of World War II were based on, and dependent upon, our ability to supply our mechanized forces on land, sea and air with petroleum, oil and lubricants.

b. To provide the fuel necessary to operate the vast accumulation of mechanized transport, the oil industry in the United States of America had to expand in size, knowledge and technique at an equal pace with the mechanization so that a constant and dependable supply of this all important product would always be available in the quality and quantities desired. It was the application in time of war of the experience and methods developed in time of peace by the oil industry in the manufacture and transportation of petroleum products that was a great factor in making it possible for us to crush our enemies quickly and with a preponderance of mechanized might.

c. An Army-Navy Petroleum Board was created by the Joint Chiefs of Staff in Washington to assemble British and American requirements in every theater of operations and to arrange for the fulfillment and dispatch of these requirements. The Army-Navy Petroleum Board had as its representative an Area Petroleum Officer, appointed by the Theater Commander concerned, in each theater of operations.

d. The following study is a review of the methods of distribution of petroleum, oil and lubricants to United States Field Forces in the European Theater of Operations.

208. Definitions.

a. Slate -- a long term requirement report, showing estimated quantities required to meet supply demands over a given period of time.

b. Bulk -- any quantity of product in a single container which would be too heavy to handle by personnel without the aid of mechanical devices, normally any container having more than 55 United States gallons quantity.

c. Packaged -- any quantity of product in a single container which may be handled by personnel without the use of mechanical devices, normally used in reference to five gallon cans.

d. POL -- the British abbreviation for Petrol, Oil and Lubricants.

e. Class III Products -- all petroleum and solid fuel products, other than those which carry an air force specification.

f. Class III (A) Products -- all Petroleum products which meet air force specifications, excluding specialty items for which the air forces is solely responsible. Items consist mainly of aviation fuels and lubricants.

g. Jerri-can -- A german type five-gallon gasoline can with clamp type cover with pouring spout made onto can.

h. Ameri-can -- a five-gallon gasoline can with screw-on cover and which requires a nozzle, tube, flexible, steel, to pour contents from can into gasoline tanks.

i. Decanting -- the process of dispensing gasoline from bulk to packages.

j. Allied products -- petroleum products other than gasoline, such as oils, greases, and other lubricants.[1]

SECTION 2

MECHANICS OF SUPPLY

209. Levels of Supply. Stock levels were prescribed for army service areas and for advance, intermediate and base sections of the Communications Zone, based upon planned operations and the time required for replenishment. Levels varied from time to time as the operation progressed. Army Quartermasters, however, attempted to insure at all times that sufficient levels were on hand in army areas, or immediately in rear in the Advance Section to meet planned or unexpected requirements. Operational supplies as carried by the individual units were limited by the number of containers and the amount of transportation available.[4]

210. Requisition.

a. The original plan for the invasion of the continent called for the issue of Class III supplies to units on requisition. This plan was found to be impracticable.[5]

It was determined, however, that the return of empty cans for refilling was essential. The can-for-can requisitioning procedure was therefore instituted to conserve the number of cans available.[4] The First US Army was responsible for the supply of Class III to all United States Forces from D-Day until the middle of July when the Advance Section, Communications Zone assumed control.

b. Effective 15 August 1944, resupply of all gasoline products to the armies was placed on a daily telegram basis.[7] Telegrams were sent to the regulating station with information copies to the Advance Section and to the Chief Quartermaster.[1,2] The armies at times experienced difficulty in obtaining the quantities and types of products which were called for in the daily telegrams. It was found that ten to fifteen days elapsed from the time the telegram was sent until the time the supplies were received. During shipment, many trains were broken and shipments often arrived piecemeal in the army areas. Inadequate documentation also added to the confusion, and it was often impossible for the Army Quartermaster to reconcile his receipts with his daily telegram requirements.[8] Much of this difficulty was overcome by requisitioning based upon maximum and minimum quantities required to make up a complete train of Class III, thus eliminating broken train lots which were hard to control.

211. Requirements.

a. The Advance Section was supplied by designated intermediate and base section depots in the forward areas. The Chief Quartermaster designated ports for the supply of intermediate and base depots.[10] Section Quartermasters estimated and submitted their requirements to the Chief Quartermaster on a 30-day basis every 10 days.[11] Each estimate gave the final revised estimate for the next succeeding 10-day period, a revised estimate for the following 10-day period, and a first estimate for the last 10 days of the 30-day period.[16] These estimates enabled the Chief Quartermaster to submit required estimates to higher headquarters and provided a basis for making available sufficient supplies to meet any requirements.

b. The Engineer Petroleum, Oil and Lubricant Branch of the Southern Line of Communications handled the procurement, storage, distribution and issues of petroleum products in Southern France through February 1945.[13] After the amalgamation of Southern Line of Communications with the Communications Zone, these functions were taken over by the Communications Zone and the same division between Engineer and Quartermaster responsibility existed as in the Northern part of the European Theater.[28]

c. Importation of fuel during the initial stages of the operation could not be planned more than a few days in advance. After a firm foothold was established, however, tankers arrived on a regular 10-day schedule. Later, the British War Office and Supreme Headquarters Allied Expeditionary Forces collaborated on the procedure for obtaining all petroleum products. All common petroleum products were slated and controlled on the continent by Supreme Headquarters, Allied Expeditionary Forces, on the basis

of a monthly slate consolidated by that headquarters. Bulk petroleum was called forward by means of 10-day demands by Supreme Headquarters, Allied Expeditionary Forces, while the packaged products were called forward by the Communications Zone. The 10-day supply period continued throughout the operation as the port situation was never in a position to permit a 30-day slate to be put into effect.[5]

d. Prior to D-Day the Chief Quartermaster had accumulated a large stock of packaged fuels and lubricants sufficient to meet continental requirements for a three-month period. These stocks were held in the United Kingdom and were called forward by the Chief Quartermaster as required. After D-Day packaged products were shipped direct from the United States as called for by the Chief Quartermaster on monthly requisitions.[5]

e. The slating procedure of Supreme Headquarters Allied Expeditionary Forces furnished petroleum product requirements for one month and anticipated requirements for the following three successive months. The bulk quantities shown on the slate for the month were used as a basis for the 10-day demands to procure and ship tanker cargoes. The packaged estimates, however, were used only as a guide and the Chief Quartermaster requisitioned exact amounts from the New York Port of Embarkation, through the Area Petroleum Office, or from the British War Office through the General Purchasing Agent.[5]

212. Allocations.

a. From D-Day until October 1944, all tonnage movements were controlled by the First and Third US Armies since the complete information on the requirements and availability of transportation was on hand only in these armies.[6] From October 1944 until January 1945, daily allocations were made by the G-4, Headquarters, Communications Zone to the services by Class of Supply. This system was unsatisfactory because it provided no basis for advance planning and did not give the Chief Quartermaster a total allocation to be divided among classes as he saw fit.[5]

b. The system was changed in January 1945. The G-4, Headquarters Communications Zone, submitted to the Chief Quartermaster on or about the 13th of each month an estimate of packaged petroleum available for movement from ports, and a statement of packaged petroleum products authorized to be moved from depots in the Normandy area, during the next calendar month.[12] The Chief Quartermaster in turn submitted to the G-4, Headquarters Communications Zone, a proposed program for accepting the tonnage at the ports, and for movement of supplies from depots, during the next calendar month.[12] The G-4 also submitted an estimate of bulk products available for movement from ports, pipeheads, and storage areas, and the estimated tank car, tank truck, and barge lift available for the movements during the next calendar month. The Chief Quartermaster in turn furnished the G-4 with a breakdown of tonnage showing the approximate amount needed for daily maintenance and the amount needed for build-up of reserves. The Chief Quartermaster also included a proposed program of supplying the using

agencies, giving the method of transportation to be used and the estimated emergency tonnage requiring air lift.[12]

c. Based on these estimates, the G-4, in conjunction with the Chief of Transportation and the Chiefs of Services, prepared and submitted to Communications Zone Sections and Chiefs of Services the approved movement schedule for all classes during the next calendar month. This system proved very satisfactory.[12]

213. Distribution.

a. Gasoline supply was based upon the theory that large volumes of gasoline should be introduced at deep-water ports, transported through strategically located pipelines to front line areas, and distributed in tank cars, tank trucks, and containers to the using agencies.[5]

b. Initially, all available bulk storage in England was placed under control of the British Petroleum Board. All stocks were held by the British Petroleum Board and issued to the United States on reverse lend-lease. The available tanker fleet of Great Britain and the United States was used to build-up desired stock levels preparatory to the invasion.[5] The initial assault force carried five gallon containers came over the beaches, and on 23 June 1944, the first tanker arrived at a Normandy port. At times it was also necessary to fly packaged fuel direct to the continent from the United Kingdom.

c. Retail distribution or delivery of gasoline was made either from bulk storage with the proper dispensing equipment, or from drums, five or 55-gallon. Bulk storage was satisfactory only when the location of the using unit was relatively static and easily accessible to the bulk storage site. While bulk storage distribution involved less handling and was more economical, it was extremely limited in flexibility and was used primarily for Communications Zone or rear area troops. Retail distribution in 55-gallon drums was never satisfactory due to its weight and bulk, and always brought complaints from the using units because of the difficulty in handling. Numerous cases of hernia were attributed to the use of the 55-gallon drums, and their use was consequently held to a minimum except in the Southern Line of Communications.[28]

d. Retail distribution by means of five gallon gasoline containers was therefore almost mandatory, particularly in the forward combat areas. The five gallon containers are relatively light in weight, small in bulk, and comparatively easy to handle. Each vehicle, except tanks and tank destroyers, was equipped with special racks to carry sufficient gasoline in five-gallon containers to last for given periods of time, and distribution was made by exchanging the empty cans of a unit for full cans. In addition, division Quartermasters were authorized additional cans for the operation of distributing points. In order to speed and facilitate distribution to the using units, it was originally planned that all packaging and decanting from bulk to five-gallon containers be done by the Communications Zone, and that all deliveries to Army supply points be made in five-gallon containers.[5] The speed of the forward movement of the

armies, the time required for new pipeline construction, the size of the can population, the condition of railroads and rail equipment, and the decanting facilities all had an effect on decanting operations, and it was often necessary to deliver gasoline to the army supply points in bulk.[4] In such cases decanting was done by the armies.

e. In view of the fact that retail distribution by five-gallon containers was the only method suitable for combat and other units, a can population sufficient to meet the needs of such distribution was essential. Such factors as the number of troops, the number of vehicles involved, type of planned operations - particularly those calling for the employment of large armored forces, and the rapid forward movement of the armies, all had to be considered in determining the size of the can population. In a fast moving situation such as the drive across France it was essential that full cans be always available when needed, and additional cans for maintenance were often required by the combat units. A sufficient stock had to be on hand to eliminate delay caused by waiting for cans to be refilled or for bulk gasoline to be decanted. Without such a stock of cans on hand to support the combat units, the drive across France could never have been made. In such a drive, the ease and rapidity of gasoline distribution to the using units and to the individual vehicles, is of prime consideration. It was originally estimated that seven million cans would support the combat forces throughout the operations in the European Theater. This included not only the immediate requirements of the armies, but also the requirements of the Communications Zone troops engaged in hauling to the armies. Before hostilities ceased, thirty-five million cans were imported to the continent, and to this was added an indeterminable number of captured German cans. In spite of this large number, while there was never a real shortage except in isolated instances, there was never an ever abundant supply, and it was still necessary to rigidly enforce can discipline in order to maintain a sufficient stock on hand.[28]

214. Pipelines.

a. A limited amount of fuel was pumped from the United Kingdom by underwater pipelines. This operation was known as Pluto (pipeline under the ocean). There were two systems: Bambi, which was a four line system that proved of little importance due to the small quantity delivered and the expensive operational trouble experienced; and Cumbo, a 15 line system across the narrow neck of the English Channel which averaged, up to the end of hostilities, 27,000 barrels a day. The operational cost of this system in manpower was also excessive, and although the system was a success it was considered that the transmission by bulk tanker delivery was far more satisfactory as long as air and naval superiority existed.

b. The pipeline system was the backbone of the distribution system on the continent. It permitted the transmission of gasoline over terrain too rugged for other means of transportation, avoided road congestion where road capacity was limited and traffic heavy, and carried gasoline over varying distances where enemy action made other means of transportation impracticable.

c. The Minor System was installed on the continent beginning D plus 3 to provide a bulk distribution system during the initial period preceding the capture of Cherbourg (O-1020). Facilities were constructed at Port en Bessin (T-7080) for unloading several small tankers. Two six-inch lines were provided for MT-80 gasoline and one six-inch line for aviation gasoline. These pipelines were extended to dispensing points at Etreham (T-7080), Carentan (T-3080) and La Forge (P-4080).

d. The Major System (Appendix 15) originated in the Port of Cherbourg (O-1020), with two six-inch MT-80 gasoline lines and one six-inch aviation gasoline line extending south through St. Lo (T-4080) to Chalons-sur-Marne (Y-7050). From Chalons-sur-Marne, two six-inch MT-80 gasoline lines extended to Thionville (U-8080), France, and from Thionville, one six-inch line was carried across the Rhine River into Germany, a total distance of approximately 600 miles from Cherbourg.

e. The Northern System (Appendix 15) started from the Port of Antwerp (U-7090), Belgium. One six-inch and two four-inch MT-80 gasoline lines and two four-inch aviation gasoline lines were constructed to Maastricht (K-5552), Holland. The three MT-80 gasoline lines were continued northeastward from Maastricht and across the Rhine River to Wesel (A-2241), Germany. The linear distance from Antwerp to Wesel is 180 miles.[15]

f. The Southern System originated at Marseilles (T-4010), France, and was built to support the 6th Army Group. From Marseilles, one six-inch and one four-inch line was built northward to La Forge (P-4080) near Saarburg, Germany. From La Forge three four-inch lines were continued across the Rhine at Frankenthal (H-4505), Germany. The linear distance was 620 miles. The system consisted of 1,507 miles of pipeline, and transmitted 569,000,000 gallons of motor and aviation gasoline up to 15 September 1945.[15]

g. In addition to these major pipeline systems, there were numerous small pipeline operations on the continent, such as the Rhine River pipeline crossing, Mehlem (L-0482) to Konigswinter (F-6232). Here, gasoline was received by rail tank cars at Mehlem and pumped across the river to a truck filling installation on the autobahn northeast of Konigswinter. This relieved the Remagen (F-6432) pontoon bridges of a considerable amount of truck traffic.[15] There were 3,600 miles of pipeline laid to the east side of the Rhine River up to cessation of hostilities, with a total capacity of 150,000 barrels per day.[15]

h. Tank cars were used to haul bulk gasoline from seaport and pipeline terminals to Communications Zone and army decanting points, or for transfer to tank trucks.[21] Tank trucks hauled gasoline from bulk storage tanks, pipeline terminals, and rail tank cars to Communications Zone or army decanting points or filling stations. Approximately 3,000 rail tank cars and 1,055 tank trucks with a capacity of 2,000 or 750 gallons each were used.[27]

215. Accounting.

a. It was essential at all times, and in order to keep pace with the combat forces, to maintain proper levels of supply, to know the daily rate of consumption so that proper levels could be maintained by proper and timely advance requisitioning. Storage facilities were limited in relation to consumption and a continuous heavy flow of petroleum products toward the front was mandatory. Proper and accurate inventories and records in all echelons, particularly in armies and smaller units, were therefore essential .

b. No two armies in the European Theater of Operations had the same accounting procedure for petroleum products. This was also true, to a lesser degree, among the smaller units. The army systems had no relation to the Communications Zone accounting systems or with any higher headquarters. This resulted in loss of effort and much duplication.[26]

216. Operations.

a. The supply of gasoline and allied products throughout the campaign in Europe was generally adequate. The supply of five-gallon gasoline cans, from an over-all European Theater stock stand point, was never short after a firm foothold had been established on the continent.[28] There were occasions, however, particularly during April and May 1945, when local shortages of containers developed due to the rapid forward movement of the armies and to the poor can discipline among the troops. The result was a trickle of returning cans rather than the steady stream which flowed to the rear under normal conditions.[28]

b. Supply of gasoline, other than in small scale, isolated instances, did not fail except during the rapid drive across France.[28] At this time the G-4 Report, 12th Army Group, dated 17 October 1944, stated regarding the status of Quartermaster supply:[29]

> "The decline of stocks of MT-80 gasoline in the Communications Zone (Continental Stocks) from approximately 14 days supply on 21 August 1944 to less than two days supply on 10 October 1944 is a matter of grave concern. This small reserve behind the field forces is entirely inadequate to support operations, and is a serious potential threat to the success of the operations of this command".

c. The G-4 Report, 12th Army Group, dated 26 September 1944 showed .67 days supply on hand in the First Army, .47 days supply in the Third Army, 2.5 days on hand in the Ninth Army, and 4.6 days on hand in the Communications Zone. The situation improved, however, and from November 1944 until the termination of hostilities there were no other serious shortages of gasoline and allied products reported.[29]

d. There were numerous agencies involved in the planning and computing of Class III requirements and in the requisitioning, distribution and issue of the products. The Chief Quartermaster was charged with the procurement, storage and issue of petroleum and petroleum products.[1]

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Supreme Headquarters, Allied Expeditionary Forces, was charged with coordinating and controlling the supply of petroleum products to the Allied Forces.[16] The Area Petroleum Office was charged with staff responsibility for the coordination of all matters pertaining to adequate supply for all purposes.[17] It is thus obvious that there was an overlapping and duplication of functions and responsibilities.

SECTION 3

PRINCIPAL FUNCTIONS OF OPERATING AND PLANNING AGENCIES.

217. Army-Navy Petroleum Board.[17] The Army-Navy Petroleum Board was the agency of the Joint Chiefs of Staff and was charged with the following functions relating to petroleum and petroleum products:

a. Maintain close coordination and liaison between the War and Navy Departments and with the Petroleum Administration for War.

b. Prepare and maintain full information and status of petroleum and petroleum products matters with which the War and Navy Departments were concerned.

c. Insure coordination, based on overall logistical plans, of procurement, overseas shipment, and storage for Army and Navy.

d. Effect collaboration on petroleum matters with other United Nations as directed by the Joint Chiefs of Staff.

e. Screen and consolidate Army and Navy requirements and coordinate with the Petroleum Administrator for War the capacity of industry to provide the requirements.

218. Area Petroleum Office. The Area Petroleum Office was an agency of the Army-Navy Board with Supreme Headquarters, Allied Expeditionary Force. Certain records on requirements and stocks were maintained and reports prepared for the Army-Navy Petroleum Board. Technical information of petroleum products was disseminated through channels. The Area Petroleum Office was divided into a Technical Branch, a Planning and Requirements Branch, and a Stock and Shipping Branch. Its principal functions were:

a. Staff responsiblity for coordination of all matters pertaining to adequate supply for all purposes.

b. Represent the Army-Navy Petroleum Board with appropriate British agencies. Act on lend-lease and reverse lend-lease as required.

c. Represent the armed forces as required in administering allied petroleum matters with combined boards or committees in London.

d. Coordinate requests by the United States

forces, maintain records of requirements, and assist as required in forward operational planning.

e. Maintain records of United Kingdom and Continental military petroleum stocks, coordinate procurement of containers for refilling in the United Kingdom, and collaborate with appropriate agencies for shipment from the United Kingdom and other Theaters of Operations.

219. Class III Division, Supreme Headquarters, Allied Expeditionary Force.[18] The principal functions of the Class III (Petroleum, Oil and Lubricants) Division, Supreme Headquarters, Allied Expeditionary Force, were as follows:

a. Coordinate and control the supply of petroleum products to the Allied Forces.

b. Collect, collate, and consolidate the petroleum products requirements of all Allied commands and Civil Affairs in liberated or occupied countries.

c. Transmit these requirements into the form of monthly slates to the appropriate supplying agencies and supervise the program of shipment into the theater.

d. To secure from the governments of liberated nations estimates of minimum requirements of their military forces which do not constitute part of the field forces under the Supreme Command and an estimate of minimum civil requirements to prevent disease and unrest, and to verify, screen, and approve these requirements.

220. Petroleum and Fuels Division, Office of the Chief Quartermaster.[1] The Chief Quartermaster was charged with the procurement, storage, and issue of petroleum and petroleum products to the United States Forces, Allied Military Forces, and Civil Affairs authorities in the quantities and types required. The principal functions of the Petroleum and Fuels Division were:

a. Check and consolidate estimates of requirements received from base sections. Requisition lubricants from the New York Port of Embarkation, and requisition liquid packaged fuels from the United Kingdom.

b. Control stocks in Quartermaster Class III Depots.

c. Formulate theater plans involving Quartermaster Class III responsibilities. Furnish long term estimates of requirements to other services for planning purposes.

d. Prepare basic operational standing operating procedures for Class III supply.

e. Maintain records and statistics for a continuous check on planning factors and logistical data.

f. Supervise and evaluate test reports of Quartermaster Petroleum testing laboratories.

g. Supervise production of gasoline and water cans at the assembly plant in the United Kingdom.

h. Represent the Chief Quartermaster and maintain liaison with other services on Class III supply matters.

221. Base Sections.[1] Base Section Quartermasters were responsible for the submission of requirements for the operation of all ground vehicles, installations, and for miscellaneous uses within the command. They consolidated depot reports and designated the supply points for servicing troops within their respective areas.

222. Advance Sections.[21] The Advance Section Quartermasters, in cooperation and conjunction with the G-4 and Transportation sections, were charged in general with the supply of petroleum and petroleum products to the armies. Their principal functions included:

a. Computation of requirements for all ground, air, sea and service forces being supplied by them, as well as for necessary civilian and Red Cross activities.

b. Requisitioning supplies based upon requirements as agreed upon with G-4.

c. Maintaining systems of stock control in Quartermaster depots.

d. Establishing Class III supply dumps at strategic points in the Communications Zone and coordinating with the Transportation and Engineer sections to insure the orderly flow of supplies into the dumps.

e. Transporting and storing aviation fuels in bulk within the Advance Section's area and deliver to air force units as required.

223. Engineer Service.[20] The Engineer service was charged with the construction and operation of bulk storage facilities. Supplies were unloaded from vessels, transported by pipelines, and stored in bulk by the Engineer service. Custody passed to the Quartermaster when the gasoline supply company packaged the product or otherwise assumed control. The Military Pipeline service was responsible for the construction of bulk petroleum handling and storage facilities under the technical supervision of the Chief Engineer, Communications Zone.

224. Continental Advance Section. After 1 March 1945, the Continental Advance Section was an operating agency of the Communications Zone, European Theater of Operations, and was contiguous to the combat zone. Its mission in immediate support and maintenance of the 6th Army Group, was to receive, store and move forward material and supplies as required.[22] Its functions were similar to those of the Advance Section, Communications Zone. Prior to that time, the Continental Advance Section performed the same supply role for the Southern Line of Communications. During part of this period the Petroleum, Oil, and Lubricants section was a separate section completely divorced from the Quartermaster Corps. It controlled sufficient gasoline supply companies, service companies, and Engineer pipeline companies to perform its mission.

The Quartermaster assumed control when the Continental Advance Section moved forward and the Special Petroleum Section remained behind with Delta Base Section. However, the Quartermaster was relieved of this function in January 1945, but assumed control again in March 1945 when the Continental Advance Section became an agency of the Communications Zone.[23]

225. Southern Line of Communications. The mission of the Petroleum Branch, Engineer Section, Southern Line of Communications, was to slate the procurement of Engineer pipeline supplies for maintenance and construction of pipeline systems and terminal bulk installations, operate the pipeline and bulk storage facilities and determine requirements. The Petroleum Branch was charged with the procurement, storage, distribution and issue of petroleum products, containers, laboratory supplies and equipment.[13]

226. Field Forces. The responsibilities and functions of the various echelons throughout the field forces were in general the same for Class III supply as for the supply of other classes. The army group supervised distribution and insured maintenance and proper stock levels. It screened estimates and made allocations as necessary and maintained current study of logistical factors and rates of consumption[24] The armies estimated requirements and effected, through normal channels by the maintenance of stock levels, the supply of petroleum, oil, and lubricants to all troops within the army area.[25]

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

227. Conclusions.

a. That the supply of petroleum, oil and lubricants in the European Theater of Operations was generally adequate and satisfactory, except during September and October 1944 when stock levels were dangerously low.

b. That without a large five-gallon can population on hand sufficient to meet the requirements, particularly of fast moving combat units and Communications Zone troops engaged in hauling troops and supplies in support of the armies, distribution of gasoline probably would have failed, with a serious resultant detrimental effect on the combat operations.

c. That distribution by five-gallong containers was found to be the only suitable method of distribution in the European Theater, and that in future operations careful study must be given to the can population required to sustain and support the units engaged.

d. That accounting procedure throughout the echelons was not standardized or related.

e. Pluto (pipeline under the ocean) was moderately successful. Bulk tanker delivery over a large body

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of water is much more economical when air and naval superiority exists.

f. Pipelines on the continent were very successful and absolutely necessary for the support of our large field forces.

228. Recommendations.

a. That accounting procedures be standardized.

b. That pipeline construction and operation be made one subject of more and constant research.

c. That the number of agencies charged with Class III operations be held to a minimum to avoid confusion and duplication.

d. That in future operations careful study be given to the size of the can population required to sustain and support the units engaged, and that necessary action be taken to insure a sufficient stock of containers on hand throughout all echelons.

Bibliography

Chapter 17

1. ETO-SOP #38, Continental Supply Procedure for Petroleum Products and Related Handling Equipment dated 19 August 1944 and 12 June 1945.*(9)

2. ETO-SOP #7, Supply Procedure on the Continent dated 2 February 1945.*(6)

3. Memorandum, Quartermaster Section to G-4 Section, 12th Army Group, dated 8 February 1945.*(37)

4. Advance Section, Communications Zone Operational History 1943-45, undated.*(22)

5. History of Area Petroleum Office, undated.*(16)

6. Report "Field Service Logistics", 12th Army Group, G-4 Section, undated.

7. First US Army Report on Operations, Annex No. 14.*(43)

8. 12th Army Group Final After Action Report.*(32)

9. Quartermaster SOP, 12th Army Group.*(32)

10. Hq Com Z, ETO, OCQM Circular Letter #97, Procedure for distribution of Quartermaster Supplies to Armies, Advance Sections and Sections, dated 5 December 1944.

11. Hq Com Z, ETO, OCQM Circular Letter #14, Procedure for Distribution of Quartermaster Supplies on the Continent, dated 9 February 1945.*(11)

12. Hq ETOUSA, file AG 400/1 OpGD, Subject: Procedure for Planning, Reception and Movement of Supplies, Equipment and Personnel, dated 10 January 1945.

13. History of Southern Line of Communications, undated.

14. Hq 6th Army Group Administrative Instructions No. 5, dated 20 November 1944.

15. Engineer Section, ETOUSA - History of POL Facilities, undated.*(15)

16. Hq Com Z, ETO, OCQM Circular Letter No. 52, Procedure for Supply of Quartermaster Items on the Continent, dated 16 September 1944.

17. Joint Chiefs of Staff, Army-Navy Petroleum Board Charter dated 13 October 1943.

18. SHAEF Administrative Memo No. 25, Maintenance of the Allied Expeditionary Forces in Petroleum Products - Western European Theater, dated 21 July 1944.*(1)

19. Hq ETO, OCQM Circular Letter #32, Responsibilities of Quartermaster Service, ETOUSA, for Fuel, Lubricants and Handling Equipment, dated 22 July 1944.

20. Hq ETOUSA, SOP #47, Military Pipeline Service, 22 September 1944.*(10)

21. Hq Advance Section, Communications Zone, SOP for Petrol, Oils and Lubricants (POL) Supply, dated 19 April 1944.

22. Organization of Continental Advance Section, Communications Zone, ETO, dated 1 February 1945.

23. Organization, Functions and Operation of Continental Advance Section, Com Z, ETO, dated 1 February 1945.

24. Memo from G-4, 6th Army Group to AGF Quartermaster Observer, 27 March 1945.

25. Hq 6th Army Group, G-4 Section Office Memo No. 13, 1 March 1945.*(30)

26. Quartermaster SOP's of the Armies.*(42)

27. Historical Data from P & F Division, OCQM Files.*(15)

28. Comments, Letter, Theater Chief Quartermaster, 13 December 1945, to The General Board.*(56)

29. 12th Army Group - G-4 Periodic Reports.

* Number in parentheses is Catalog Number used in Inventory of Material, QM Study Number 109, (Class III Supply), File R401/11.

CHAPTER 18

LOGISTICAL FACTORS

229. Definition. Logistics is the art of planning and carrying out military movement, evacuation and supply.[1] Logistical factors, as discussed in this chapter, are those factors dealing with the most important phase of supply -- the computation of requirements.

230. Types of Logistical Factors.

a. There are three methods of expressing petroleum, oil, and lubricant logistical factors for computation of large scale requirements:

(1) Pounds per man per day.

(2) Gallons per man per day.

(3) Expression of requirements of MT-80 gasoline by either of these first two methods, and requirements of allied products as percentages of MT-80.

b. There is essentially no difference in either of the three methods of expressing petroleum, oil and lubricant logistical factors. The use of "pounds per man per day" is desirable when requirements are to be stated in tons, and "gallons per man per day" (greases excepted) is desirable when requirements are to be expressed in total gallons or barrels.

231. Methods of Determination. There are two generally accepted methods of determining petroleum, oil and lubricant logistical factors:

a. The vehicular method, in which the average daily requirements of any unit or number of units can be determined by computing from experience the average number of miles to be traveled daily by all vehicles involved, multiplying the average number of miles to be traveled by the total number of each type vehicle involved, and either multiplying the result by the average consumption rate (increased by safety factors) in gallons per mile for each type vehicle (taken from TM 9-2800), or dividing the result by the average consumption rate in miles per gallon for each type vehicle involved. Normally, the total requirements of gasoline for power equipment, cooking, heating, lighting and other miscellaneous needs are figured at twenty percent of the gasoline requirements for the vehicles. The total figure can be divided by the machine records unit strength or by the ration strength to obtain the requirements in gallons per man per day. Oil and lubricants are also normally determined as percentages of total fuel requirements. Percentages usually used are: Engine oil - 3% of total fuel requirements; gear oil - 1% of total fuel requirements; and grease - 1.5% of total fuel requirements. Appendices 16 & 17 list the requirements for large forces as computed by the Office of the Chief Quartermaster, European Theater of Operations. This method is flexible and is

applicable to both small units and field forces. One can compute the amount of gasoline needed to move unit vehicles one mile, and thus forecast requirements from day to day by multiplying the "gallons required per mile" for the unit by the anticipated number of miles to be traveled. Corps and larger organizations find this method cumbersome because of the constant change in the units assigned or attached, which affects the number and types of vehicles, and because the average daily movement of units will vary from day to day. This method, however, is mandatory when no experienced consumption factors are available.[2,3]

b. The experience consumption rate method involves the determination of rates based on the total gallons or pounds of petroleum, oil and lubricants consumed during extended operations of large masses of troops, divided by the total machine records unit strength or the ration strength of all troops who consumed those products. Thus, the requirements per man per day are determined from actual experience. When past experience data is not available, the vehicular method should be used until the operations have progressed sufficiently for experience consumption rates to be compiled. Ration strength data is easily obtained and is more accurate for large masses of troops than machine records strength data.

232. Planning Factors developed by the Area Petroleum Board.

a. Prior to D-Day, requirements were based upon combat and non-combat logistical factors. These factors represented consumption, exclusive of requirements used in building up a reserve stock pile. The factors were:

Product	Unit	Non-combat	Combat
MT-80	Gal/man/day	0.4	1.48
Diesel	Gal/man/day.	0.04	0.27
Kerosene	Gal/man/day	0.005	0.005
Engine Oils	% of (MT-80 Diesel)	2.	3.
Gear Oils	% of (MT-80 Diesel)	0.5	1.
Greases	% of (MT-80 Diesel)	1.	1.5
Gasoline (for cooking)	% of (MT-80 Diesel)	-	0.08

The combat requirements were 214 net tons of POL per day for each divisional slice of 40,000 troops. The non-combat requirements amounted to 50.6 net tons for the same number of troops.

b. Just prior to D-Day, comparison was made with factors developed and used by Allied Forces Headquarters in Italy. Requirements in Italy revealed a consumption rate of 150 liquid tons MT-80; 9.8% diesel fuel; 2.7% kerosene; and 2.9% engine oils, gear lubricants and greases. Based upon the above figures, it was agreed to plan requirements for the initial operations in the European Theater of Operations on a daily consumption rate of 153 net tons for each divisional slice of 40,000 troops, of which 79.08% was MT-80 gasoline;

16.03% diesel fuel; 0.28% kerosene and 4.61% engine oils, gear lubricants and greases. The non-combat consumption rate for the United Kingdom was lowered to 45.5 net tons.

c. In October 1944, however, the factors were revised based upon actual experience in the European Theater of Operations and upon the development of accurate records. Since consumption had been greater than anticipated, the daily requirements were raised to 217 net tons while the non-combat consumption rate increased 66 net tons, all based upon a divisional slice of 40,000 troops. The new requirements were broken down as follows:

MT-80	1.700	US gal/man/day	
Unleaded fuel	0.002	"	
Kerosene	0.003	"	
Diesel fuel	0.170	"	
Engine Oil	0.0561	"	(3% of fuel)
Gear Oil	0.0187	"	(1% of fuel)
Grease	0.0280 bbls/man/day		(1½% of fuel)

d. In January 1945 consumption records from D-Day to include 31 December 1944 were available and at that time it was determined that requirements were 192 net tons, based upon the same divisional slice.

233. Actual Planning Factors Used by Field Forces.

a. In planning a daily consumption figure for petroleum products, there were two basic theories. First, that the figure should be expressed as a total quantity based upon the number of operational miles per day for all vehicles involved, and second that the figure should be expressed as a factor in "pounds per man per day" for all troops involved. It was decided to use a factor of 15.4788 pounds per man per day, as computed by the Chief Quartermaster. This figure was based on 50 operational miles per vehicle per day (Appendix 17). The First US Army agreed with the daily operational mileage, but considered the actual vehicular consumption figure to be greater than that which was used in the Chief Quartermaster's calculations, and believed that a liberal safety factor should also be included. The First US Army therefore calculated the factor to be approximately 24 pounds per man per day. G-4 of the 12th Army Group concurred in the First US Army's recommendations, and the 24 pounds per man per day factor was adopted and used for approximately two months after D-Day.[5]

b. After operations commenced in the European Theater of Operations, studies were made on consumption rates to develop planning factors based upon experience. It was soon recognized that the factor previously accepted in the computation of the day of supply for petroleum, oil and lubricant products, namely, 24 pounds per man per day, was excessive, and this figure was discarded in favor of the factor 15.47, as originally proposed by the Chief Quartermaster.[6]

c. As the rapid advance across the Continent pro-

gressed, additional experience factual data was accumulated and compiled by the Petroleum and Fuels Section, Office of the Chief Quartermaster, as of 31 December 1944.[9] These factors were based upon the consumption of petroleum, oil and lubricants from 6 June 1944 to 31 December 1944 by all United States Forces, and as a result a downward revision of previous estimates, particularly in the case of allied products, was made.

d. The Commanding General, 12th Army Group, later submitted to the Commanding General, European Theater of Operations, United States Army, a report on the petroleum, oil and lubricant consumption from 1 August 1944 to 28 February 1945.[7] These figures were analyzed and new factors were recommended for estimating the requirements for field forces. Recommended factors per man per day were:

Item	Gallons	Pounds
MT-80	1.0153	8.2526
Diesel Oil	.0353	.2773
Engine Oils	.0234	.2032
Gear Oil	.0028	.0025
Greases	.0012	.0123
Kerosene	.0051	.0436

These above figures were based on ration strength and included a 20% increase for additional miscellaneous units. Paragraphs 6 & 7 of this report are quoted in explanation of these revised factors.[7]

"6. A survey of the strength figures of the major commands indicates that there is normally a large percentage of troops in each area who are serviced by a given command but whose numerical strengths are not included in the assigned and attached strength figure of the basic command. This accounted for additional strength (Air Force, Communications Zone troops, Allied troops, etc.) varies between 20 and 35 percent of the basic strength figures of the command and generally corresponds to the ration strength. Experience has proven that the factors, as established in the Quartermaster Service Reference Data, calling for 15.47 pounds per man per day and computed on the actual assigned and attached strength, definitely results in a surplus of all POL items, with the exception of kerosene. Thus, it is apparent that the factor is excessive, whereas, the strength figure is insufficient. The two compensating errors, however, have had the net result of establishing quantities in terms of days of supply on a more or less workable basis.

"7. To establish the supply of POL items on a more exact basis and to provide uniformity throughout the theater it is proposed:

"a. That new factors be established, based

upon actual experience which will call for the proper proportion of all POL items.

"b. That the basis for applying such factors be on the ration strength rather than on the actual assigned and attached strength of the command.

"c. That the new factors be based on a high average use of each product rather than the exact average. On this basis, armies will be adequately provided for over a period of time although there may be short periods of extended action or unusual activity in which the actual consumption will be greater than the computed day of supply. In planning for periods of abnormal activity, allowances will naturally be made for additional quantities."

234. Factors Finally Developed.

a. The Statistics Section, Office of the Assistant Chief of Staff, G-4, Supreme Headquarters, Allied Expeditionary Forces, compiled a report on consumption figures from 24 February to 23 March 1945 for the First, Third, and Ninth US Armies, and from 24 February 1945 to 24 March 1945 for the Seventh US Army and the First French Army (Appendix 18). This report is in agreement with the factors as finally developed.

b. After over ten months of experience in supply of forces in the European Theater under combat conditions, the following factors were worked out as representative of the requirements for fuel and lubricants for the European Theater under combat conditions:[8]

MT-80	1.43	Gallons/man/day
Diesel fuel	.10	"
Kerosene	.007	"
White gasoline	.002	"
SAE 10 engine oil	.0063	"
SAE 30 engine oil	.0252	"
SAE 50 engine oil	.0105	"
SAE 90 gear oil	.0122	"
Greases 0 and 1	.0166	pounds/man/day
Greases 2 and 3	.0091	"
Grease 4	.0011	"

This represents about 177 tons per divisional slice of 40,000 men or approximately 11.7 pounds per man per day.

c. Factors developed by the Office of the Chief Quartermaster varied somewhat from those above. The figure

recommended was 13.48 pounds per man per day, broken down as follows:[11]

MT-80	12.00	pounds/man/day
Other fuels	1.00	"
Lubes	.48	
Total	13.48	"

The discrepancy between these factors and those developed by the Area Petroleum Office apparently lies in the use of different consumption records as well as different manpower figures.

235. Conclusions.

a. That the methods and procedures of computing logistical factors were generally satisfactory.

b. That the factors as finally developed and concurred in by the various agencies concerned were satisfactory.

236. Recommendation. That pertinent doctrines, techniques and War Department publications be amended by appropriate agencies of the War Department.

Bibliography

Chapter 18

1. Dictionary of United States Army Terms, TM 20-205, dtd 18 Jan 44.

2. Staff Officer's Field Manual, Organization, Technical and Logistical Data, FM 101-10 Oct 43.

3. Quartermaster Service Reference Data, (Section III, Chapter 3, Volume II), Hq, SOS, ETOUSA, dtd 1 Jan 44.*(19)

4. Standard Military Vehicles, TM 9-2800, dtd 6 Mar 43.

5. 12th Army Group Final After Action Report, Chapter 2, 1 May - 5 Jun 44. *(32)

6. 12th Army Group Final After Action Report, Chapter 4, 26 Jul - 14 Sep 44. *(32)

7. Ltr, Hqs, 12th Army Group to Commanding General, ETOUSA dtd 29 Mar 45. *(40)

8. Area Petroleum Office Experience Report, undated. *(16)

9. Consumption Factors, 6 June 1944 to 31 December 1944, P & F Division, OCOM, ETOUSA, Hqs. *(18)

10. Consumption Rates of US Forces in the Final Advance to the Rhine, SHAEF, dtd 24 Apr 45 (Prepared by Statistics Section, G-4 Div.)

11. Quartermaster Operational Analysis No. 4, subj: "Quartermaster Pounds per Man per Day, Dated, 17 November 1945.

*Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109, (Class III Supply), file R 401/11.

CHAPTER 19

GASOLINE SUPPLY COMPANY

SECTION 1

MISSION, ORGANIZATION AND FUNCTION

237. Mission. The mission of the Gasoline Supply Company is to operate Class III distributing and bulk reduction points for the supply and issue of gasoline, oil and lubricants to the using forces. It was the operating base of Class III supply in the European Theater of Operations, both in the Communications Zone and in the Combat Zone.[3] It operated at beachheads, truckheads, railheads, pipeline terminals, and airfields. It also established roadside filling stations.[3]

238. Organization.[1]

a. The Gasoline Supply Company is a flexible organization, composed of a company headquarters and two operating platoons. Each platoon can operate independently. A total of 56 laborers are provided for handling.

b. There are 21 trucks, 2½-ton cargo and trailers organic in the company for hauling gasoline and allied products. The following technical equipment is organic to the company:

12 - extinguishers, fire, carbon-dioxide, permanent shut-off 15 pounds

1 - cleaning equipment, drum, gasoline, engine driven

4 - tanks, collapsible, 3,000 gallon capacity, for petroleum products

3200 - cans, gasoline, five gallons

4 - pumps, gasoline dispensing, 100 gallons per minute

4 - pumps, gasoline dispensing, 30 gallons per minute

4 - pumps, barrel, kerosene or gasoline, with hose and nozzle

8 - pumps, barrel, oil dispensing

c. Experience proved the organic fire fighting equipment to be inadequate, unless used immediately at the start of a fire. Once the fire was well started, the limited range and core of effectiveness of the extinguisher rendered it relatively useless, while the danger to using personnel was correspondingly high.[5]

239. Functions.

a. The company is designed to handle all matters pertaining to the receipt, storage and issue of gasoline and

allied products.[2]

b. The company normally issued gasoline on a can-for-can exchange basis. It was responsible for the cleaning, refilling, and tagging of the empty cans. It received gasoline in five-gallon cans or in bulk by pipeline or rail tank cars. When it received gasoline in bulk, the company was responsible for its reduction into five-gallon or 55-gallon containers suitable for issue. Retail distribution of gasoline in 55-gallon drums was held to a minimum except in the Southern Line of Communications where it was extensively used. Distribution by this method always elicited complaints from commanders and Quartermasters of combat units because of the difficulty in handling the full 55-gallon drum. The use of this method resulted in numerous cases of hernia and it should not be employed except as a last resort.[13] The company established distributing points in such a manner as to facilitate receipt, storage and issue, and take advantage of camouflage and dispersion. Distributing points were normally located within a convenient distance of the using units and of the source of supply from the next higher echelon.

c. Each operating platoon has the following rated daily capacity, assuming that the trips from railheads or bulk reduction points to issue points consume an average of one hour:[1]

Bulk reduction of 72,000 gallons of gasoline and cleaning of 3000 five-gallon drums and 300 55-gallon drums.

d. In the European Theater of Operations, the actual capacity of gasoline supply companies was considerably less than the rated capacity. With no additional labor attached, and a normal trip time of two hours, the company could normally receive in bulk, reduce and issue approximately 50,000 gallons per day. With one Quartermaster service company attached for labor, and all receipts in five gallon cans, the capacity was raised to a maximum of 300,000 gallons.

SECTION 2

EUROPEAN THEATER OF OPERATIONS EXPERIENCE

240. Troop Basis and Control.

a. The Commanding General, Communications Zone, allocated Gasoline Supply Companies to sections and base sections, Communications Zone, and to Army Groups depending upon their availability. The Army Group in turn allocated the companies to the Armies on the basis that normally one company is required to service army troops and one company to service a type corps, or that a total of five to eight companies is required for a field army.[3]

b. The company was normally attached to a Quartermaster Battalion for administration and technical control. The battalion in turn, was attached to a Quartermaster Group that operated directly under the Quartermaster of the Advance or Base Sections, Communications Zone, or under the Army Quartermaster. At times, functional control was eliminated from the Quartermaster Group and was direct from the Section or Army Quartermaster to the company or battalion.[4]

241. Bulk Delivery and Reduction.

a. Delivery of bulk gasoline was normally made by pipe line or rail tank cars. Delivery by air was experimented with and proved overwhelmingly successful, notably during the period 30 March to 14 May 1945 during which time an aggregate of 43,021 net tons were successfully delivered to the First, Third, Seventh and Ninth US Armies. This method has a distinct disadvantage, particularly over long logistic lines. The delivery to the armies just mentioned consumed almost half as much gasoline as it delivered, expressed in terms of aviation and motor gasoline respectively.[13] In some instances tank trucks were used to carry the bulk gasoline beyond the facilities of the pipe line or rail cars, and required the pumping of the gasoline from the tank cars to the tank trucks. This was done by use of the 100 gallon per minute dispenser, and later with a 350 gallon per minute dispenser mounted on a trailer.[7]

b. Bulk reduction (decanting) was accomplished at all types of installations, although normally this operation was centered in the Communications Zone.[3] The four 100 gallon per minute dispensers were utilized for this operation. Additional dispensers were often necessary to obtain additional capacity. Large gravity dispensing systems in lieu of power dispensers were used only in an emergency, since experience proved them too light for heavy duty. They overheated rapidly and presented a fire hazard.[8,9,10] The design of the 100 gallon per minute dispenser proved a constant source of difficulty. It is suspended from one end only, and as the bearings became worn the rotor habitually got off center and scored the housing, necessitating excessive repairs. It was necessary to mass produce locally spare castings for the rotor and to rebore the housing to permit the operation of the oversized casting. A 100 gallon per minute dispenser designed with the rotor mounted in a journal at each end would have been more satisfactory.[13]

c. For efficient bulk reduction and issue it was necessary to have large numbers of five-gallon gasoline cans available. The allowance of 3,200 per company was insufficient, and augmentation from theater stocks was the rule.[13] In the Communications Zone, operations at pipe line terminals required from eight to 14 five-gallon cans daily for each five-gallon can issued to using units.

242. Packaged Receipts. The delivery of gasoline in five-gallon cans eliminated the necessity for decanting and simplified operations. All receipts on beachheads were packaged. There, distances were short and requirements were normally small.[5] Receipts were also packaged when air lift was used for delivery in emergencies. Issue was made in such cases direct from the airfield or from nearby distributing points.[6]

243. Operations.

a. The operation of the company conformed in general with prescribed procedure. Augmentation in personnel and transportation was normal. The roadside filling stations which were established in many areas to serve individual vehicles proved inadequate for large scale consumption. They were effective, however, in eliminating individual vehicles from the traffic of distributing points and truckheads.

b. Accurate bookkeeping was essential in order to

maintain a balanced stock of petroleum products and to keep higher headquarters informed of the consumption rate and of the status of supply at all times.[12] There were no standard accounting forms, however, and each army prescribed its own. The general inexperience of the gas company personnel in accounting procedure, coupled with the variations in procedure among the armies, resulted at times in confusion and general inaccuracy of records.

c. Transportation was short. The maximum rated capacity of the two platoons is 144,000 gallons. The 21 trucks, two and one-half ton, assigned, are capable of transporting approximately 16,000 gallons, the full 3,200 container allowance, each trip. Due to the distances between bulk reduction points and truckheads or distributing points, and the time required to load and unload vehicles, each trip normally consumed two hours. In the normal 10 hour working day, therefore, an average of only 80,000 gallons could be transported in organic vehicles without overloading.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

244. Conclusions.

a. That the rated capacity of the Gasoline Supply Company was not attained due to shortage of personnel and transportation.

b. That the fire-fighting equipment was inadequate.

c. That the 30-gallon-per-minute dispenser was not used due to its inadequacy, and the number of 100-gallon-per-minute dispensers often proved insufficient. The design of the 100-gallon-per-minute dispenser also proved inadequate.

245. Recommendations.

a. That the amount of personnel and transportation and the number of gasoline drums be increased in sufficient quantities to enable the company to meet its normal requirements.

b. That a fire-fighting section, with suitable equipment, be included in each platoon.

c. That pertinent doctrines, techniques and Tables of Organization and Equipment be amended by appropriate agencies of the War Department.

Bibliography

Chapter 19

1. T/O & E 10-77, QM Gasoline Supply Company, dated 21 June 1945.

2. TM 10-465, Quartermaster Handbook "Gasoline Supply Company", dated May 1943.

3. Study on Operations of QM Gasoline Supply Companies, believed to have originated at Hq ETOUSA, undated. *(13)

4. Study on Operations of Quartermaster Gasoline Supply Company, Hq 12th Army Group, undated. *(34).

5. First US Army Report of Operations, Annex No. 14, 20 October 1943 to 1 August 1944. *(44).

6. After Action Report, Third US Army, Quartermaster, 1 August 1944 to 9 May 1945. (April Operations).

7. AGF Report No. 830, dated 9 April 1945. *(23).

8. Memo for record - Visit to First and Ninth Armies, Headquarters Twelfth Army Group, Quartermaster Section, dated 17 November 1944. *(35).

9. Memo, G-4 to Quartermaster, FUSAG, dated 13 May 1944. *(41).

10. Informal Report on Decanting Operations from Theater Chief Quartermaster to the General Board, undated. *(55).

11. AGF Report No. 981, dated 22 May 1945. *(29).

12. OCQM Cir Letter No. 10, Headquarters Seventh Army, dated 13 April 1945.

13. Comments, Letter, Theater Chief Quartermaster, 13 Dec 45, to the General Board. *(56).

* - Number in parentheses is Catalog Number used in Inventory of Material, QM Study No. 109 (Class III Supply). File R 401/11.

CHAPTER 20

CLASS III (SOLID FUELS) OPERATIONS

SECTION 1

GENERAL

246. Source and Availability.

a. The supply of solid fuels throughout operations in the European Theater was rarely adequate. The supply of coal immediately following the invasion of Normandy was critical. Indigenous production in France, Belgium and Holland was approximately 50 percent of normal, and there was an even greater reduction in the amount of imported coal which, under normal conditions, had provided one-third of civilian requirements.[6] Coal was requisitioned and supplied from the United Kingdom. Limitations on ship transport prevented large scale imports from either the United Kingdom or the United States. Accordingly, requirements were met largely from local sources. A system of priorities was established to insure that both military and essential civilian requirements were filled.[7]

b. The short supply of coal in the fall of 1944 forced the exploitation of wood resources of France. Ready-cut wood was purchased and cutting rights were secured in forests in various parts of France. Results, however, were not satisfactory. Transportation was short, and it was often found that the cut wood allocated by the French was not available or that it could not be moved out when an attempt was made to pick it up. Of the 104,722 cords of cut wood allocated by the French government between 1 November 1944 and 30 April 1945, only 18,888 cords were delivered.[6]

c. Production of coal in Germany was negligible by 9 May 1945. The overall military and civilian European demand exceeded the supply. Steps were taken immediately to reorganize the mines and resume production, but it was necessary also to organize production of fuel wood to supplement coal supply.[6]

247. Comparison of Fuels.[6] For troop use, the fuel value of one cord of wood is considered the equivalent of one ton of bituminous coal. With wood cutting tools and equipment normally available, production of one cord of firewood normally requires three man days. The production of one ton of coal normally requires one man day. In order to obtain maximum fuel value of wood a seasoning period of from six to eight months should be allowed subsequent to the felling of the tree. Coal has full heating value as soon as mined. To transport a quantity of wood equal in fuel value to a quantity of coal requires more than twice the transportation facilities. Thus, coal, in addition to being less bulky, more efficient and easier to handle than wood, is also preferable to wood from both production and transportation standpoints.

248. Allowances. In order to conserve coal and insure

its issue for the essential requirements a system of priorities and allowances was established as follows:[6]

a. Hospitals - 12 pounds per bed per day during winter, five pounds per bed per day during other seasons.

b. Coffee Roasters - 400 pounds per day per roaster.

c. Space heating, cooking and hot water - four pounds per man per day during space heating season only. During other seasons, one and one-half pounds per man per day for cooking and hot water.

d. Engineer blacksmith forges - six pounds per forge per day.

e. Others - static bakeries, bath units, laundries, Red Cross, etc., as authorized by the Chief Quartermaster.

Fuel wood was substituted for coal as necessary. Local procurement of solid fuels, except wood, was prohibited except where specifically authorized.

249. Procedure. The supply of solid fuels was a Quartermaster function and followed normal supply channels.[5,6] The Supreme Headquarters, Allied Expeditionary Forces, Supply Division, was the overall controlling agency. It screened both military and civilian requirements, and allocated the fuels to the separate agencies based on priorities and availability of the fuels.[1,2] The Quartermaster Corps, based upon the allocation received, procured, stored and issued the fuels to the using forces based on the priority and allowances established.

SECTION 2

OPERATIONS

250. Requirements

a. Coal for the initial invasion of the continent was shipped from the United Kingdom. Shipments were made based upon estimates of requirements submitted by Supreme Headquarters, Allied Expeditionary Forces, and approved by the British War Office.[9] The initial estimate for the United States military forces was made by the First US Army and submitted to the 21st Army Group for consolidation and approval by Supreme Headquarters. As the situation progressed the Chief Quartermaster received the estimates from the armies, air forces, Navy on shore, and section Quartermasters; edited and consolidated the requirements; and submitted the estimated total requirements for all United States Forces to Supreme Headquarters. Similar estimates of requirements by other Allied Forces were submitted for screening and approval to Supreme Headquarters.[9]

b. Each estimate contained a statement of anticipated fuel consumption during the calendar month, a consolidated requisition for the following month, and an estimate of fuel needs for the next succeeding month.[9]

251. Responsibility.

a. Supreme Headquarters maintained control throughout the operation. As the operations on the continent progressed and more countries were liberated or occupied, Supreme Headquarters, Allied Expeditionary Forces, reorganized and decentralized control. It established, in each country, a Solid Fuels Sub-Section composed of the military and civilian representatives of government, transportation, and the coal mines or production experts.[2] As the sub-sections were organized, the Allied Forces submitted their estimates of fuel requirements within each country separately to the sub-section of the country concerned.[4,8] The sub-section operated directly under the Solid Fuels Section of Supreme Headquarters, and was responsible for:[3]

(1) Advising on all matters pertaining to indigenous production of solid fuels, and for carrying out instructions of Supreme Headquarters relative to Solid Fuels production.

(2) Screening essential civilian requirements.

(3) Presentation of military solid fuels requirements.

(4) Preparation of proposed allocations for approval.

(5) Arrangement and coordination with appropriate civilian and military authorities for the distribution of solid fuels within the country to the normal distribution centers, by railway, water or road.

(6) Coordination of the movement and distribution of exported or imported solid fuels.

b. As the operating solid fuels agency for the United States military forces, the Chief Quartermaster was responsible for:[4,8]

(1) Submitting estimates as required and receiving the allocations.

(2) Coordinating with the Chief of Transportation, European Theater of Operations, for the shipment and delivery of coal from continental point of origin or port to destination for consumption.[6]

(3) Maintaining daily contact with the British War Office for the implementing of the agreed coal shipment program.

(4) Accounting for all coal received from all sources by all United States forces, except some coal procured by the General Purchasing Agent by direct negotiation.[15]

c. The Quartermasters of the field armies were responsible for submitting estimates of fuel required, and

for the procurement, storage and issue of solid fuels to subordinate units for both military and essential civilian use.

252. Operations.

a. The Advance Section, Communications Zone, began solid fuels operations on the continent when sacked coal began to arrive early in July 1944, and the first Advance Section coal dump was established in Cherbourg on 14 July 1944.[7] Deliveries of coal throughout the operation failed to meet the allocations established by Supreme Headquarters, due principally to the shortage of production and transportation.[6,13]

b. Local procurement was at times instituted by the field forces.[11] Coal was procured by requisition from local Belgian and French mines after approval of Headquarters, Advance Section, or Communications Zone. At times, when the situation was critical, representatives from the armies were stationed at the mines to expedite shipment.[10] Coal was also procured from captured enemy stocks.[11,12]

c. Considering the entire period of operations on the continent, a supply of coal was obtained barely adequate to meet military requirements on drastically reduced standards. The supply was always critical from D-Day until April 1945, at which time small stock piles were accumulated. Requirements for essential civilian use were at the minimum standard to sustain communities.[13]

253. Distribution.

a. Distribution to the using units was made on the basis of the allowances established by Supreme Headquarters. In the Third US Army, however, it was necessary to reduce the allowances in January 1945, from four pounds per man to two pounds, and to request a decrease of 50 percent in consumption by army and corps headquarters.[11] During the winter months of 1944-45 issue of solid fuels was made by the armies as received.[10] It was impossible to accumulate reserve stockpiles in the army areas until later in 1945 when the weather became less severe.[12]

b. Dump distribution was normally made either at army coal dumps, which stocked only solid fuels, or at army Class III supply points, which stocked solid fuels in addition to normal supplies. In either case, the dumps were operated by Quartermaster service company personnel. Using units drew direct from the dumps. At other times, when the Army Zone of Operations included the coal mining district of Germany, armies sometimes issued direct from the mines to the using units. Quartermaster service company personnel performed the administrative work at the mines and German civilians performed the labor.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

254. Conclusions.

a. That for operational use coal is greatly

preferable to wood as fuel because it minimizes the transportation problem and requires fewer man-days of production.

b. That the supply of fuel for military requirements was obtained at the minimum standard. Supply for essential civilian requirements was at the extreme minimum standard to support communities.

c. That transportation and coal production were short of the established requirements.

d. That organization and methods and procedures used in the supply of solid fuels were generally suitable, but that the military forces were dependent at all times on concessions from governments of liberated countries for an adequate supply of coal.

255. Recommendations.

a. That coal be used in preference to wood whenever possible.

b. That all possible steps be taken in future operations to plan and provide for production and shipment of fuels to meet both military and civilian requirements.

Bibliography

Chapter 20

1. Administrative Memo No. 44, SHAEF, dated 28 Jan 45 (Sec III, Par 5). *(4)

2. Annex A, Administrative Memo No. 44, SHAEF, dated 13 April 45. *(4)

3. Administrative Memo No. 44, SHAEF, dated 28 Jan 45 (Sec III, Par 6). *(4)

4. Administrative Memo No. 44, SHAEF, dated 28 Jan 45 (Sec III, Par 7). *(4)

5. QM Tech Cir Ltr No. 16, Hq Com Z, dated 4 April 45. *(12)

6. Informal Report to The General Board, Quartermaster Class III Operations, Theater Chief Quartermaster, undated. *(14)

7. Operational History, Advance Section, Communications Zone, 1943-1945 (Extract from Chapter VII, Section II) *(22)

8. Administrative Memo No. 44, SHAEF, dated 28 Jan 45 (Sec IV, Par 9) *(4)

9. SOP No. 36, ETOUSA, dated 4 July 44 (Coal Supply Procedure). *(8)

10. First US Army Report of Operations, 1 August 1944-22 February 1945 (Annex No. 10, Quartermaster Section Report). *(43)

11. After Action Report, Third US Army, Quartermaster Section, 1 August 1944 - 9 May 1945.

12. After Action Report, Ninth US Army, dated 16 Dec 44.

13. Conference with Captain W. N. Runney, SHAEF G-4. Solid Fuels Sub-Section, 15 June 1945.

14. Conference with Captain J. R. Tolbert, Fifteenth US Army, Solid Fuels Division, 17 Nov 1945.

15. Comments Letter, Theater Chief Quartermaster, 13 Dec 45, to The General Board. *(56)

* Number in parentheses is Catalog Number used in Inventory of Materials, QM Study No. 109, (Class III Supply), file R 401/11.

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

QUARTERMASTER LEVELS OF SUPPLY - EUROPEAN THEATER

	CLASS I	CLASS II Clothing	CLASS II - Other	CLASS III	CLASS IV	P.X.	
1942, 29 November	75	90	60	60	60	60	Ltr.dated 29 Nov 1942-W.D.,Subj. Levels of Supply, ETO.
1943, 20 June	60	60	45	45	45	45	Cable R-9743 dated 20 June 1943.
1943, 3 December	75	90	60	60	60	60	Cable R-6493 dated 3 Dec 1943.
1944, 29 January	60	75	75	60	75	75	Ltr. dated 20 Jan 1944-W.D., Subj. Levels of Supply.
1944, 26 April	75	90	90	75	90	90	Ltr. dated 26 April 1944-W.D., Subj. Levels of Supply.
1944, 31 July (Note)	60	75	75	60	75	75	Ltr. dated 26 April 1944-W.D. Subj. Levels of Supply.
1944, 23 November	60	60	75	60	75	75	Ltr. dated 23 Nov 1944-W.D., Subj. Levels of Supply.
1945, 3 March	50	60	60	45	60	60	Cable WARX-46911 dated 3 March 1945.

Note: Although the levels shown were authorized for ETOUSA, the Chief Quartermaster voluntarily elected to utilize the levels shown below. Levels shown remained in effect until March 1945, at which time levels conformed to those shown above.

	UNITED KINGDOM	CONTINENT
I	45	60
II	45	60
III	45 (Greases & Lubes only)	60
IV	45	60
P.X.	45	45

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

HEADQUARTERS TWELFTH ARMY GROUP
APO 655

28 October 1944

400.312 (G-4 Sup)

SUBJECT: Requisitioning and Movement of Supplies.

TO : Commanding General, Communications Zone, APO 887.

1. With the concurrence of your headquarters, representatives of G-4 and the Special Staff Sections of this headquarters have followed through, from the time originated until supplies were delivered, requisitions which were placed by the First Army on 28 and 30 September 1944. All representatives were required to report on their observations while on the mission, together with any recommendations they considered appropriate.

2. Pertinent comments in the reports of these representatives have been extracted and condensed and are appended hereto as inclosures 1 to 12 inclusive. In addition movement tables of truck and rail transportation are likewise appended as inclosures 13 to 17, inclusive.

3. From the observations of our representatives the following conclusions are drawn:

a. The stock records of the Services in Headquarters, Communications Zone are and will remain inaccurate until proper communications are established. The authority for directing shipments is centralized, and procedures adopted by the Services for their depots are uniform.

b. The Service representatives in the Normandy Base Section Headquarters make many changes in the shipping orders, releases, or requisitions sent down from Paris.

c. As indicated in the observation of the Medical and Signal representatives, the designation of only one of many depots for filling requisitions eliminates the possibility of obtaining all items requested on the requisitions even if all are available in the several depots.

d. The fact that many systems of documentation exist in the depots makes it appear that no uniform procedure has been established. Proper tally outs, and waybills for rail and truck would eliminate many errors in shipments and would assist in expediting deliveries. Many shipments reach the Armies with no or little evidence as to what the items are supposed to be and the identification with any particular shipping order or requisition is improbable, if not impossible. Any system, uniformly established, which would carry the identity of the requisition number of the Army, the items shipped, and the proper destination would materially improve the flow of supplies.

e. The train symbols of assigned trains must be maintained from point of origin to ultimate destination. Further, standard trains should be formed in such manner that they may be kept intact from origin to destination. This would assist in an even flow of supply and enable the accurate passing of information to be sent to the regulating station.

f. Lack of control of truck shipments and delays, in some instances resulted in failures to receive supply shipments. No thorough check could be made at the TCPs along the route of known convoys and trucks which left the Normandy areas.

g. There did not exist a uniform system of notifying the armies in advance of the items not available and the items shipped.

h. Duplication of effort in allocating transport exists between G-4 Sections, Communications Zone Headquarters and G-4 Section, Normandy Base Section.

i. Lack of communication between headquarters, between headquarters and depots, and between depots impedes the orderly flow of supplies and does not permit prompt reaction to substitutions desired by the Armies.

j. The substitutions requested by Armies are not passed on to the depots and as a result, substitutions made at depots are more a product of memory.

k. Services do not make available to other services, tonnages resulting from non-availabilities; but in most instances utilize all capacity themselves in their enthusiasm to move tons.

l. The depot arrangements of Services would in most cases preclude substitution of supplies requested from another Service, or even class, especially for rail transport.

m. Guards are provided on trains.

n. The control of train traffic is impared because of utilization of civilians in the train crews (language, zeal, interest).

o. Time and tonnage is lost by careless loading at truck to rail transfer points. Supplies of the same Service and class should be loaded into one train whenever possible.

p. Lack of knowledge of activity at railheads impedes the spotting of trains for outloading.

2. It is recommended that:

a. Duplication of effort in the processing of requisitions be eliminated in order that a minimum amount of time is lost in forwarding supplies.

b. Depots, where possible, be combined so that the greatest number of items requested by Armies can be supplies.

c. A uniform system of documentation be adopted and enforced so that supplies when leaving the depots are identified with the Armies request, items on the conveyance are itemized, and consignee and consignor are both clearly indicated. Further, the system should be so established that the same information is available with and on arrival of supplies at the armies.

d. A suitable system be devised to notify the Armies

within 24 hours of time shipped, all supplies shipped, requisitions of the Army that called for these supplies, method of shipment, and if practicable, expected arrival time.

e. A system of communication be established which will enable shipments to be properly controlled, information forwarded promptly, and control of trains at railheads improved.

f. Supplies being transferred from truck to rail be kept together by classes and Services.

g. Supply shipments be given precedence, except for hospital trains.

h. Information on supply policies and procedures be adequately and promptly communicated to all subordinates that handle supply shipments.

i. When items are not available, information be furnished promptly to the Armies which will enable them to plan on the future availability of the item.

j. Trains carry the same designation from start to finish.

For the Army Group Commander:

/s/ Raymond Stone Jr.
RAYMOND STONE JR.
Colonel, AGD
Asst Adj Gen

17 Inclosures (not included)

D A I L Y T E L E G R A M

HOW SENT _____ TIME SENT _____ DATE _____

1. Railhead (as of 2400)_____
2. Reporting Unit _____
3. Total Strength for Rations _____
4. List of Organic Units w/strength (include in Item 3)_____
5. List of Attached Units w/strength (include in Item 3)_____
6. Gasoline _____Octane (gals)_____
7. Gasoline _____Octane (gals)_____
8. Fuels, Diesel (gals)_____
9. Oil, Engine, SAE 10 (gals)_____
10. Oil, Engine, SAE 30 (gals)_____
11. Oil, Engine, SAE 50 (gals)_____
12. Lub., Gear, Universal, SAE 80 (gals)_____
13. Lub., Gear, Universal, SAE 90 (gals)_____
14. Grease, General Purpose No. 0 (lbs)_____
15. Grease, General Purpose No. 1 (lbs)_____
16. Grease, General Purpose No. 2 (lbs)_____
17. Grease, Wheel, Bearing, H.D. No. 3 (lbs)_____
18. Grease, Water Pump, No. 4 (lbs)_____
19. Misc. Items _____

Official Designation of Sender Time Signed

AUTHORIZED TO BE SENT IN CLEAR

Signature of Officer Signature & Grade of Writer

Incl No. 1, SOP
Third Army, 1943.

HEADQUARTERS SEVENTH ARMY
APO 758 U.S. ARMY

AG 400.213 - QM

WOC/JLD/bq
7 October 1944

SUBJECT: Quartermaster Requirements.

TO : Commanding General, Continental Advance Section, U. S. Army. ATTENTION: Quartermaster.

1. Reference letter, this headquarters, dated 30 September 1944, file AG 400.213 QM, subject, "Quartermaster Requirements", effective upon the receipt of this letter the requirements contained in the reference letter are superseded by those listed below and shipments based on the new requirements are to begin on 15 October.

a. EPINAL - For VI Corps & Army Troops

(1) Class I

Rations, Type "B"	110,300	ea
Rations, Type "10-in-1"	59,000	ea
Rations, Type "C"	5,700	ea
Accy Pack	877	cases
Coffee	2,592	lbs
Milk	6,474	cans
Sugar	6,474	lbs
Soap	17,550	lbs
Toilet Paper	3,510	rolls
Atabrine	25,000	ea
Halazone	25,000	ea
Hosp, Supplement	700	cases
Vitamin Tablets	70,000	ea
Sub Total Tonnage	375.7	L.T.

Bread baking ingredients		
Flour	60,700	lbs
Yeast	910	lbs
Salt	1,210	lbs
Sugar	1,825	lbs
Lard substitute	1,825	lbs
Milk, dry, pwd, skim	1,210	lbs.
Sub total tonnage	30	L.T.

Total Class I Tonnage 405.7 L.T.

100% "B" ration included for Air Corps strength of 15,000, plus 30% build up.

(2) Class II - Tonnage requirements for Class II & IV from 15 October 1944 to 21 October 1944 will be 325 tons per day. This notes an increase as to previous requirements, but it is imperative to have above tonnage so that initial issue of winter clothing (Combat) and tentage (heavy) can be moved into this area.

b. LUNEVILLE - For XV Corps

(1) Class I

Rations, Type "B"	50,000	ea
Rations, Type "10-in-1"	45,000	ea

Rations, Type "C"	9,000 ea	
Accy Pack	520 cases	
Coffee	2,160 lbs	
Milk	5,400 cans	
Sugar	5,400 lbs	
Soap	10,400 lbs	
Toilet Paper	2,060 rolls	
Atabrine Tablets	17,000 ea	
Halazone tablets	17,000 ea	
Hosp Supplement	400 cases	
Vitamin tablets	60,000 ea	
Sub total tonnage		251.1 L.T.
Bread baking ingredients		
Flour	36,000 lbs	
Yeast	540 lbs	
Salt	700 lbs	
Sugar	1,080 lbs	
Lard, substitute	1,080 lbs	
Milk, dry, pwd, skim	700 lbs	
Sub total tonnage		18 L.T.
Total Class I tonnage		269.1 L.T.

2. Request that supplies for each delivery point be loaded as a separate shipment and that each railroad car be clearly marked with its destination.

3. The above date given for shipments to begin is based on rail communications being opened. In event they are not you will be notified by cable.

For the Commanding General:

/s/ W. C. Caldwell
W. C. CALDWELL
Colonel, A.G.D.
Adjutant General

DISTRIBUTION:

3 - CONAD
1 - AG
1 - G-4
1 - Col Massey
1 - Operations
2 - File

HEADQUARTERS SEVENTH ARMY
APO 758 U.S. ARMY

WOC/JLD/bq

AG 400.213 QM 7 October 1944

SUBJECT: Quartermaster Class III Requirements.

TO : Commanding General, Continental Advance Section, U.S. Army. Attention: Petroleum Officer.

1. Reference letter, this headquarters, dated 30 September 1944, file AG 400.213 QM, Subject: "Quartermaster Class III Requirements", effective upon the receipt of this letter the requirements contained in the reference letter are superseded by those listed below and shipments based on the new requirements are to begin 15 October.

a. EPINAL

Gasoline, V-80	180,000 gals.	
Diesel Fuel Oil	7,200 gals.	
Kerosene	1,450 gals.	
Engine Oil, SAE 10	700 gals.	
Engine Oil, SAE 30	3,800 gals.	
Engine Oil, SAE 50	600 gals.	
Universal Gear Lub SAE 90	800 gals.	
Grease, GP #1	700 lbs.	
Grease, GP #2	400 lbs.	
Grease, WB #3	200 lbs.	
Grease, WB #4	48 lbs.	
Total Tonnage		650.6 L.T.

b. LUNEVILLE

Gasoline, V-80	120,000 gals.	
Diesel, Fuel Oil	4,800 gals.	
Kerosene	950 gals.	
Engine Oil, SAE 10	500 gals.	
Engine Oil, SAE 30	2,500 gals.	
Engine Oil, SAE 50	400 gals.	
Universal Gear Lub SAE 90	600 gals.	
Grease, GP #1	500 lbs.	
Grease, GP #2	300 lbs.	
Grease, WB #3	150 lbs.	
Grease, WB #4	36 lbs.	
Total Tonnage		434.3 L.T.

NOTE: The above tonnages include shipment of 370 tons of V-80 in rail tank cars daily as predicated in CBS cable.

2. Request that all gasoline be shipped by tank car or in 5 gal U.S. containers. No 55 gal drums of V-80 gasoline or any Jerry cans are desired in the Army Area. Shipment of Diesel Fuel Oil in 55 gal drums is satisfactory.

3. Supplies for each delivery point to be loaded as a separate shipment and each car to be marked clearly with its destination.

4. The above data given for shipments to begin is

based on rail communications being opened. In the event it is not you will be notified by cable.

For the Commanding General:

/s/ W. C. Caldwell
W. C. CALDWELL
Colonel, A.G.D.
Adjutant General

DISTRIBUTION:

3 - CONAD
1 - AG
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1 - Col Massey
1 - Operations
2 - File

HEADQUARTERS
COMMUNICATIONS ZONE
EUROPEAN THEATER OF OPERATIONS
UNITED STATES ARMY
Office of the Chief Quartermaster
APO 887

2 March 1945

SUBJECT: Mission of the Charleroi Depot Area, Q-183

TO : The Quartermaster, Channel Base Section, APO 228, U. S. Army (Thru Commanding General)

1. Enclosed is the mission for the Charleroi Depot Area, Q-183. You will note that the PX mission is being shifted immediately from Lille-Mons Depot, Q-185, to Charleroi.

2. Charleroi will be the principal Base Depot on the Continent for Class I supplies, and in addition to backing up present depots, it must be prepared to assist in making shipments to build up Advance Depots which will be established in the future to support the First, Ninth, Third and Seventh Armies. The maximum storage mission of 240,000 long tons of Class I may never be reached. However, storage capacity to this extent must be held in readiness as Theater Reserve Space to meet such fluctuating requirements as may arise.

3. The attached mission is substantially the same as draft copies which have been discussed in detail with your office and representatives of the Depot, both at Charleroi and in Paris. It is requested that you have the Depot immediately prepare a detailed plan to implement this Mission, to include planned utilization and allocation of storage space and planned method of handling in and out tonnages. It is further requested that the Depot and your office send their key planning officers to Paris at the earliest possible date with this detailed plan of operation to iron out any difficulties.

/s/ John B. Franks
Brig. Gen. USA
for /t/ ROBERT M. LITTLEJOHN
Major General, U.S.A.
Chief Quartermaster.

1 Incl: Mission of the Charleroi Depot Area.

Six (6) copies to Quartermaster, Channel Base Section, APO 228
Six (6) copies to Commanding Officer, 52nd QM Base Depot, APO 228

MISSION OF CHARLEROI DEPOT AREA
(Q-183)

1. Charleroi Depot area has two basic missions:

a. As a Base and Intermediate Depot it will:

(1) Receive and store reserves of Class I supplies and make shipments to Armies and other Depots as required. Charleroi will be the principal source of Class I for initial stockage of Advance Depots to be established in the near future.

(2) Receive and store a portion of the theater Class III packaged POL reserve and make shipments forward to Depots and Armies as required.

(3) Receive and store reserves of PX supplies for First and Ninth Armies and ADSEC (north) and make shipments as required.

b. As a Distribution Depot it will:

(1) Receive, store and distribute all classes of supply to troops in the Depot Area as directed by the Base Section Commander; and receive, store and distribute aviation gas to Air Corps Units as designated by USSTAF.

2. a. The above basic missions are summarized as follows:

Class I	- 45 days for 600,000 (Plus 170,000 L/T additional Class I)
Class II	- Retail only as directed by Base Section Commander.
Class III	- Retail of MT 80 and Allied Products as directed by Base Section Commander. Bulk storage and issue of Aviation Gas to Air Corps Units as designated by USSTAF. Portion of theater reserves of packaged POL (About 42,000 L/T).
Class IV	- Retail only as directed by Base Section Commander.
PX	- 45 days for 850,000 (less gratuitous issue items) 45 days for 400,000 (all items) Plus 13,000 L/T additional PX
Civil Affairs (Class I)	- Approximately 25,000 L/T

b. When Advance Depot(s) are established to support the First and Ninth Armies, the Class I mission of Charleroi will be reduced to 45 days for 200,000 men, for troops in the Depot area. However, all facilities will be retailed as theater reserve space for use as required.

3. Estimate of total tonnages to be stored and handled to accomplish the above mission is as follows:

	Long Tons to be Stored	Long Tons to be handled daily (In and Out) (a)
Class I	240,000	6,000
Class II	As directed by Base Section Commander	
Class III POL		
Retail	As directed by Base Section Commander	
Theater Reserves of		
Packaged POL	42,000	As directed by CCQM
Aviation Gas	3,000	1,000
PX	20,000	800
Civil Affairs Supplies	25,000	1,500

(a) Tonnages to be handled represent the maximum tonnage that the depot must be prepared to handle. Actual tonnage will fluctuate below these figures.

4. To assist in calculating items, weights and storage space, the following publications of this office have been distributed to all depots:

Basic Model Stocks, dated 20 January 1945.
Initial Issue and Replacement Factors, dated 20 December 1944.
Packing and Shipping Data, dated 1 November 1944. (Supplement to QM Service Reference Data, Vol II Revised)

5. This mission is set forth in detail in attached Annex A.

1 Incl. - Annex A

DETAILED MISSION OF CHARLEROI DEPOT AREA (Q-183)

Class of Supply	Mission	Area Served	Long Tons to be Stored	Maximum Long Tons to be Handled Daily (In & Out)(a)	Remarks
CLASS I					
Non-Perishables - 45 days for 600,000 broken down as follows:					
Backup for Liege Depot (includes RAC Kits/gratuitous issue PX)	15 days for 1,000,000	First & Ninth Armies and ADSEC (North)	45,000		Represents balance of level not stored by Liege(Q-179)for First & Ninth Armies and ADSEC(North). Normally shipments will be made to Liege Depot and not direct to Armies. It is planned that later this mission will be transferred to Advance Depot(s) to be established for support of First & Ninth Armies.
Retail for Depot Area	45 days for 200,000	As directed by Base Section Commander	25,000	All Class I Non-Perishables.	Distribution mission.
Additional Class I	Theater Reserve space to be used as directed by OCQM	Intermediate & Advance Depots	170,000	6,000	Charleroi will receive,sort,classify, and make balanced and balancing shipments of Class I to Advance & Intermediate Depots as required. It will be the principal source of initial stockage of Advance Depots to be established in the near future.
Perishables	14 days for 100,000	Depot Area	700	75	Distribution mission.
Fresh Fruits & Vegetables	10 days for 200,000	Depot Area	1,000	250	Distribution mission. Represents local procurement to maximum extent.
CLASS II	As directed by Base Section Commander.	Depot Area			Distribution mission only as directed by Base Section Commander.

DETAILED MISSION OF CHARLEROI DEPOT AREA (Q-183)

Class of Supply	Mission	Area Served	Long Tons to be Stored	Maximum Long Tons to be Handled Daily (In & Out)(a)	Remarks
CLASS III					
POL:					
MT-80 Gas and Allied Products	As directed by Base Section Commander.	Depot Area	5,000	1,000	Distribution mission. Tonnage to be handled represents incoming bulk POL received and decanted.
Theater Reserves Packaged POL	As directed by COQM		42,000	4,000	Tonnage to be stored: 30,000 L/T packaged MT 80 12,000 L/T packaged Allied Products
Aviation Gas	Bulk supply to Air Corps Units in Depot Area	Air Corps Units as designated by USSTAF	3,000	1,000	Aviation Gas Storage point must be prepared to receive and issue up to full capacity of present facilities.
Solid Fuels:					
Coal	As directed by Base Section Commander	Depot Area			
Wood	(See Remarks)				Supervision of wood-cutting activities and procurement of wood as and when directed by the Quartermaster, Channel Base Section.
CLASS IV	As directed by Base Section Commander				
PX.					
Items for sale in First and Ninth Army Areas	45 days for 850,000	First and Ninth Armies			

DETAILED MISSION OF CHARLEROI DEPOT AREA (Q-183)

Class of Supply	Mission	Area Served	Long Tons to be Stored	Maximum Long Tons to be Handled Daily (In & Out)(a)	Remarks
PX. (Cont'd)					
Items for sale in Com Z areas	45 days for 400,000	Depot Area	Total PX 20,000	Total PX 800	
Additional PX	Theater Reserve Space for use as directed by OCQM.	As directed by OCQM.			Consists of additional PX directed from Ports to Charleroi by OCQM.
CIVIL AFFAIRS (Class I)	Bulk shipments/issues	Authorized agencies in depot area, and to Armies and Depots as required.	25,000	1,500	Does not include Class III.

(a) Tonnages to be handled represent the maximum tonnage that the depot must be prepared to handle. Actual tonnage will fluctuate below these figures.

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

SUPREME HEADQUARTERS
ALLIED EXPEDITIONARY FORCE

Allocation Letter No. 45
AG 400-1 (Civil) GE-AGM
(SHAEF/G-5/Sup/2342/1

9 July 1944.

SUBJECT: Allocation of Credits - Civil Affairs Supplies/Stores - Operation OVERLORD - D plus 91 to D plus 120.

TO : Commander-in-Chief, 21 Army Group. (Rear Headquarters)

1. Listed below are additional items of Supplies/Stores approved by this headquarters for use by British and U.S. Forces under your command in the period D plus 91 to D plus 120.

ITEM	Net Weight Long Tons	Procurement Responsibility
Biscuits	2902	UK
Vit Chocolate	660	UK
Salt	146	UK
Flour	4355	US
M & V	653	US
Soup	291	US
TOTAL	9007	

2. Allocation of milk requirements is under consideration and will be the subject of a subsequent communication.

3. Details of the allocations made by this letter are attached as Inclosure I. Sub-allocations between British and U.S. Zones shown therein may be varied as required to meet operational needs.

4. This letter is your authority for calling forward the above items as operational needs may require.

5. All pertinent instructions contained in Allocation Letter No. 1, this headquarters, file AG 400-1 (Civil) GE-AGM, dated 13 April 1944 will be observed in connection with the distribution of the Supplies/Stores approved by this letter.

By command of General EISENHOWER:

E. C. HOEHNKE
Colonel, AGD
Adjutant General

1 Incl: Technical data.

INCLOSURE NUMBER I TO ALLOCATION

LETTER NUMBER 45

1. Details of Supplies/Stores approved by Allocation Letter Number 45 dated 9 July 1944 for use of 21 Army Group are:-

ITEM	BRITISH ZONE Net Weight Long Tons	U.S. ZONE Net Weight Long Tons	Total Net Weight Long Tons	Procurement Responsibility.
Biscuits	2743	159	2902	UK
Vit Chocolate	216	444	660	UK
Salt	138	8	146	UK
Flour	4116	239	4355	US
M & V½	517	36	653	US
Soup	275	16	291	US
TOTALS:	8005	902	9007	

SUPREME HEADQUARTERS
ALLIED EXPEDITIONARY FORCE

ALLOCATION LETTER NO. US/45
AG 4001 (Civil) GE-AGM

APO 757 (Main)
19 October 1944.

SUBJECT: Allocation of Credits - Civil Affairs Supplies/ Stores - U.S. Forces - Operation OVERLORD.

TO : Commanding General, Communications Zone, European Theater of Operations, U.S. Army.

1. The following supplies/stores of U.K. procurement source are approved by this headquarters for use by U.S. Forces during the period D plus 91 to D plus 180, Operation OVERLORD:

Item	Gross Weight, Long Tons
Industrial Salt	200

2. This letter is your authority for calling forward these supplies/stores as required.

3. All pertinent instructions contained in Appendix "B" to Allocation Letter No. US/1, this headquarters, SHAEF /G-5 (Sup)/2342, dated 22 August 1944, will be observed.

For the Supreme Commander:

T. H. DAVIS,
Brigadier General, USA
Adjutant General.

HEADQUARTERS
SERVICES OF SUPPLY
EUROPEAN THEATER OF OPERATIONS
UNITED STATES ARMY
Office of the Chief Quartermaster

27 April 1943

430 Q.Sub

SUBJECT: Composite Ration for E.T.O.U.S.A.

TO : The Quartermaster General.
2nd & O Street, S.W.
Washington, D.C.

1. Experience in North Africa has proved a definite need during operations for a composite-packed ration to replace the bulk-packed Type "B" Ration.

2. Reference is made to the following:

Exhibit A - Letter, Col. J.P.Sullivan to Maj Gen. Edmund B. Gregory, dated 17 March 1943, with attachments.
Exhibit B - letter, Chief Quartermaster Hdqrs. SOS ETO to Chief Quartermaster AFHQ, APO 700 dated 31 January 1943, subject: Subsistence Problems in North Africa, with replies from:

Lt. Col. R.A. Rose, Ord.
" " N.P. Williams, QMC
Lt. Col. V.J. MacLaughlin, QMC
Capt. Wm.D. Pratt, QMC and
2nd Lt. E. Ballard, QMC, joint
Exhibit C - Photographs of Class I supplies during North Africa campaign.

3. It is not desirable that dependence be placed on the British composite ration (14 in 1) for future operations. While it was not useful in North Africa, its menus are poorly adapted to American tastes. Moreover, production capacity on this type ration will be strained to meet British requirements.

4. The Type 5-in-1 Ration is not satisfactory for use over periods of several weeks, and in addition, is too small for efficient handling.

5. Difficulties in handling and distributing the Type "B" Ration emphasize the need for a composite-packed U.S. Army ration. This ration should have the following characteristics:

a. Each case should contain twelve rations for one basic menu. Variety should be provided by offering five different menus. Proper segregation during operations by foreign labor requires simple case marking, i.e. B1-B2-B3-B4 and B-5.

b. It should be nutritionally adequate.

c. It should be completely self-contained within each case.

d. Except for powdered whole milk, powdered whole eggs and lemon crystals, dehydrated and concentrated foods must be excluded. This is necessary because this ration will be used in operation where there will not be time or opportunity, first to purify water and, second, to reconstitute dehydrated items. Gross weight should not exceed 75 lbs. Five proposed menus for a 12-in-1 composite-packed ration are attached as Exhibit "D".

e. A can opener, matches, cigarettes, water purification element and latrine paper should be included.

f. Each case must contain three heating units. These will provide enough heating units to supply small groups separated from their cooking facilities.

g. Cases should be of seasoned timber, battened and suitably strapped.

6. It is planned to use the proposed 12-in-1 ration in operations after the initial assault phase. Its use will continue indefinitely in the forward areas to which distribution of bulk rations is difficult; troops in the rear areas will be supplied with Type "B" Ration in bulk as early as practicable.

7. It is proposed to provide a 40 day supply of composite rations for 600,000 troops, inclusive of a wastage factor. Total requirements are estimated at 24,000,000 rations.

8. In recognition of the pressing need, my office has developed a 12-in-1 composite-packed ration using components of the Type "B" Ration and offering five menus. Lack of appropriate items packed in small containers will limit this effort to not more than 3,000,000 rations. Difficulties have been encountered on these points:

a. Certain basic items packed in containers oversize for the purpose have had to be included (examples: Bacon in 12 lb. cans; dried eggs in 5 lb cans; preserved butter in 5 lb cans). This has increased the gross weight of the composite pack and will undoubtedly result in some waste.

b. Casing materials are in very short supply in the United Kingdom.

c. Labor for building cases and packing them is also in short supply.

d. The average age of inventories is one year and it is questionable that the assembling of large quantities of composite-packs should be attempted from any except the newest stocks.

9. It is concluded that supply of the U.S. Army composite-packed ration must be principally from the United States. With combat maintenance to be supplied this theater from May through September, reference Cable No. 7742, Somervell to Andrews for Loc, dated 21 April 1943, it is urgent that production begin at the earliest date possible. Requisitions are being forwarded inclusive of these rations,

under authority of letter dated 3 April 1943, from Pembark to Commanding General, SOS ETO, Subject: Editing procedure for Requisitions from U.K., for inclusion of this type.

R. M. LITTLEJOHN
Brig. General, QMC
Chief Quartermaster

Incl: (4)
Exhibit A
" (B) Not included in Appendices.
" (C) " " " "
" (D) " " " "

RATION ACCESSORY CONVENIENCE PACKETS

Toilet Kit 800 rations	Per man per day Allowance	Quantity per Kit
Blade, safety razor, ea.	.15	120
Razor, safety, ea.	.005	4
Shaving Cream - oz.	.08	64
Brush, tooth, ea.	.015	12
Powder, tooth - oz.	.035	28
Soap, toilet - oz.	.14	112
Tobacco Kit **200 rations**		
Cigarettes, ea.	20.	4000
Tobacco, pipe, - oz.	.08	16
" Chewing - oz.	.01	2
Matches, ea.	40.	8000
Candy Kit **400 rations**		
Candy, hard - pkts	1	400
Gum, chewing - stick	1	400

OVERISSUE OF RATIONS TO U.S. ARMY FORCES

	Average US Army Strength in the Theater	Average Daily Rations Issued	Average daily Number of Rations Issued Per Man Per Day
June '44	1,601,892	1,636,750	1.02
July	1,725,000	1,983,750	1.15
August	1,850,500	2,386,517	1.28
September	1,985,000	2,636,368	1.32
October	2,132,000	2,550,162	1.19
November	2,407,010	2,721,197	1.13
December	2,659,000	2,883,818	1.08
January '45	2,780,500	3,038,553	1.09
February	2,899,000	3,031,972	1.04
March	2,999,000	3,386,966	1.12
April	3,064,500	3,706,689	1.20
May	3,061,500	3,550,342	1.15
June	2,888,440	3,151,352	1.09
July	2,670,832	2,762,632	1.03
August	2,279,221	2,392,782	1.04
September	1,836,000	2,062,900	1.12

RATION ISSUE EXPERIENCE ON EUROPEAN CONTINENT

Date	Type A/B	Type C	Type K	Type 10-in-1
June (6th-30th),1944	-	14 %	15 %	71 %
July	57 %	06 %	09 %	28 %
August	52 %	14 %	14 %	20 %
September	58 %	18 %	10 %	14 %
October	79 %	07 %	05 %	09 %
November	88 %	03 %	05 %	04 %
December	87 %	03 %	05 %	05 %
January, 1945	91 %	02 %	03 %	04 %
February	91 %	02 %	04 %	03 %
March	88 %	04 %	05 %	03 %
April	74 %	08 %	07 %	11 %
May	87 %	02 %	04 %	07 %
June	94 %	01 %	03 %	02 %
July	96 %	01 %	02 %	01 %
August	95 %	01 %	02 %	02 %
September	92 %	02 %	04 %	02 %

NOTE: Issue on the Southern Line of Communications is included in above percentages from 1 April 1945 onward. Percentage of type rations issued in the former SOLOC area previous to that date are shown below:

15 August 1944 - 31 March 1945	69 %	08 %	08 %	07 %

THE BRITISH ARMY CATERING CORPS

1. The Army Catering Corps is a combatant corps composed of personnel, as described in paragraph 2(b), for the purpose of providing the Army with:-

(a) advisers and instructors who are experts in catering and cooking.

(b) efficient N.C.O. and cook personnel for units

The incorporation of catering experts and qualified cooks into one corps controls their posting and ensures distribution, throughout the Army, to the best advantage.

Prior to the outbreak of the War a number of expert caterers were brought into the Army direct to fill key positions as Catering Advisers. On the commencement of hostilities the expansion of the Army necessitated their augmentation in greatly increased numbers and Officers Emergency Reserve Commissions were initially granted caterers with qualifications as set out in paragraph 9 to fill appointments as Catering Advisers or Specialist Messing Officers.

Similarly the personnel to fill vacancies as cookery instructors were enlisted direct from the Catering industry and after a few weeks military training were appointed Warrant Officer Class II, Staff Sergeant Instructor of Cookery.

All vacancies now occurring both for officers and for men, are filled by promotion within the corps.

Cooks now receive the normal military training as given to all arms of the service, after which they are sent on cooks' courses.

2. The organization includes:-

	Para
(a) Establishment	
War Office Catering Branch, S.T.4.....	3
War Office Personnel Branch A.G.14(c)..	4
Army Catering Corps Training Centre (Adlershot).....	24
Schools of Cookery (Home and Overseas).	25
Messing Officers Training Centres.....	26
A.C.C. Record and Pay Office (Edinburgh).....	4
(b) Personnel	
Command Catering Advisers.....	6
Catering Advisers.....	7
A.C.C. Specialist Messing Officers.....	12
Supervising Officers, Emergency Cookery Training Centres.....	14
Chief Instructors (Officers).....	17
Warrant Officers and N.C.O. Cookery Instructors at E.C.T.Cs.....	16
Travelling Cookery Instructors.....	18

		Para
Warrant Officers Staff Serjeants Serjeants Corporals Privates	Serving as cooks with Units.....	20

3. THE WAR OFFICE CATERING BRANCH S.T.4.

S.T.4. is a Branch of the Directorate of Supplies and Transport. As the technical branch it selects all specialist personnel and is responsible for all training in catering and cooking.

4. THE WAR OFFICE PERSONNEL BRANCH A.G.14(c)

A.G.14(c) is the personnel branch, under the Director of Organization which controls postings, promotion, pay, etc., through:-

The Officer I/c A.C.C. Records
The Regimental Paymaster, A.C.C.

5. Ranks.

The ranks of A.C.C. Officers in the senior appointments are:-

War Office		Oversea.	
Deputy Director	-Colonel	G.H.Q.	-Lt Colonel
Assistant Director	-Lt Colonel	Army H.Q.	-Major
Deputy Assistant Director	-Major	L of G.H.Q.	-Major
Staff Captain	-Captain	Divisional H.Q.	-Captain
Chief Inspector of Training	-Lt Colonel	Area H.Q.	-Captain

Home Commands

Command Catering Adviser	-Major
Catering Adviser (Command Pool)	-Captain

6. Command Catering Advisers at home

A Command Catering Adviser (C.C.A.) is appointed to each Command H.Q. with a Staff of one Assistant Command Catering Adviser and clerks. The C.C.A. corresponds directly with the War Office on all technical matters. Coming under his supervision are:-

	Para
Catering Advisers (Command Pool).....	7
Specialist Messing Officers.....	12
Supervising Officers of E.C.T.C.s.....	14
Supervising Travelling Instructructors.....	18

7. Catering Advisers (Command Pool) at home

A "Command Pool" of Catering Advisers (C.A.s), under the jurisdiction of the C.C.A., are distributed over Command Supply Depots (C.S.Ds.). Their number corresponds

approximately with that of C.S.Ds. in the Command, carrying only to the extent that some C.S.Ds. subsist too many units for one C.A., while smaller C.S.Ds may be grouped under one C.A. is allotted one clerk.

At home it has been found in practice that this method is better than attachment to Districts, Areas, Divisions or Brigades for the following reasons:-

(a) Economically there is an obvious saving in time, petrol and travelling expenses.

(b) Improvement in efficiency by closer adherence to Directorate policy.

(c) The state of messing and the cook situation of newly incoming units is at once ascertained; urgent requirements can be met and close supervision given and maintained in backward units.

(d) Continuous touch is kept with all Units through their Messing Officers or representative who must visit the Supply Depot at least once a week.

(e) The close prosimity to Units allows ample time to visit early and late meals. the

(f) Improved knowledge of local resources of market produce.

8. Catering Advisers Overseas

In order to meet operational requirements Catering Advisers are appointed to:-

G.H.Q. (Chief Catering Adviser)
Army H.Q.
Divisional H.Q.
L of C Areas

9. The Qualifications of a Catering Adviser

A Catering Adviser's technical qualifications must take precedence over his military qualifications. He must in fact have served an apprenticeship in the catering profession, commencing in the kitchen and then graduating through the various branches to a recognized position of responsibility. No other choice of personnel will satisfy the demand for organization and decision which will be thrust upon him at a moments notice. To appoint as Catering Advisers men who are "very keen on messing", "know good food", or who are more sympathetic catering "well wishers" is disastrous.

The most likely types are obtained from amongst Caterers and Hoteliers who have recognized executive or administrative organizing ability such as:-

Catering Managers from large firms, public services, Railway Companies } with kitchen experience
Hotel Managers } with kitchen experience
Banqueting Managers } with kitchen experience

10. The duties of a Catering Adviser.

The duties of a Catering Adviser may be summarized as follows:-

(a) Visits to Units
(b) Relations with Commanding Officers and Units
(c) Collaboration with Unit Messing Officers
(d) Liaison with Supply Officers and N.A.A.F.I. representatives
(e) Training of Cooks
(f) Assistance to Home Guards, Cadets, Feeding of Troops in transit, at Railway Haltens do Repas, and emergency civilian catering arrangements.

(a) Visits to Units

Visits to units bear no semblance to an inspection. The Catering gives the units the benefit of his expert advice on all technical questions appertaining to catering, thereby advising the unit how to bring about a satisfactory high standard of catering. Reports are kept down to the barest minimum, all that is required by the Catering Adviser is to complete one copy of the report form which is kept in his office for his information and for the necessary "follow up" visits.

The details of the report form are tabulated on a very simplet precise report form which enables the Inspecting Officers to see at a glance the general state of messing and the degree of urgency of such question of personnel, engineer, ordnance and other requirements as have been brought to the notice of Unit Commanders. A copy of the precise report is forwarded weekly to the Command Catering Adviser for information.

(b) Relations with Commanding Officers and Units

The Catering Adviser:-

(i) Gives expert advise on matters pertaining to catering
(ii) Assists formations and units with instruction and demonstration either by himself or through the medium of a travelling instructor.
(iii) Assists with all questions dealing with cooks and their suitability for promotion courses.
(iv) Ensures, in collaboration with the Officer i/c A.C.C. Records, that formations and units are supplied with a full establishment of efficient N.C.Os. and cooks.
(v) Assists Commanding Officers on questions relative to inefficient cooks.

(c) Collaboration with Unit Messing Officer

The Catering Adviser:-

(i) Holds periodical conferences for all

Messing Officers at which topical questions are discussed and practical demonstrations are given.

(ii) Ensures that the ration is used to the best advantage and that all waste is eliminated.

(iii) Advises on the best means of spending the ration cash allowance.

(iv) Advises on methods to be employed in obtaining the best results by an efficient use of all cooking apparatus with special emphasis on economy of fuel.

(v) Gives practical advice on the construction of improvised field cooking apparatus and on Mess Tin Cookery.

(vi) When occasion arises, in conjunction with the Messing Officer, may be called upon to arrange for hot meals to be supplied to troops in transit at Railway Haltes de Repas.

(d) Liaison with Supply Officers and N.A.A.F.I. Representatives

The Catering Adviser:-

(i) Effects continuous liaison between the four parties whose collaboration is essential to good messing, namely the Supply Officer, N.A.A.F.I. representative, Messing Officer and himself.

(ii) In conjunction with these officers he convenes regular meetings for unit Messing Officers at Command Supply Depots which are made as interesting as possible by practical demonstrations. For example with the assistance of a Supervising Travelling Instructor, instruction is given in preparing, cooking and serving, new items of food introduced into the ration scale. The availability of supplies and compilation of Bills of Fare are discussed and attention is drawn to A.C.Is. having a bearing on catering etc.

(e) Training of Cooks

The Catering Adviser:-

(i) Is responsible for the efficient running of Emergency Cookery Training Centres and ensures that the syllabus of training is adhered to, through the medium of the Supervising Officers of E.C.T.Cs.

(ii) Is expected to take a keen interest in the welfare, pay, promotion and upgrading of Cooks.

(f) Assistance to Home Guards, Cadets, troops in transit and "Blitz" feeding

The Catering Adviser:-

(i) Must be available if required to help Home Guard Units in all matters relating to catering and to assist in the training of their cooks.
(ii) Assist Cadet Force Camps and Cadet Units who seek advice on catering or training of cooks.
(iii) In the event of a "Blitz", helps in providing such emergency catering arrangements as may be required by the civil authorities.

11. Transport

It will be seen from para. 10 above that the main duty of a Catering Adviser is to be "out and about" among his units and for that reason he must be mobile and transport must be made available.

12. Specialist Messing Officers

(a) Full time Specialist Messing Officers are appointed to Training Units where the establishment exceeds 1,000. The Officers filling these appointments are catering experts. Where the establishments exceed 1500 the rank of Captain is authorized and for units over 1,000 and under 1,500 the rank of the Messing Officer is that of a Lieutenant.

(b) The special conditions attaching to the appointments of these officers are as under:-

(i) Their services are utilized wholly in connection with unit messing and they are not utilized for other normal regimental duties.
(ii) To compensate for this specialist service, rations are underdrawn by the unit to the extent of 2½ in every 100, subject to the unit being under reasonable centralized conditions of cooking and messing.

13. The Qualifications of a Specialist Messing Officer

The qualifications are the same as for a Catering Adviser. In practice the Catering Advisers are selected from the Messing Officers who show initiative and organizing ability.

The duties of a Specialist Officer

(a) To provide throughout the week 4 adequate meals a day, including a supper meal served at a time which suits the troops evening habits and not before 19.00 hours. For those who go out in the evening there must also be a supper available on their return between 21.00 hours and 22.00 hours.

(b) To prepare the indents for both R.A.S.C. and N.A.A.F.I. portions of the ration and to supervise their reception, weight checking and distribution and maintain all requisite books or accounts.

(c) To ensure a wise and properly balanced expenditure of the Ration Cash Allowance.

(d) To arrange a weekly Bill of Fare, compiled so that the tastes of the men, as ascertained at the Men's Messings (which are held weekly) are provided for in the production of a properly balanced diet.

(e) To ensure that duty rosters are prepared and posted for all personnel employed on messing duties, and to be responsible for the organization, work, discipline, and cleanliness of the N.C.Os., cooks and mess orderlies.

(f) To supervise the preparation and cooking of the food, adjusting the timing to the prescribed meal hours.

(g) To supervise the serving of meals and to prevent, by careful distribution, any tendency to waste due to badly served portions, careless cutting up of bread, or inconsiderate table manners.

(h) To make all arrangements for early and late meals for guards and parties arriving, departing or on special duties.

(i) To provide all personnel, undertaking journeys by road or rail with adequate haversack rations.

(j) To see that all cookhouses, stores, dining rooms and premises used for messing are kept scrupulously clean and the equipment properly maintained.

(k) To ensure the conservation and the segregation of all By-Products and to inspect bins and swill area daily before Contactor removes contents.

(l) To maintain the cookhouse personnel up to full establishment in numbers and ranks, not forgetting understudies and learner cooks.

(m) To keep himself up to date regarding all orders relating to the training, upgrading, pay and promotion of cooks and to watch that relevant entries are made in the soldier's pay book.

(n) To maintain constant liaison with his local Supply Officer, N.A.A.F.I. Manager, Catering Adviser, D.A.D. O.S. and D.C.R.E.

(o) To effect an underdrawal of 2½% complete rations providing the unit is reasonably centrally messed.

14. <u>Supervising Officers of Emergency Cookery Training Centres</u>

These Officers are selected from highly qualified civilian chefs who have had Army experience as cookery instructors. In practice it is found that each Officer is able to supervise six Emergency Cookery Training Centres (para. 15) each training 60 soldier cooks or 48 A.T.S. cooks. Their rank is Lieutenant (Qr,Mr.).

15. Emergency Cookery Training Centres (Home and Abroad)

(a) Training Men

Establishment of 4 A.C.C. cookery instructors (1 W.O., 1 S/Sjt., 2 Sjts)
Period of training - 8 weeks
Numbers under training - 60.

E.C.T.Cs. function to produce trained unit cooks. Those reaching the required standard are transferred to the A.C.C. Those below A.C.C. standard remain as regimental cooks, but are eligible for test later for transfer to A.C.C.

Including A.T.S. (para.(b) below) there are up to 100 E.C.T.Cs in Commands at home.

E.C.T.Cs are attached to units large enough to give each centre 400-600 rations to cook. In most cases, units to which E.C.T.Cs are attached are able to give up some of their cooks and so help the man-power situation.

Each centre trains 60 students for 8 weeks in 4 classes, the intake being arranged so that 15 students come in every fortnight and corresponding number are posted out. E.C.T.Cs are easy to open or close down. The following are used:-

(i) A cookhouse containing a fixed range or facilities for preparation of food.
(ii) A cookhouse containing portable camp equipment such as Bluff ranges, Triplex ranges, Soyer stoves etc.
(iii) Field kitchen where every type of improvised oven and kettle trench is constructed by students who are required to cook food in the oven they have built.

Among the types apparatus constructed are the Adlershot ovens, oil-drum oven, kettle trench and special stress is laid on the oil and water method of firing.

E.C.T.Cs. are usually housed in Nissen huts, one of which is set aside for lecture purposes.

(b) Training A.T.S.

Follows closely the arrangements for men, except that there are 3 instructors training 48 students for 6 weeks. There are 3 classes and the fortnight intake and output is 16. A.C.C. and A.T.S. instructors are employed.

16. Warrant Officers and N.C.O. Cookery Instructors for E.C.T.Cs (Para.15)

Originally selected as described in para 1. Vacancies now filled by promotion from within the corps.

17. Chief Instructors (Officers)

At the large training establishments the Chief Instructor (and deputies) are specially selected officers

with civilian qualifications as caterers and instructors. Those for Messing Officers Training Centres are selected from the best of the Supervising Officers (para 14) having particular regard to their ability as lectures and teachers.

18. Supervising Travelling Instructors (S.T.Is.)

These travelling cookery instructors are exceptionally good all around chefs who have proved their catering and organizing abilities as cookery instructors at E.C.T.Cs. from which they are specially selected. Their duties in Commands, under the direction of the C.C.A. are to help newly formed or backward units in their messing arrangements and in this connection to demonstrate the correct methods of Army cooking and catering to unit cooks. S.T.Is. usually stay several days with one unit before passing on the next. All Warrant Officers Class II.

They are allotted to each Command Pool and operate from C.S.Ds. under the "pool" Catering Adviser (para.7).

19. Flexibility of the Army Catering Corps

A point to note in the organization of the A.C.C. is its flexibility.

Any emergency can be met by a "switching" of personnel. For example a party of advisory experts can be made up by a contribution from Command Pools of Catering Advisers and Supervising Travelling Instructors. This party, with the addition of working teams of student cooks from E.C.T.Cs. under their own instructors can be expanded to organize the feeding of an expeditionary force in transit or a "blitzed" population.

The dissemination of information for the special guidance of the A.C.C. Officers is effected by the issue periodically of Catering Circulars.

20. Army Catering Corps cooks serving with units

War establishments of all units show A.C.C. personnel as "attached". Cook personnel consist of:-

Warrant Officers (Class II) Cooks
Staff Serjeant Cooks
Serjeant Cooks
Corporal Cooks
Private

A.C.C. Standard must be reached before unit Cooks are transferred to the A.C.C.

21. A.T.S. Cooks

The training of A.T.S. cooks is controlled by S.T.4. This service is there closely linked with the Army Catering Corps.

Training, classification, promotion, etc., are based on A.C.C. design and all instruction is given in

A.C.C. controlled cookery training establishments.

22. Hospital Cooks (R.A.M.C. Commitment)

Hospital Cooks (R.A.M.C. and V.A.D.) is a Royal Army Medical Corps commitment but the actual training in hospital cookery is undertaken at the Army Catering Corps Training Centre, Adlershot.

Catering Adviser test hospital cooks prior to upgrading and promotion.

23. Regimental Butchers

There are two types of butchers:-

(a) Royal Army Service Corps tradesmen butchers.
(b) Regimental (non-tradesmen) butchers.

All except the smallest unit are allowed a (regimental) non-tradesman butcher. This type of unit personnel is trained under A.C.C. arrangements controlled by S.T.4.

24. The Army Catering Corps Training Centre, Adlershot

(a) This modern establishment (a pre-war conception, completed in 1940) is the headquarters of the Army Catering Corps. It is modelled on the most practical lines to ensure that students receive up to date instruction in cookery in all its branches.

The A.C.C. Training Centre consists of:-

(a) Headquarters
(b) Instructional Group
(c) Administrative Battalion consisting of -
Bn. H.Q. Administrative Coy.
Q. Branch Holding Coy.
2 Student Coys.

The principal appointments are:-

Commandant -	Colonel
O.C. Admn. Bn.-	Lt Colonel
Chief Instructor -	Major

(b) The average strength of the whole Centre is 2,200 made up as under:-

620	Students (including 70 Officers, 150 A.T.S.)
180	Instructional and Administrative Staff.
700	Holding and awaiting draft.
500	Instructors permanently detached to Command E.C.T.Cs. (para 16)
2,200	

(c) The building occupies an area of 10,000 sq.ft and is equipped with the latest types of cooking equipment fuelled by gas, steam and solid fuel. The arrangement of

the building is carefully planned to facilitate the easy relation of work, commencing With the reception of the bulk goods into the main storage rooms and distribution thence into various larders, pastry rooms and kitchens - the larger of which are on the ground floor.

Main details of the lay-out are under:-

Ground Floor - 5 complete kitchen departments - kitchen - larder - 3 Dining halls seating 500, 400 and 60, pastry. Officers and Serjeants Messes. Administration Offices
Main Lecture Hall seating 250 fitted with demonstration gas ovens and apparatus and cinematograph Equipment.
Vegetable preparation rooms.
Ration and utensil stores.
Refrigeration chambers.
Cooking apparatus and equipment consisting of modern coal, gas, steam and electrical apparatus.

First Floor - 10 Self contained kitchen - class rooms each completely fitted.
6 Lecture rooms.
Students changing rooms provided with hot and cold water.
Wash basins and individual lockers.
Administration Offices and stores.

Outbuilding - Fully equipped kitchen and service supplying 700 capacity hall.

Annexe - 2 large fully equipped kitchens, larders and pantries.

Field Kitchen- Containing all types of field cookers and ovens such as Bluff ranges, Aldershot ovens, camp boilers and small equipment. Improvised apparatus, drum ovens, kettle trenches, hot plates and larger dugout Kitchens for desert warfare. All apparatus operated by wood, coal, coke, sawdust, diesel oil, crude oil, and waste oil and water.

(d) Experimental work. New ideas on cookery apparatus designs are encouraged. New inventions, covering all types of cooking apparatus, and equipment, are tested for the War Office.

(e) Research work. Cooking tests are carried out for the War Office in conjunction with S.T.6. (Supply Branch) and the Ministry of Food.

(f) Training. The main types of Courses of Instruction include:-

Commanding Officers' (Including A.T.S.) Course on Messing

Regimental Messing Officers' Course (including A.T.S.)
Regular Army Cooks' Courses (for post war purposes)
Sergeants Cooks' Course (Men and A.T.S.)
Corporal Cooks' Course (Men and A.T.S.)
Cooks' Grading Course (Men and A.T.S.)
Hospital Cooks' Course (R.A.M.C., V.A.D. and A.T.S.)
Officers Mess Cooks' Course (men and A.T.S)
Regimental Butchers' Course.

Students under training cook from 5,000 to 7,000 rations daily for neighbouring static formations. Food is conveyed hot from the Centre in insulated containers or cooked in the unit cookhouses by students, from advanced classes, under their instructors.

25. Army Schools of Cookery.

Schools of Cookery are designed to train large numbers at one time, as distinct from the "sausage machine" output of 15 every fortnight at an E.C.T.C. (para.15) which can be attached to an establishment giving primary military training to "intakes" from civil life.

The larger the number under training, the larger the building required and administrative staff necessary. Army Schools of Cookery are operating as under:-

Middle East School of Cookery
London School of Cookery

26. Messing Officers' Training Centres

The establishment of a Messing Officers' Training Centre includes:-

A Commandant	- Major
Chief Instructor	- Lt. Qm
Instructor	- W.O. Class II

There are 40 Officers under training at one time on Courses of 10 days duration, for the Messing Officers' course, or 2 days for a Commanding Officers Course.

This type of Centre, primarily designed for the training of regimental messing Officers in units whose strength is 1,000 (units of 1,000 and over have an A.C.C. Specialist Messing Officer) is operated in 3 Home Commands. Messing Officers in other Commands are trained at the A.C.C. Training Centre.

27. Training in Catering and Cooking. (Not included)

28. Syllabus of training (Not included)

29. Rates of Pay (Not included)

30. The Army Catering Corps Regimental Association (Not included)

The War Office (S.T.).
October, 1942.

LIST OF ITEMS TO BE CARRIED IN MODEL STOCK FOR ADVANCE DEPOTS

CLOTHING:

Belt, web, waist
Cap, field, cotton, OD or
Cap, wool, knit
Coat, mackinaw
Drawers, cotton, short
Drawers, wool
Gloves, leather, heavy
Gloves, wool, OD, leather palm
Handkerchiefs
Headbands, liner, helmet, M-1
Jackets, field, OD or
Jackets, field, M-43
Jackets, herringbone twill
Laces, leggings
Laces, shoe
Leggings, canvas
Liners, helmet, fibre
Neckbands, liner, helmet, M-1
Overshoes, Arctic
Raincoats, synthetic, OD
Shirts, flannel
Shoes, service or Boots, combat
Socks, wool, cushion sole
Socks, wool, light
Socks, wool, ski
Sweater, high neck
Trousers, herringbone twill
Trousers, wool serge
Undershirt, cotton
Undershirt, wool

EQUIPAGE:

Bag, canvas, field
Bag, canvas, water, sterilizing
Bag, carrying, ammo
Bag, carrying, rocket
Bag, sleeping, wool
Belt, magazine, BAR
Belt, cartridge, cal. .30 dismounted
Blanket, wool, OD
Can, meat
Canteen, M-1910
Carrier, pickmattock, intrenching
Case, sleeping bag, water repellent
Cover, canteen
Cup, canteen
Fork, M-26
Knife, M-26
Pack, field combat (Haversack and Carrier, pack will be issued until exhausted)
Pickmattock, intrenching
Pins, tent, shelter, wood
Pocket magazine, carbine, Cal. 30
Pole, tent, single section (Pole, tent, shelter half will be issued until exhausted)
Carrier, shovel, intrenching
Pouch, first aid packet
Shovel, intrenching
Spoons, M-26
Strap, carrying, general purpose
Suspenders, belt, M-1936
Tag, identification
Tent, shelter half
Towel, bath

REGULAR SUPPLIES:

ORGANIZATIONAL EQUIPMENT:

Axe, chopping, single bit
Bucket, general purpose, galv., 14 qt.
Cans, corrugated, galv.
Cans, water, 5 gallon
Containers, round, insulated, w/inserts
Heater, water immersion type
Lantern, gasoline
Lantern, kerosene
Outfit, cooking, 1-burner
Outfit, cooking, 2-burner
Outfit, cooking, 20-man
Picks, railroad
Range, field, M-37, Pack "A"
Range, field, M-37, Pack "B"
Shovels, round point, general purpose, D-hdld

EXPENDABLES:

Broom, corn
Brushes, sanitary, 17"
Brush, scrubbing
Candles
Calcium, hypochloride, ampules
Compound, germicidal rinse, 3.3
Insecticide, powder, body, 2 oz can
Insecticide, spray, DDT
Dubbin
Handles, mop, SLT
Lime, chlorinated
Matches, safety
Mop, cotton
Paper, toilet, 1,000 sheet roll
Powder, scouring
Prophylactics, chemical
Prophylactics, mechanical
Sprayers, liquid
Soap, laundry
Tablets, halazone
Wool, steel

LIST OF ITEMS TO BE CARRIED IN MODEL STOCK FOR ADVANCE DEPOTS (Cont'd)

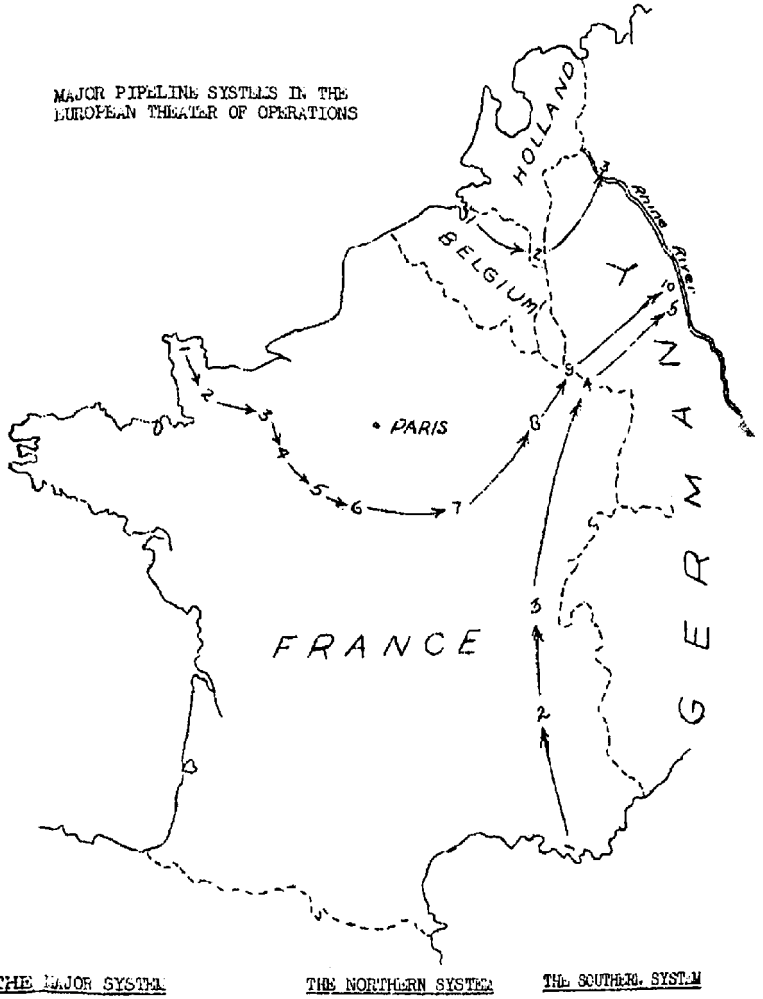
ORGANIZATIONAL EQUIPMENT (Cont'd):

Tool sets, carpenter
Tool sets, carpenters & wheelright
Typewriters, portable and non-portable
Units, fire for range, field, M-37

OFFICE SUPPLIES:

Envelopes
Fluid, duplicating, spirit process
Ink, mimeograph, 1 lb. can
Ink, writing, fluid
Paper, bond
Paper, carbon
Paper, carbon duplicating, spirit process
Paper, manifold
Paper, mimeograph
Paper, master copy
Paper, printing, offset
Pencils, lead
Stencils, waxless, dry

MAJOR PIPELINE SYSTEMS IN THE EUROPEAN THEATER OF OPERATIONS



THE MAJOR SYSTEM

-Cherbourg (O-1020)
-La Haye Du Puits (T-1624)
-St Lo (T-4060)
-Torigny-sur-Vire (T-5050)
-Domfront (T-6000)
-Alencon (Z-3080)
-Chartres (R-3000)
-Chalons-sur-Marne (Y-7050)
-Thionville (U-6060)
-Mainz (M-3765)

THE NORTHERN SYSTEM

1-Antwerp (J-7090)
2-Maastricht (K-5552)
3-Wesel (A-2241)

THE SOUTHERN SYSTEM

1-Marseille (T-4010)
2-Lyon (X-9080)
3-Dijon (O-0060)
4-La Force (P-4080)
5-Frankenthal (M-4505)

HEADQUARTERS
SERVICES OF SUPPLY
EUROPEAN THEATER OF OPERATIONS

Office of the Chief Quartermaster

Quartermaster Service Reference Data
VOLUME II (Revised)
OPERATIONAL-PLANNING 1 JANUARY 1944

Chapter 3

Gallons "per man per day" for large Forces

	Composition of Forces (Per Cent of Total)			Gallons per Man per Day
	FF	AF	SCS	
Total MT gasoline and diesel fuel for all purposes	100	0	0	2.10
	0	100	0	1.25
	0	0	100	1.14
	71	8.7	20.3	1.83
	50	25	25	1.65
	64	18	18	1.77
Total MT gasoline and diesel fuel for vehicles only	100	0	0	1.73
	0	100	0	.90
	0	0	100	.77
	71	8.7	20.3	1.46
	50	25	25	1.28
	64	18	18	1.41
Total MT gasoline and diesel fuel for miscellaneous equipment, including field ranges.	100	0	0	.375
	0	100	0	.35
	0	0	100	.37
	71	8.7	20.3	.37
	50	25	25	.37
	64	18	18	.37
Gasoline for field ranges	All forces			.08
Kerosene for lighting and cleaning	All forces			.005

HEADQUARTERS
SERVICES OF SUPPLY
EUROPEAN THEATER OF OPERATIONS

Office of the Chief Quartermaster

Quartermaster Service Reference Data
VOLUME II (Revised)
OPERATIONS-PLANNING 1 JANUARY 1944

Chapter 6

PER MAN PER DAY FIGURES - POL PRODUCTS
(Combat Conditions)

	Gallons (US)	Pounds (including container)
MT gasoline (80 Octane) (Including Powered Equipment)	1.48	12.03
Diesel Fuel (Including Powered Equipment: for vehicles)	.27	2.12
Total Fuel Including Gasoline for Powered Equipment	1.75	14.15
Gas for Cooking and Heating	.08	.65
Total Fuel Including gas for cooking and Heating	1.83	14.80
Engine Oil	.0525	.454
Gear Oil	.0175	.151
Kerosene	.0049	.042
Total Oil	.0749	.647
Grease - Pounds	- - - -	.0318
Grease - Converted to Gals	.0032	- - - - -
TOTAL POL	1.9081	15.4788

Gallons "Per man per day" vary with the make-up of the total troop strength depending on the proportion of Field, Air and SOS Forces. The above figures are recommended for use when these proportions are not known.

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

CONSUMPTION RATES

CLASS III

	FIRST ARMY	THIRD ARMY	NINTH ARMY	TOTAL THREE ARMIES OF 12 ARMY GP	SEVENTH ARMY	FIRST FRENCH	TOTAL 6 ARMY GP	TOTAL FIVE ARMIES OF 12 & 6 GP
TONNAGE ON HAND BEGINNING OF PERIOD	12,312	10,419	12,052	34,783	16,830	10,738	27,586	62,351
TONNAGE DELIVERED (28 DAY PERIOD)	46,270	58,249	36,108	140,627	46,429	19,295	65,724	206,351
TOTAL	58,582	68,668	48,160	175,410	63,259	30,033	93,292	268,702
TONNAGE ON HAND END OF PERIOD	9,588	11,088	18,959	39,635	15,271	9,982	25,253	64,888
TONS CONSUMED	48,994	57,580	29,201	135,775	48,988	20,051	68,039	203,814
AVERAGE RATION STRENGTH	385,429	441,000	386,571	1,195,000	337,219	222,096	559,315	1,754,315
POUNDS PER MAN	10.169	10.445	6.338	9.090	11.384	7.222	9.732	9.294
AVERAGE FIELD STRENGTH	304,473	314,448	304,489	923,410	296,127	213,096	509,223	1,432,633
POUNDS PER MAN	12.873	14.649	7.762	11.763	12.964	7.527	10.689	11.381
TOTAL DIV DAYS	350	371	329	1,050	379	215	594	1,644
TONS/DIV/DAY	193.983	155.202	88.757	129.310	126.617	93.260	114.544.	123.974

The period covered by this report is 24 February 45 to 23 March 45 for the First, Third and Ninth Armies; 25 February to 24 March 45 for the Armies of 6th Army Group.

The field strength figures, with the exception of First French Army, are averages of MRU reports for the 1st and 15th of March. Figures for the First French Army were taken from their weekly G-4 report.

Ration strength for First, Third and Ninth Armies is reported by ASCZ and compiled from depot issue of rations to the Armies. Ration strength for the First French Army is taken from their weekly G-4 report.

FROM: Report of Consumption rates of US Forces in the final advance to the Rhine, SHAEF, dtd 25 Apr 45. (Prepared by Statistics Section, Office of the Assistant Chief of Staff, G-4 Division).

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