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THE GENERAL BOARD

United States Forces, European Theater

MOTOR TRANSPORT SERVICE AS A PERMANENT PART OF THE TRANSPORTATION CORPS

MISSION: Prepare a report and recommendations to substantiate the feasibility of making the motor transport service an organic part of the Transportation Corps.

The General Board was established by General Orders 128, Headquarters European Theater of Operations, U.S. 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.

File: 321/11

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MOTOR TRANSPORT SERVICE AS A PERMANENT PART OF THE TRANSPORTATION CORPS

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Note: In Study Number 125, "Motor Transport Service as a permanent part of the Transportation Corps", annotation has been accomplished by footnotes or by direct reference to source documents. Where no annotation to a statement is given the statement is the personal experience or observation of the Chief of the Transportation Section of the General Board, and/or the writer of study Number 125. The annotation reference numbers in this regard were omitted because of the monotonous frequency with which they would occur. Consultants listed in this study were for the purpose of verifying observations of the above two officers; in many instances they also substantiated their experiences as well.

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MOTOR TRANSPORT SERVICE AS A PERMANENT PART OF THE TRANSPORTATION CORPS

PART ONE

THE PLACE OF THE MOTOR TRANSPORT IN THE TRANSPORTATION SYSTEM

CHAPTER 1

THE MISSION OF THE TRANSPORTATION CORPS

SECTION 1

IN THE COMMUNICATIONS ZONE, EUROPEAN THEATER OF OPERATIONS

1. At the Office Chief of Transportation. The mission of the Transportation Corps was the transporting of supplies and personnel from ports to destinations and any subsequent movement. For motor transport the entire mission was the same if other facilities were not available, or the supplementing of other facilities if such facilities could not adequately meet the demands. In general, however, for motor transport the mission was a combination of the two and specifically was transporting, by motor vehicles, bulk supplies and personnel between such points as necessary to assure fulfillment of the Transportation Corps' mission.

2. In the Sections of the Communications Zone the mission of the Transportation Corps was one of operating the transportation facilities assigned and operating the Transportation Corps installations. For the motor transportation office this was the operation of the assigned motor transport units.

SECTION 2

IN THE COMBAT ZONE, EUROPEAN THEATER OF OPERATIONS

3. At Army Group Level. The mission of the Transportation Sections in the Army Groups was to advise the Commanding General and General Staff on all matters pertaining to the Transportation Corps and to maintain liaison with Transportation Staff Sections of subordinate commands and other transportation agencies.

4. In the Armies. The mission of the Transportation Sections in the Armies varied slightly, but generally was the same. In some instances it merely was the same as stated in the preceding paragraph for Army Groups, while in others it had the added mission of controlling the operation of the motor transport units. In the lower echelons of each army organization, as corps and divisions, the mission was mainly operational regarding the units assigned.

5. In the Air Forces. The mission of the Transportation Sections in the Air Forces was generally the same. It was the furnishing of the necessary transportation to effect all operations of the command concerned, and maintain liaison with the other major commands of the theater to co-ordinate movements.

CHAPTER 2

THE ORGANIZATION OF THE TRANSPORTATION CORPS

SECTION 1

AS ORGANIZED BY THE WAR DEPARTMENT

6. War Department Orders. The Transportation Corps was established by the War Department in 1942 and assigned to it were activities and functions formerly belonging to the Water Transport Branch of the Quartermaster Corps.[1] Activities and functions concerning railways, formerly belonging to the Corps of Engineers, were also transferred to the Transportation Corps in 1942 by the War Department.[2] These orders, although they stated that the Chief of Transportation was "charged with the direction, supervision, and co-ordination of all transportation functions for the War Department and with the operation of field installations pertaining thereto," did not deal with the operation of the organizations of the Motor Transport Service; that is, Quartermaster truck and car companies and the supervising Quartermaster battalions and regiments, now called Quartermaster groups. These orders contained regulations concerning only the ports, water transport, and the Military Railway Service and provided for staging areas and group regulating stations. Later orders expanded on some of the responsibilities of the Transportation Corps as originally established, introducing the term "commercial traffic branches", but did not add operation of the motor transport units.[3] Planning, training and operation of this bulk transportation facility remained with the Quartermaster Corps. Further orders, affecting motor transport in theaters of operation, is covered in paragraph nine of this chapter and also the whole of chapter four.

7. Organization. As organized in the War Department, there was provided a Highway Division, because it was necessary in co-ordinating the transportation of the supplies and personnel of the army in the United States, to include commercial vehicles as well. War Department orders, however, did not include any provisions for training or operation of Motor Transport Service or the units. The Highway Division carried out research and development of bulk transport vehicles for use in Theaters of Operations, expedited equipment requisitions for motor transport units where they were under Transportation Corps in a Theater of Operations and supervised all traffic of supplies and personnel by commercial motor vehicles in the United States. Later the allocation of administrative vehicles to installations also became a function.

SECTION 2

AS ESTABLISHED IN THE EUROPEAN THEATER

8. European Theater of Operations Orders. With the formation of the European Theater of Operations in early 1942, orders were issued which included the Motor Transport Service as a part of the responsibilities of the Services of Supply.[4] (Covered in further detail in paragraph nine which follows). However, this Motor Transport Service included all of the functions which at that time in the United States were responsibilities of the Quartermaster Corps (i.e. design, development, procurement, storage, issue, operation and all echelons of maintenance). Later European Theater orders are covered in connection with the Communications Zone in paragraph ten below.

9. Services of Supply Orders. The Headquarters Services of Supply also issued orders which set forth the detail of the Motor Transport Service as a part of the Transportation Corps.[5] However, with the issuance of War Department Circular 245 in 1942, the functions of design, development, procurement, storage and issue, and third, fourth and fifth echelons of maintenance for motor vehicles were transferred to the Ordnance Service.[6] Operation of the motor transport units remained with the Quartermaster Service. The Headquarters, Services of Supply, then transferred the same functions (as mentioned in War Department Circular 245, 1942) to the Ordnance Service and the operation of the motor transport units to the Quartermaster Corps. Traffic Regulation and co-ordination remained as a function of the Transportation Corps in the European Theater. Later these responsibilities were set forth in a single circular.[7] There were numerous difficulties during the ensuing year and in July, 1943, the operation of motor transport units was returned to the Transportation Corps in the European Theater.[8] When the Motor Transport Service was returned to the Transportation Corps in July, 1943, the planning began for Operation Overlord. In order to accomplish this planning the Motor Transport Service was organized into a Requirements Branch, Allocation Branch and a Training Branch. As active operations began (other than those conducted in the United Kingdom prior to the invasion of the continent) the organization was expanded as will be shown in the following paragraphs.

10. Communications Zone Orders. In the organization of the Communications Zone the transition from the Services of Supply to the Communications Zone caused no interruptions to activities. The same organization kept operating without any noticeable change other than the establishment of a forward echelon for purposes of more detailed planning. Motor Transport Service remained as an integral part of the Transportation Corps. By European Theater of Operations orders, the operational as well as planning elements of Motor Transport Service were established and organized.[9] By the implications of the European Theater of Operations Standard Operating Procedure 31, the sections of the Communications Zone could also establish motor transport offices as part of the Section Transportation Office. These offices were established, generally similar to the Motor Transport Service Headquarters, for the control and operation of the motor transport units performing port clearance and static operations.

SECTION 3

AS ORGANIZED IN THE EUROPEAN THEATER

11. European Theater and Communications Zone Organizations. Principal among the Communications Zone motor transport organizations was the Motor Transport Service Headquarters. This headquarters served in a dual capacity for the Headquarters, European Theater of Operations and the Headquarters, Communications Zone, as the staff of the Chief of Transportation. This, as organized originally, was for planning Operation Overlord, but as more direct control was taken over the organization finally evolved into the Executive Office, comprising the chief, deputy and executive officer, and the functions of the adjutant's office. The work of planning and operation was divided into a staff branch, operations branch, status branch and an equipment branch. The Communications Zone sections organized motor transport branches similarly although the names of these branches in the Transportation Section were altered in some cases and a staff branch was not included because long range planning for the European Theater, or general analysis of staff problems, was not required.

12. Army Group Organizations. The 12 Army Group formed a Transportation Section in December 1943. The number of personnel was small, however, and operated without a break-down into divisions, branches, etc. The section operated strictly as a special staff section for advice to the Commanding General and General Staff. The 6 Army Group had an officer designated as the Transportation Officer, but this officer and a small staff formed the Transportation Section of G-4. The organization formed rail, motor and traffic branches for functioning.

13. Army Organizations. The Army organizations varied. Field army organizations which furnished a good test of all methods, are shown below. In lower echelons the small amount of transportation was normally operated by Corps Quartermasters, Division Quartermasters or a Transportation officer of the respective G-4 sections.

a. First United States Army - A Transportation Section with a Transportation Officer in G-4 allocated units to lower echelons and received requests and set priorities for army units. The Quartermaster operated the truck companies. Vehicles were dispatched in accordance with the priority commitments arranged by the Transportation Section. Motor transport units were dispatched on a more or less permanent basis to the various services.

b. Third United States Army - A Transportation Section with a Transportation Officer in G-4 exercised full operational control over the motor transport units.

c. Seventh United States Army - The Seventh United States Army was the only one with a Transportation Section as a Special Staff Section. The section was fully organized including a motor transport division. The operation worked well and co-ordination and continuity of transportation of supplies and personnel from the ports to destination reached from the Communications Zone right down to the Division.

d. Ninth United States Army - The Ninth United States Army organization was similar to that shown above for the First United States Army.

e. Fifteenth United States Army - Transportation section in G-4 handled movement control problems only. Operation of the motor transport units was by the Quartermaster.

14. Air Force Organizations. The Air Force organization paralleled the ground force organization. The plans followed in each air force were, in general, as set forth in fighter command orders.[10] These specified that the command responsibilities for proper operation and maintenance of all vehicles belonged directly to each commander. Responsibility for operation was vested in the A-4 Section of the main headquarters and in S-4 Section of the lower echelons. Responsibility for maintenance was vested in the Ordnance Officer. A Station Transportation Officer was appointed as assistant S-4 to supervise operations.

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2. War Department General Order 60, 1942, as amended by Section II, General Order 66, 1942.

3. War Department Circular 135, 1942, as amended by Section III, Circular 287, 1942.

4. ETO Circular 2, dated 13 June 1942, and later ETO General Order 19 dated 20 July 1942.

5. SOS Circular 13, dated 19 August 1942.

6. Section IV of War Department Circular 245, 1942, as later amended by Section III, Circular 267, 1942; Section II, Circular 274, 1942; Section III, Circular 317, 1942; Section III, Circular 318, 1942; Section I, Circular 387, 1942; and Circular 418, 1942.

7. SOS Circular 44 dated 3 November 1942.

8. SOS Circular 45, dated 22 July 1943, amending Circular 44 dated 3 November 1942.

9. ETO SOP 31, dated June 1944 (later superseded by revisions in July and the last dated 2 December, 1944) and ETO Organization Order 48, dated 26 November 1944.

10. Fighter Command Memorandum Number 75-1, "Travel and Transportation," dated 17 February 1945, Headquarters, 8 Fighter Command.

CHAPTER 3

THE FUNCTIONS OF THE TRANSPORTATION CORPS

SECTION 1

IN THE COMMUNICATIONS ZONE, EUROPEAN THEATER OF OPERATIONS

15. As Part of Theater Headquarters. The function of the Transportation Corps, when the Chief of Transportation acted as the Special Staff Officer on the staff of the Commanding General of the European Theater, was the development of the theater plans and administration thereof for transporting the supplies and personnel to destinations and any subsequent movement. Responsibilities of the chief of Motor Transport Service, as a member of the staff of the Transportation officer in the European Theater, were to ascertain the requirements for motor transport units, additional personnel and special equipment; the recommending of allocations of motor transport units to major commands of the theater; and staff advice on matters pertaining to the operation of motor vehicles.

16. As Part of Communications Zone Headquarters. The functions of the Transportation Corps when the Chief of Transportation acted as the Special Staff officer on the staff of the Commanding General of the Communications Zone, was the same as stated in the preceding paragraph except that more detailed control and operational jurisdiction was included. The responsibilities of the chief of Motor Transport Service as a member of the staff of the Transportation Officer for the Communications Zone Headquarters covered several items. They were, first, the recommendation of allocations of motor transport units to major subordinate commands of the Communications Zone; second, the operation of those units designated for line of communication hauling; and, third, the technical supervision of all other motor transport units in the Communications Zone (including expediting supplies and parts and preventative maintenance and training); also, the maintaining of statistics regarding the operation of all motor transport units in the Communications Zone and analysis of the statistics to determine corrective action necessary to eliminate inefficient operations. The functions also included technical advice on all staff matters regarding the operation of motor vehicles.

17. In the sections of Communications Zone the functions of the Transportation Corps were for the most part operational. For motor transport, this included the operation of all motor transport units in the section; also, the allocation and reallocation of those units to port clearance and static operations in accordance with the changing requirements. An additional function was the carrying into effect of the technical directives of the Motor Transport Service Headquarters regarding operation, maintenance and documentation of motor transport units and activities.

SECTION 2.

IN THE COMBAT ZONE, EUROPEAN THEATER OF OPERATIONS

18. In the Army Groups. The functions of the Army Group Transportation Section in carrying out the mission entailed a review of the Transportation Corps responsibilities for planned invasions and subsequent operations, and the consequent transportation capabilities for logistical support of continued planned tactical operations. In addition, the co-ordination of Transportation requirements of the armies under their

control, including the reallocation of units to meet changing requirements or obtaining additional units through theater headquarters as necessary.

19. In the Armies. The functions of the Transportation Section (in whatever form they existed) were the reallocation of the motor transport units to lower echelons where necessary or the stipulation of operation and control methods of the units maintained as army troops. In some instances this operation and control was exercised direct. In addition, direct liaison was maintained with the Motor Transport Service agency of the Transportation Corps regarding supplies arriving via a line of communications express route.

20. In the Air Force. The functions of the Transportation Sections in the various echelons, in general, followed those of the ground forces. In the upper echelons it was primarily allocation of units and the coordination of movements. In the lower echelons it was primarily the operation of the units and the pooling of all motor transport facilities. The Station Transportation Officer also advised the Commanding Officer on the operation of all transportation at the station. The detail of the functions was, in many respects, comparable to the Communications Zone functions.[1]

BIBLIOGRAPHY

1. Headquarters VIII Fighter Command Memorandum 75-1, dated 17 February, 1945, and Services of Supply Circular 9, 1944.

CHAPTER 4

WAR DEPARTMENT CIRCULAR 256, 1943

SECTION 1

PERTAINING TO COMMUNICATIONS ZONE

21. Control Headquarters. War Department Circular 256 dated 16 October, 1943, covered a major reorganization vitally affecting the transportation system of the entire army. Throughout, it gave considerable space to the motor transport organizations in the various elements of the army. Paragraph 17 of the circular specifically covered Transportation Service. In general, the final plan followed in the Communications Zone European Theater of Operations, followed this circular fairly closely. The principles outlined in the circular for a co-ordinated motor transport system in conjunction with and supplementing the other transportation facilities had been advocated in the European Theater of Operations for some time. The circular specifically stated that the Motor Transport Service was organized under the Chief of Transportation and provided for an administrative headquarters. Based on this document, Headquarters, European Theater of Operations published Standing Operating Procedures establishing the Motor Transport Service in the Transportation Corps. Detail of this is covered below in section three of this chapter. Figure three in War Department Circular 256, 1943, shows the Transportation Service as directly under the Communications Zone Headquarters and not decentralized to the Sections of the Communications Zone. Directly under the Transportation Service are shown all the means of transporting supplies and personnel in a complete system--coastal shipping, rail, highway (Motor Transport Service), inland waterways, and in addition, co-ordination of air with the other forms of transportation.

22. The Motor Transport Service. In addition to the administrative headquarters, War Department Circular 256, 1943, also specified that the required number of Quartermaster motor vehicle units would be included in the Motor Transport Service. In addition, as pointed out in the preceding paragraph, this Motor Transport Service was directly under the Transportation Service and not decentralized.

23. Supporting Units. The War Department circular went on to specify that Ordnance maintenance units, and such other auxiliary services as were needed, were included in the Motor Transport Service. It pointed out that signal service organizations, organized under Table of Organization and Equipment 11-500 may be required for the control of operations and at the larger motor transport centers more or less complete station services may be required.

SECTION 2

PERTAINING TO COMBAT ZONE

24. In Armies. War Department Circular 256, 1943, covered Army motor transport facilities by stating that the principles followed in providing organic means for supply were based on Field Manual 100-10 but that certain changes were made. Among these changes, Armies were charged with the responsibility, and were being provided with sufficient means to place supplies within convenient reach of regiments, separate battalions and smaller units. The Army was provided with

sufficient personnel and transportation to handle all supplies upon arrival in the combat zone, including establishing and manning of supply points. Specific organization of the motor transport facilities in the Armies was not given; actual functional organizations used in the European Theater of Operations were as given in section three of chapter two of this study.

25. In lower echelons of the Army the War Department circular did not specify the exact organization of the motor transport facilities. It stated, however, that the motorized division, as a separate type of organization, had been eliminated. In its place it specified that the infantry division could be transported by a troop transport battalion, consisting of six truck companies. It required training of all infantry divisions to include use of the troop transport battalion. It further pointed out that by the changes effected in the infantry division, the strength had been reduced approximately eight per cent, and in motor vehicles fourteen per cent with no change in the basic organization. No special comment was made on Corps motor transport facilities. For other units, however, it noted that in most cases extra transport for reserves (except ammunition and units consuming large amounts of fuel) was not provided and that resupply was by use of available unit transportation.

26. In the Air Force. Except for the references to co-ordination of air transport with the other forms of transportation for supplies and personnel, no coverage was given the motor transport units in air force organizations.

SECTION 3

ADAPTION IN THE EUROPEAN THEATER

27. European Theater orders. Based on War Department Circular 256, 1943, the European Theater of Operations published a Standing Operating Procedure[1] in June, 1944, for the operation of motor transportation in the Communications Zone. This was later revised in July, 1944, and again in December 1944. The changes were made in order to bring the procedures up to date in the light of experiences. Coupled with this last revision was the publication of another Standing Operating Procedure[2] in December, 1944, covering Red Ball Motor Transport Operations. This was based on experiences of Motor Transport Service up to that time with line of communications hauling (particularly the "Red Ball Express"), and in the scope of the Standing Operating Procedure it stated that it pertained to "Red Ball and similar line of communications movement of supplies and personnel by motor transportation." Based on this doctrine as representing the attitude of Headquarters, European Theater of Operations regarding War Department Circular 256, 1943, the Communications Zone proceeded with certain refinements of the orders, and with actual operations. After VE-Day, and while line of communications hauling was still being operated, this Communications Zone order was rescinded and the same content published as a European Theater of Operations order[3] making the Motor Transport Service a Theater Service under the Chief of Transportation.

28. Communications Zone Orders. Coupled with the European Theater of Operations orders mentioned in the preceding paragraph, the Communications Zone later issued other orders and directives regarding Motor Transport Service. After the initial issue of the European Theater of Operations Standing Operating Procedure in June, 1944, the provisional Motor Transport Brigade began operations. It operated as the Motor Transport Service control agency for Advance Section during

the Normandy campaign and for some time after the breakthrough at St. Lo (VT 4963). Ordnance and units of the other services were attached to the Motor Transport Brigade (which was a provisional organization of the Advance Section only). This attachment of supporting troops was in keeping with the general principles of War Department Circular 256, 1943. After the Motor Transport Brigade ceased functioning, the Motor Transport Service assumed the responsibilities for operations of the line of communications hauling since they had become intersectional. Ordnance support was attached as before when the number of vehicles which were involved warranted it. At major marshalling yards and any such large stations of the Motor Transport Service, small station services as provided in War Department Circular 256, 1943, were set up. These, however, did not quite reach the magnitude envisioned in the circular, but generally can be said to have been successful, except for communications. Since that time, Table of Organization and Equipment 55-402E dated 7 May, 1945, for a Headquarters and Headquarters Company, Highway Transport Service, has been published, which includes such supporting troops or station services in the remarks column. The last Communications Zone order issued on transportation fully established the Motor Transport Service in the Transportation Corps along with the other independent transportation services. This organized the Motor Transport Service as a Service Command under the Chief of Transportation.

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1. Headquarters, European Theater of Operations Standing Operating Procedure No. 31.

2. Headquarters, European Theater of Operations Standing Operating Procedure No. 53.

3. General Order 179, 1945, Headquarters, European Theater of Operations.

4. General Order 82, 1945, Headquarters, Communications Zone,

CHAPTER 5

PLANNING FOR OPERATION OVERLORD

SECTION 1

BASIS FOR MOTOR TRANSPORT UNITS

29. Communications Zone Requirements. For operation Overlord the total Communications Zone Motor Transport requirements were based on the assumption that all supplies for all troops scheduled to be on the continent at the peak of operations would at some stage be transported by truck. After much study 65 pounds per man per day was used as a basis in calculating truck requirements. In the distribution of the supplies it was estimated that at the peak 70% would require port clearing, an average of eight miles. It was further considered that approximately forty thousand tons per day would require rehandling in static operations. Of any total tonnage to be moved overland; in line of communications hauling (which was approximately one-half of total arriving) it was estimated that 25% would be moved one-quarter of the distance, 25% one-half of the distance and 50% the entire estimated 150 miles. For these total requirements it was estimated that 240 truck companies would be required even when including heavy duty equipment in two-thirds of the companies. In addition, proportionate battalion headquarters and group headquarters would be required for their supervision. For car companies, original planning started by estimating the number of cars which would be required in the operation of all the principal installations including the principal headquarters. By eliminating the number of passenger carrying vehicles which would be produced by the pooling of organic vehicles, plus the assembling of approximately a thousand administrative vehicles for tables of distribution, the requirement was reduced to three car companies. The car companies were allotted one to the Combined Theater and Communications Zone Headquarters, one to the Advance Section Headquarters and the other for a section to be organized. Field force requirements later reduced the available car companies to two. This did not include one car company in the Southern Line of Communications, for which separate plans were made. By adding additional drivers to all truck companies so that they could operate 24 hours a day, increasing the size of vehicles in two-thirds of the companies, providing for pooling organic motor vehicles in installations to reduce static operation requirements, and making full use of civilian motor transport, the total requirements for the first phase of the continental operation were reduced to the bare minimum of 160 companies. Twenty additional companies available later brought the total to 180. While this required almost perfect operation, in order to meet the demands on motor transport facilities, it was an absolute necessity because of the manpower shortage. In later stages of the operation as plans for the final drive were made, it was anticipated that 75 additional truck companies were necessary to meet the commitment. In appendix B of the "History of Motor Transport in the European Theater," on file in the Office Chief of Transportation, European Theater, is a compilation of the motor transport requirements for the final operation. Based upon this the 75 extra companies were furnished. This brought the total then assigned to Communications Zone operations to 245 companies.

30. Army Requirements. Army requirements were based on "rules of thumb" adopted from experience in the African campaign and the application of additional considerations for the operation to be performed. All companies were equipped with standard 2½ ton 6 x 6 trucks. Basically they were as follows: one company per Army Group

Headquarters, one company per Army Headquarters, two companies per Corps, three companies per Division plus one extra company per new type Armored Division, the old type Armored Division having organic truck companies.

31. Air Force Requirements. The requirements for the Air Force motor transport units were prepared by the Air Force Headquarters. The Air Force truck companies are, of course, the special aviation units. Latest tables are Table of Organization and Equipment 10-517 Quartermaster Truck Company (Aviation) dated 2 January 1945 and Table of Organization and Equipment 10-518 Quartermaster Truck Platoon (Aviation); Separate, dated 2 January 1945.

SECTION 2

INTEGRATION WITH OTHER FORMS OF TRANSPORTATION

32. With ships in port or with amphibian trucks. One of the principal parts in the planning for Operation Overlord was the integration of the truck companies engaged in clearing cargo which was being unloaded from ships in the ports or from amphibian trucks at transfer points behind the beaches. The planning for the truck companies operating in connection with ships, provided for either port clearing the cargo to local depots, railheads or barge heads, or loading direct from the ships to trucks and transporting over line of communication routes. In the case of amphibian trucks the integration of the motor transport vehicles required transfer points at which loads could be taken from the amphibian trucks and placed in the land vehicles. These plans of course required provisions for suitable and adequate cranes to load the trucks at ships side (in cases where cargo had already been placed on the dock by ship booms during the intervals between arrival of transportation facilities). At the transfer points the plans required provisions for suitable and adequate cranes for the transfer of cargo from the amphibian trucks. Provision of adequate labor was an additional consideration. In general, the fact that all the forms of transportation for the movement of the supplies from the ships to their destination were under the direction of a single service (Transportation Corps) meant that the responsibility rested in one place. Further, it was easy to tie together the arrival or departure of ships with the location or relocation of truck companies and amphibian truck companies.

33. With Barge. Integration of motor transport facilities with barge operation of the Inland Waterways Service was another consideration. Normally, the loading of barges could be considered as a direct loading from ships, although it had to be considered that there might be cases where the cargo would arrive at the starting point by truck. At the destination however, clearance from the barge head would almost always be by truck. Suitable cranes and labor had to be included in the plans. Again the fact that both forms of transportation were under a single service simplified the planning for coordination.

34. With Rail. The integration of motor transport with rail facilities was one of the largest considerations in the planning. It was possible of course, for the requirements of integration, to have motor vehicles bring supplies to rail at transfer points and take supplies from rail at transfer points. Crane and labor requirements were again a principal consideration. There was one other major consideration in the planning and that was the gradual reduction or moving forward of line of communication hauling by motor transport as rail transport took over the delivery of supplies on long hauls. All of these plans were simplified considerably by the fact that coordination and knowledge of location of units were centralized in th service of the Transportation

Corps.

35. 7th Air. In planning for integrating motor transport of the Communications Zone with air transport facilities, the planning was primarily that of transporting the supplies to the planes at the origin, since at the destination the transfer normally would be within the army area and performed by army motor transport. At the destination, the Transportation Sections coordinated the removal. Because of close liaison with the actual operators of the air transport this did not present special difficulties. Coordination of the movement of all supplies being a responsibility of the Transportation Corps, facilitated the integration of all the various forms of transportation required to place the supplies at the plane.

36. 7th Army Facilities. In producing the plans consideration had to be given to the place where the Communications Zone transport units transferred the supplies to Army jurisdiction for further transport as required. Generally it can be considered that the principal means of transportation available in the Army, at least organic transportation, was motor transport units. In general too, when the army is moving forward it can be considered that except for air delivery in emergencies or of high priority materials, delivery to the army would normally be by Motor Transport Service. The best integration of the two motor transport systems was the plan finally developed for the XYZ operation, described later in chapter nine.

SECTION 3

BASIS FOR TYPES OF VEHICLES AND OTHER EQUIPMENT

37. Standard Table of Organization and Equipment Vehicles. Based on African experience and consideration of the job to be done and keeping in mind that a large number of standard truck companies were going to be unobtainable due to manpower shortage, it was decided that no more than one-third of the companies should be equipped with standard or other light type equipment. This basis at the final conclusion of the operations proved to be a very practical figure. It was considered necessary to use standard vehicles in all three types of operations (line of communications hauling, port clearance and static operations). This was due to the nature of the supplies being transported and the conditions of the terrain at various places. Standard equipment consisted of the 2½ ton 6 x 6 truck with provisions for the substitution of 750 gallon tank trucks. Since that time new Tables of Organization provided also the substitution of 2½ ton cab-over-engine cargo trucks. Standard trucks were considered useable for any type of cargo which would fit into the body. The cab-over-engine vehicles with long bodies were specifically requisitioned to care for a special engineer requirement for the transporting of Bailey bridge materials. In addition it was considered that pipes for pipe lines and other light, bulky type cargo could be transported conveniently and efficiently in the cab-over-engine truck. The 750 gallon tank truck was also considered for use in transporting water for the engineer, and for transporting water for use in locomotives. As the planning progressed these two requirements were eliminated as a potential need and the 750 gallon tank trucks were used only in the plans for the transport of bulk gasoline.

38. Heavy Duty Equipment. Coupled with the decision mentioned in the previous paragraph that one-third of the motor vehicles should be of the light type was the fact that the other two-thirds should be heavy duty vehicles. In the first planning these heavy duty vehicles were divided between seven ton semi-trailers and truck-tractors, ten ton semi-trailers and truck-tractors, 20 ton semi-trailers and truck-tractors, 45 ton trailers and prime movers; five ton refrigerator vans and truck-tractors a

two thousand gallon tank semi-trailers and truck-tractors. Because of production difficulties in the United States, the cargo semi-trailers were later changed and all were placed in the ten ton class. In considering the various vehicles and the uses to which they could be placed, the cargo semi-trailers were considered useable for practically any type cargo which the Transportation Corps would be called upon to transport. Special equipment or supplies of each service were considered. Such supplies or equipment as the services themselves normally transported with organic equipment or special equipment provided them for the purpose were eliminated from the plan. The 45 ton trailers were the tank transporter type. These were specifically included for the purpose of port clearance. Only two companies were so equipped. It was considered that these units could port clear any type cargo by improvising floor beds and side racks but principally that their presence would assure constant clearing of the quays of any large equipment, such as tanks, which might tend to clog dock facilities if not promptly serviced and moved away. The five ton refrigerator vans also were requisitioned for the purpose of assuring constant prompt port clearance of perishables. Normally Quartermaster Mobile Refrigeration Companies would handle their own perishable supplies to their own warehouse, but the presence of two truck companies in the Transportation Corps' Motor Transport Service, equipped with these type vehicles assured an availability for rapidly clearing ships loaded with perishables or for the transfer of perishables to rail refrigeration cars in emergencies. The 2000 gallon tank semi-trailers were for the purpose of transporting gasoline. In the case of all semi-trailers (and the 45 ton trailers) they were planned at a ratio of two per truck-tractor (or prime mover) with sufficient dolly convertors for the semi-trailers to permit fast turnaround and operation in tandem if practical on the highways available. But in any case this ratio would permit rapid turn-around by permitting the truck-tractor to return with empty semi-trailers while the loaded vehicle was left at the destination for unloading. Ideal ratio is three to one but operating conditions in a large theater makes two to one workable. Just prior to D-Day, due to production delays, it was necessary to accept in lieu of ten ton semi-trailers the temporary substitution of 5/6 ton semi-trailers (China-Burma-India type), six ton semi-trailers (animal and cargo), and 12½ ton semi-trailers (wrecking), some 25 feet and some 40 feet long. Few of the ten ton semi-trailers were delivered prior to D-Day, the last of the heavy duty vehicles not arriving until late in November 1944. These delays in delivery seriously handicapped the ability of the Motor Transport Service to support the rapid movement of the Armies past St.Lo, France. (VT 4963). More detail concerning this actual phase of operations is covered in Transportation Corps Study Number 122, entitled "Operation, Organization, Supply and Services of the Transportation Corps in the European Theater". Later, on reception of the 75 additional truck companies, as mentioned in Section one of this chapter, 14 of the companies were equipped with ten ton Diesel cargo trucks. This was a substitution made by the War Department with European Theater concurrence in lieu of additional ten ton semi-trailers because of the availability. Special comment is made in paragraph 104 of chapter nine regarding the operations of this Diesel fleet.

39. Equipment to Augment Table of Organization and Equipment. In order to carry out the mission of the Motor Transport Service, as part of the vast transportation system of the Transportation Corps, many special items of equipment were given consideration to augment the standard equipment of the motor transport units. All of these were considered as performing special functions, however minor, in the completion of Operation Overlord, although individually they were not mentioned in the plan. The list gives an indication of the detailed planning which the Motor Transport Service did as an integrated part of the Transportation Corps. The list included, among others, standard road sign sets, life preservers for

amphibian trucks, traction devices for trucks operating in severe mud conditions, bullet hole sealers for tankers, additional cargo nets to permit fast turn-around at amphibian truck transfer points, gelatin reproduction sets for making strip maps, luminous tape and luminous paint, drag chains for tank trucks, "A" frames for unloading amphibian trucks, the dolly convertors previously mentioned and 750 gallon skid tanks. The skid tanks were for converting cargo trucks to tank trucks in emergencies and also in anticipation of the fact that production of tank truck equipment would delay delivery to the European Theater beyond time for operations. Those were among many of the large number of items considered and finally requisitioned as supplements to the plan. The exact detail matters little, the principal point being the comprehension by Motor Transport Service personnel of the mission to be performed. This was aided materially by their close association with the planners for the other transportation facilities in the Transportation Corps network.

SECTION 4

ADDITIONAL DRIVERS

40. Basis. After reviewing the total requirements for the operations on the continent, as compared with the avilability of motor transport units to carry out such a mission, it was realized that the capacity was not adequate to meet the demands to be placed upon them. However, the deficiency in capacity could be met if, in addition, to providing larger vehicles, extra drivers could also be provided to permit the operation of the motor transport units "around-the-clock", continuously, for six months and longer. On this basis additional drivers for each truck company were requisitioned. Thirty-six extra drivers were requested per company and 4 additional personnel for relif of non-commissioned officers.

41. Difficulties encountered. The preliminary difficulties encountered in initiating this part of the plan were primarily on a General Staff level in that the requirements for such additional personnel could not be visualized in the same manner as envisioned by the Motor Transport Service. Additional data to prove the point was collected concerning experiences in Africa, and also the experiences of the British Army in Libya and their method of using driver increments in each company. Due to the difficulties encountered it was approximately six months before action was taken toward producing the personnel for assignment to the truck companies and nearly nine months until they were available. In spite of the directive that good operating personnel would be provided, the personnel was of very poor quality and character and produced many troubles in the operation of the "Red Ball Express", etcetera, troubles dealing with improper driving, black market operations, etcetera. Many were of such poor quality that they never qualified as drivers. This condition continued throughout the European Campaign, many of the replacements coming from depots as potential drivers could not be qualified and hence filled the Table of Organization in number only. This seriously handicapped the abilities of the units to operate continuously and contributed toward inefficient operations because of the additional burden placed upon the qualified personnel.

42. Use. The extra drivers were provided, although poor in quality and character as mentioned in the preceding paragraph, in the amount of forty per company. Although unqualified and inapt personnel was furnished, their use was considered so important by the European Theater that later in the operation and upon the approved columns from Table of Organization and Equipment 10-500, twenty-four extra drivers were furnished for every truck company in the European Theater, including those in the Armies. Use was made of Prisoners of War to offset the fact

that in the beginning additional drivers were only furnished for a limited number of companies. Later the number of drivers was cut to twenty four. Also throughout the campaign the driver personnel was of poor quality. This was accomplished by using Prisoners of War as cooks, cook's helpers, mechanics, etcetra, and using such relieved personnel as drivers when they could be qualified. This was a poor substitute for such an important and vital requirement, and even this did not make us the entire deficiency.

SECTION 5

TRAINING FOR USE OF VEHICLES AND SPECIAL EQUIPMENT

43. Training in the United States. The training of the troops to be used in the operation was a very important consideration in the planning. The training of the troops was totally inadequate. The deficiencies in the training of the motor transport troops in the United States is covered in detail in part two, chapter two, three and five.

44. Training in the United Kingdom. As units arrived in the United Kingdom preparatory to the invasion, training was given added thought as the planning for the operation depended on the completeness of the training of the units. Because of the production difficulties regarding the heavy duty type motor transport vehicles, delivery to the United Kingdom was very small. Therefore preliminary training for troops was very limited. Also the scarcity of service troops during part of the time required long hours of work, including the motor transport units often on service activities other than trucking and so precluded the possibilities of extensive training in the use of the special equipment with which they were to be equipped. Many of the troops arrived in the United Kingdom just prior to D-Day and this also eliminated any possibilities of extensive training to make up deficiencies of training received in the United States.

45. Training on the Continent. Training on the continent in reality became an improvement in driving by virtue of actual operation. In practically every instance as rapidly as the heavy duty equipment arrived from the United States on the continent it was issued to truck companies and was driven away directly into operations. This formulated the training. In the reception of the 75 companies mentioned in section one of this chapter, fourteen of the companies were to operate ten ton Diesel trucks. No additional training was required for these companies however, since they had operated this type of equipment in Iran for two years previously. The balance of sixty-one companies, however, was trained in the United Kingdom or on the continent as they arrived, by use of a special continuous training program in camps set up and operated by the Motor Transport Service. Vehicles were then issued to the truck companies, mainly at Marseilles, (BT 4615), France, direct from the Ordnance assembly lines. After a short period of additional maintenance instructions, the vehicles were loaded and the companies proceeded in a slow "over-the-road" convoy to a destination in the forward areas. After delivery they received their initial assignment and began operations immediately.

CHAPTER 6

STANDARDIZATION OF MOTOR TRANSPORT OPERATING PROCEDURE

SECTION 1

LINE OF COMMUNICATION OPERATION PROCEDURES

46. First express route procedures were those prepared for the initial "Red Ball Express" in the latter part of August 1944. These procedures were prepared at Advance Section Headquarters, then located at Catz, (VT 4585) France, during conferences including representatives of the Advance Section G-4, Advance Section Transportation Office, the Motor Transport Brigade (the provisional motor transport command and control agency of Advance Section which was to operate the route) and the Motor Transport Service of the Office of the Chief of Transportation of the Communications Zone. The Motor Transport Service headquarters had been moved to the continent, prior to the establishment of the Communications Zone Headquarters, and placed on temporary duty with the Advance Section. This was done so that its personnel could impart all planning knowledge of the operation, which it had prepared during the preceding year, to the staff of the Motor Transport Brigade who were to carry out these plans during the initial months of the campaign. This also afforded the Motor Transport Service personnel a chance to adjust the unknown or estimated factors of their planning so that future estimates and plans would more closely approximate actual conditions. The possibilities of express routes had been broached during early planning, and the situation existing in early August offered the first chance for initiation since nothing existed except for the principles laid down in "Motran". Detail on "Motran" is covered in paragraph 48 of this section. The early procedures for "Red Ball Express" were more or less brief - one way routes in each direction, traffic control points, ordnance support, engineer support, medical support, use of lights, approximately 75% of tonnage on the first phase of "Red Ball" by motor transport and the balance by rail, etcetera. The initial express route was limited to a specific date and a specific tonnage. Actually the total tonnage was not reached on the specified date due to the far reaching destruction to railroads. Therefore motor transport continued on past the date for several days until the total was completed. As the mission neared completion plans were made to continue the express route, but on a daily tonnage commitment for an indefinite period. This was the second phase and during this time the procedures were refined in the light of previous experience. More detail on the "Red Ball Express" and other routes is covered in chapter nine.

47. European Theater of Operations Standing Operating Procedure Number 53. During the second phase of the "Red Ball Express", and partly during the beginning of other similiar routes, the Motor Transport Service in the Transportation Corps sought to bring about an efficient integration of such motor transport express routes with the other facilities of the entire transportation system. This led to numerous conferences with G-4 of the Headquarters Communications Zone. On 2 December 1944, it resulted in the revision of European Theater of Operations, Standing Operating Procedure Number 31 on "Motor Transportation in the Communications Zone" and the publication of European Theater of Operations Standing Operating Procedure Number 53 on "Red Ball Motor Transport Operations" which, as stated in the scope of the Standing Operating Procedure, covered all line of communication hauls similar to the "Red Ball" operation. This Standing Operating Procedure also referred to European Theater of Operations Standing Operating

Procedure Number 50 "Road Traffic Regulation and Control on the Continent" dated 7 October 1944 which, although not performed directly by the Motor Transport Service, concerned the operations very much.

48. Motor Transport Service Procedure. Principal among the Motor Transport Service procedures effecting line of communications operations was "Motran". This was a Transportation Corps technical manual outlining operating procedures and was written by the Motor Transport Service Headquarters during the planning days in the Office of the Chief of Transportation. For weeks prior to D-Day the headquarters used it for guidance in command exercises to eliminate as many flaws as possible. Actual receipt of the printed publication was not obtained, until in June - it was dated 21 June 1944. However, prior to the actual printing, tentative copies were mimeographed and were taken to the continent by the Motor Transport Brigade and the first truck companies. When European Theater of Operations Standing Operating Procedures Number 53 was published "Motran" was included as a reference. Coupled with "Motran" and in order to secure efficient loading of vehicles to conserve as much cargo space as possible was another Motor Transport Service publication "Truck Loading Reference Data". Principal types of vehicles were listed with calculated loads for items of supply furnished by each Service in all forms of boxing, and crating. Additional parts of the manual covered such subjects as load calculating, and personnel loading. These publications however, also applied to, and were used in port clearance and in static operations. They are still in use.[1]

SECTION 2

GENERAL OPERATION PROCEDURES

49. Directives Prior to 1944. Prior to 1944, Headquarters European Theater of Operations and Services of Supply directives that were in use, were in the form of numerous circulars, bulletins, and operational memoranda. The operation of motor vehicles in the European Theater obviously suffered since the commands of the lower echelon units seldom received all such publications, because of time lag in delivery due to reproduction and dissemination by others. Toward the end of 1943, the Motor Transport Service, as the largest single operator of motor vehicles, proposed and initiated the first draft of a single document on motor vehicle maintenance and operation to replace all the many existing publications. Research was made in order to consolidate all existing rules and regulations and then such other pertinent and desireable rules as were necessary were added to bring all motor vehicles under rigid control. This document as proposed, applied not only to vehicles of the Motor Transport Service, but all others in the European Theater as well.

50. "Maintenance and Operation of Motor Vehicles". On 24 January 1944, the Headquarters of the European Theater of Operations published the pamphlet "Maintenance and Operation of Motor Vehicles" file AG 451/2 PubGC. All other existing European Theater and Services of Supplies directives regarding motor vehicles were rescinded. This was a result of the technical research of the motor transport service regarding the best method of putting forth such procedures for vehicle operation. In addition, the covering letter stated that in the future all procedures, applicable to the same subject, would be in the form of new sections to be added to the document, or revision of existing sections thereof. During the course of its existence as such, thirty-four changes were published in keeping it up to date.

51. European Theater of Operations - Standing Operating Procedures Number 65. In June 1945 the publication mentioned in paragraph 50 and

all changes were rescinded, and the contents republished as European Theater of Operations - Standing Operating Procedures Number 65. Distribution of the original (and succeeding publications) was down to, and including, all companies or other separate organizations. In the integration of motor transport into the vast Transportation Corps transportation system this was a major step, since many parts directly concerned the operation of motor transport units.

SECTION 3

TECHNICAL ADVICE ON VEHICLE OPERATION

52. Technical responsibilities of all Service Chiefs are set forth in Field Manual 101-5. These responsibilities cover all the various technical phases of the specialty of the Service Chief. On matters pertaining thereto the Service Chief is the principal advisor to the commander. The Service Chief normally has "experts" on his own staff for all the many phases, detailed operations or methods. They keep him advised as necessary technical inspections of various phases or methods of each specialty are carried out by teams of the Service concerned to assure compliance with technical directives regarding maintenance, operation, etcetra of equipment. Among such responsibilities, the specialty of maintenance and the operation of motor vehicles is of particular interest not only to the Motor Transport Service, but to all services because every arm and service has normally at least one vehicle in every unit regardless of type.

53. Technical responsibility for vehicle maintenance is vested in the chief of Ordnance Service. Ordnance Service sets all the standards and procedures for maintenance of general purpose vehicles, regardless of which echelon of maintenance is concerned. In addition Ordnance also performs third, fourth and fifth echelons of maintenance on general purpose vehicles. The user of the vehicle, regardless of arm or service, performs first and second echelon maintenance - also termed preventive maintenance - in accordance with the standards and procedures established by Ordnance Service. Technical inspections by Ordnance service in accordance with Army Regulations 850-15 give evidence as to the efficiency or correctness of, the performance of preventive maintenance by the user. The Inspector General makes full use of such technical inspection reports.

54. Technical responsibility for vehicle operation is not specified in Field Manual 101-5. Thus, a commander desiring some advice on vehicle operation such as proper convoy procedure, etcetra, must select someone of his staff for the advice since it is not specifically stated who among the specialists advises on such matters. Logically, since all arms and services operate some vehicles, all Service Chiefs would be potential advisors. But vehicle operation not being the primary technical mission or specialty of each, it would seem appropriate to select or designate a principal user of vehicles (the largest single operator or one who operated vehicles in mass movements daily, and in all kinds of operation for long periods at a time). In the European Theater of Operations this was the Chief of Transportation.

55. Technical supervision and advice on motor transport operation matters performed in the European Theater of Operations serve as an example. They were performed by the Chief of Transportation and covered many items, since he was Service Chief on both the Theater and Communications Zone staffs. Among these for example were the following: first the preparation of the European Theater of Operations document "Maintenance and Operation of Motor Vehicles"; second the changes to the same document regarding operation matters (ordnance handling the maintenance changes); third the European Theater of Operations - Standing Operating

Procedures Number 65 replacing these latter documents. Within the Services of Supply of the European Theater of Operations was the technical research concerning the publication of Services of Supply Circular 9, 1944. This affected the pooling and use of all vehicles in the United Kingdom. In the Communications Zone, through the use of liaison officers, advice to the Section staffs on the operation of vehicles in motor transport units assigned to the various subordinate commands was another example. Also, he was responsible for technical supervision of the operation of motor transport units assigned to other commands including analysis of efficiency of their use. In addition, he had an allied part in the tire conservation program (basically an ordnance technical responsibility for promulgating methods or procedures) by giving advice on methods of operational control to reduce mileages, dispatches, etcetra and so conserve tires.

SECTION 4

TECHNICAL DEVELOPMENT OF TRANSPORT VEHICLES

56. Developments in the War Department Office of the Chief of Transportation of bulk hauling vehicles for use by the Motor Transport Service as part of the Transportation Corps' transportation system covered many fields. In general these technical developments dealt with expediting the interchange of major assemblies, etcetra, so that production of general purpose vehicles destined for motor transport units in the European Theater could be completed. Another development was the expediting of load tests under operating conditions on all types of vehicles. The Motor Transport Service was particularly anxious to obtain the results of these tests in order to conserve manpower. This authority was obtained through War Department Circular 212, 1944. Another technical development was an all-purpose, general-purpose cargo vehicle. This vehicle was developed by the Highway Division, Office Chief of Transportation in Washington, and had the features of not requiring crating for shipment and was constructed in such a way that it could be floated ashore, and dragged on self-contained skids overland to a place of erection. As erected it could be changed to suit any type load or special equipment. It could be operated as a semi-trailer or as a full trailer; as a short cargo body, medium cargo body or long cargo body; as a flat bed trailer or flat bed trailer with stake sides and tarpaulin cover; or as a two part disengaged trailer for hauling long poles or airplane fuselages or wing sections. This particular development, however, started at a time when full production could not be obtained and only pilot and experimental models were produced. It demonstrated, however, the possibilities in technical development of bulk transport vehicles to meet requirements of the Transportation Corps.

57. Developments in the European Theater of Operations. Technical developments in the European Theater of Operations by the Motor Transport Service were confined primarily to two spheres. First was the improvement of motor transport equipment to overcome deficiencies noted during operations and by experimentation such as elimination of the warping of the sides of ton ton semi-trailers. The second sphere of technical developments dealt with operational procedures by analyzing deficiencies in the use of motor transport. Improvements were brought about by the development of aids for the analysis of operations and the development of bivouac and marshalling procedures affecting smooth operations.

58. The need for continued development of bulk transport vehicles is obvious. Considering the improvements made during the four years of active war, but comparing the improvements with the difficulties experienced in production due to lack of tested and approved units prior

to the start of the war, it is considered necessary that experimentation should continue in the technical development of new and better types of transport vehicles for bulk supplies and mass loading of personnel. Motor Transport Service as an integrated part of the Transportation Corps' transportation facilities, is a logical way in which to continue this technical development. Latest technical information received in the theater indicated that the Highway Division (Motor Transport Service) in the Office Chief of Transportation, in Washington, has ten separate classes of vehicles with which they are experimenting regarding standardization of a Motor Transport Service fleet for the transporting of bulk supplies and personnel.

BIBLIOGRAPHY

1. Copies are on file in the Office of Chief of Transportation in Appendix B to "The History of Motor Transport in the European Theater".

CHAPTER 7

USE OF MOTOR TRANSPORT IN THE EUROPEAN THEATER

SECTION 1

LINE OF COMMUNICATION HAULING

59. Definition. Line of communication hauling, with respect to the Motor Transport Service, is the transporting of bulk supplies and/or personnel over main supply routes. It is an over-the-road movement in lieu of rail or supplementing rail movement. Normally the movement involves long distances, although some hauls may only be approximately 50 miles. In most cases it is an inter-sectional movement in the Communications Zone or a movement from the Communications Zone forward into the Army Service Area. There are variations, however, depending on the geographical limits of sections of the Communications Zone, or the urgency of the movement of the supplies or personnel into the Combat Zone. Under the latter mentioned conditions, the movement may be entirely within a single section of the Communications Zone or may have a final destination in the Divisional area. This type of operation is also referred to as "Line of Communication Hauling" or "Express Routes" and each is usually given such titles as "Red Ball Express", "White Ball Route", "Red Lion Express", or "ABC Route".

60. Examples. The following typical examples of line of communication hauling in the European Theater of Operations serve to illustrate the variation of conditions which may exist. More detail concerning the routes is given later in chapter nine. The "Red Ball Express" during the first stages operated from the Advance Section of the Communications Zone into the Army Area. In later stages it went through several sections of the Communications Zone into the Army Area and had during one period approximately a 1000 mile turn-around. In this case it operated in lieu of rail which had been severely damaged. As the railroads gradually were able to assume a greater proportion of the loads, the motor transport was a supplement in order to meet the total requirements. The "ABC Route" during the early stages, in part operated within a single section of the Communications Zone and some of the deliveries were little more than 50 miles from the origin. In the emergency routes which were set up during the Ardennes bulge for the purpose of transporting personnel from rear areas to Bastogne (VP 5558) and the vicinity, the routes extended deep into the combat zone, and in some instances parts of convoys were surrounded inside Bastogne. The "XYZ Operation" which supported the Armies in the drive across the Rhine had four routes which were entirely within Army territories at the close of operations. Such routes carried bulk supplies (including gasoline) forward and return loads of salvage and prisoners of war.

61. As part of the transportation system, line of communications hauling was one of the principal links in the delivery of supplies and personnel to the combat troops and in the evacuation requirements. As the flexible part of the Transportation Corps' Transportation System, motor transport lines of communication can be described as giant roving tentacles at the ends of the rail system, inland waterways system, pipeline system and forward supply air fields when air delivery is made to the rear of the Armies. These tentacles can be bent to fit any route and distance, with final delivery of vital supplies to the fighting forces. However, this is not the only major use of the flexible character of motor transport. Many motor transport lines of communication as part of the tremendous transportation system are as temporary extra rails running side by side

with the railroad as a supplement during recovery from damage by enemy action, so that the daily commitments may be met. Many reach out direct from ship's side or beach as great flexible conveyor belts of supplies to the consuming Armies at the front. All are an integrated part of the continuous and coordinated flow of materials to the front, which is the job of the Transportation Corps.

SECTION 2

PORT CLEARANCE

62. Definition. Port clearance, as it pertains to Motor Transport Service, is the rapid clearing of cargo from quay sides to permit continuous unloading of ships that would otherwise be hampered by back-log piles of supplies on the dock. Beach clearance is also a form of port clearance, although in most cases of beach clearance the hauling tends to extend directly into a line of communication haul. The clearing of supplies may be to sorting sheds, local depots or to rail or barge-heads if the rail facilities do not extend on to the quay, or if the barges cannot be brought alongside of the ship. In some instances where the origin of motor transport lines of communication are at ship side, the operation eliminates all or part of necessity for motor transport units for local clearance only. However, as normally used in motor transport operations, port clearance means a local clearing of the docks. It is a cousin to static operations which is described in section three of this chapter.

63. Example. The operations at any one of the ports in the European Theater of Operations required some port clearance by motor transport, even in those places where motor transport lines of communication started at shipside, or where rail facilities extended on to the quays. The clearing of such ports at Cherbourg (VO 1522) and Le Havre (VL 4027) in France, or Antwerp (VJ 6795) in Belgium are typical examples of supplies being moved by truck to local depots or railheads. At Antwerp there was also the case of the ABC operation, which cleared the port by a shuttle system of 10-ton semi-trailers between the docks and a marshalling yard outside of the city. The convoys for ABC line of communication were then made up at the marshalling yard. At Le Havre during the inflow of thousands of troops the port was cleared of personnel by motor vehicles, including semi-trailers, transporting the troops to the "Red Horse" staging areas.

64. The place in the transportation system which port clearance motor transport operations occupies, is an essential link to a smooth flow of supplies and personnel. Unless the coordination is exact and the organization of the transportation system thoroughly integrated, the flow of supplies arriving at their destination will fluctuate or be interrupted. There is need therefore in the linking up of the ships being unloaded with the facilities carrying the cargo away from the port. In addition, if the quays are not promptly cleared the return of the ship to the Zone of Interior is seriously retarded and consequently supplies for the operating theater reduced accordingly.

SECTION 3

STATIC OPERATIONS IN THE COMMUNICATIONS ZONE

65. Definition. Static operations of Motor Transport Service are those local operations which supplement the facilities normally available to the installations (i.e. posts, camps or stations). Static operations are usually confined entirely to the limits of

the section of the communications zone in which located. Variations of this may happen for example, where small emergency transfers of supplies between depots extends into the next section. Static operations involve house-keeping duties at principal headquarters, hauling from railhead or barge-head to local depots or vice versa, depot to depot transfer of supplies, interior depot operations such as moving warehouse stock, etc. In ideal and controlled static operations Motor Transport Service vehicles are only furnished to installations when the facilities of the installation motor pool and civilian facilities have been exhausted in the performance of the task.

66. Examples. At any of the installations in the European Theater of Operations there were, at one time or another, some static operations. This may have been during the build up of the depot by hauling from railhead or barge-head or during the closing out of the depot by the reverse procedure. At major depots, such as Quartermaster Class I, static operations may be continuous during the existence of the depot due to the nature of the supply. However, as loads at such installations fluctuate the motor transport units are continually relocated to cope with the transportation needs. The static operations of truck companies assigned to major headquarters for house-keeping were continuous. In the air force such static operations may have been bus schedules when commercial transportation was not available, station house-keeping, transportation of personnel and supplies between dispersed working sites, etcetera.

67. The requirement in the transportation system for motor transport units for static operations in the Communications Zone is very important. If installation motor pools and local civilian facilities are unable to provide the necessary vehicles for moving the supplies to and from the place of arrival (or departure) by rail or other means, or for transfer to other depots to meet changing requirements, the steady supply to using troops will be interrupted. Through static operations, the vehicles of the Motor Transport Service, therefore, keep all the ends and parts of the supply system tied firmly together. The ideal arrangement, of course, is to have sufficient units and attach them more or less permanently to each installation. In this way, the units get to know the job and the installation personnel become efficient in operating with the same individuals every day. Team work is developed by permanent association. In the European Theater of Operations, facilities were extremely short and not even the minimum could be attached. The establishment of central Transportation Corps pools was the only manner in which the needs could be met. At the same time, however, being a part of the over-all transportation system, the slackening of work at one installation and the increase of another is quickly covered by the relocation of the units. But if the units are independently assigned or separately controlled, the full magnitude of transportation requirements to keep an even flow of supplies would not be felt in time to shift the units. Motor transport units engaged in static operations are a vital link in the system as a whole and are best coordinated for rapid relocation when they are an integral part of the entire Transportation Corps' transportation system.

SECTION 4

OPERATIONS IN THE COMBAT ZONE

68. Type Operations. The operations in the combat zone by motor transport units could best be described as retail delivery if compared with the Communications Zone hauling as being wholesale delivery. The delivery of supplies was for the most part package

delivery. Trucks were standard 2½ ton 6 x 6 type which facilitated negotiating all types of terrain. Movement of unit equipment when organic transport was not available was accomplished as required by normal dispatch. Personnel movements, or motorizing divisions for tactical moves when required, was performed by any of the truck companies available and serves to indicate the unnecessary designation of "Troop Transport Company" which is discussed in part two.

69. Transportation Systems of the Armies. The transportation system of the armies was motor transport. Except for short stretches of railroad found intact and operated by the Armies to assist their truck units as a local operation, any part of the railways rehabilitated by the Armies were absorbed into the Military Railway Service of the Communications Zone. Regularity of the transportation system in the Army areas could not always be obtained or maintained. Enemy action, change in tactics, or relocation of units, meant at least an advancing origin and a roving destination. In general the systems were approximately the same. Due to the necessityfor many emergency moves of Corps and Divisions, the Seventh Army Transportation Officer successfully operated a pool of vehicles on local static operations which could be assembled quickly for any emergency. Thus at all times the most efficient use possible was attained while meeting all the emergencies.

70. Integration of Army Transportation System with the Communications Zone system was normally achieved smoothly when line of communications hauls ended at dumps, depots or depot areas ("goose-eggs") more or less stable. Disorganized operations occurred when relocation of dumps or change of tactics was not coordinated with the Motor Transport Service agency of the Communications Zone supplying the army. When units of the Motor Transport Service, became enmeshed in the Army gears as they ground forward in such movements, lack of supply coordination often meant convoys lost for days, and consequent serious reduction in delivery capacity of the Communications Zone Motor Transport Service. Behind armies where coordination was well organized, this problem did not exist. More detail on improved methods obtained is covered later in section seven of chapter nine. By close coordination, the Motor Transport Service was able to have better selection of Army dump sites made. In the Seventh Army where Transportation Corps was on a Special Staff level, the Transportation Corps had a representative with each service when sites were being selected. This assured proper consideration for access by vehicles and convenience to the other forms of transportation. Later, as the Communications Zone took over these sites, the Motor Transport Service was assured of better access to the dumps for heavy duty equipment.

SECTION 6

OTHER USES OF MOTOR TRANSPORT

71. For Primary Mission of Organizations. The forty-eight task vehicles in a truck company are for the purpose of carrying out the primary mission of the company, which is trucking. Likewise in companies other than motor transport units, some have vehicles expressly intended for carrying out their primary missions. A few examples are:

Table of Organization and Equipment 3-217, Chemical Decontamination Company.

Table of Organization and Equipment 10-247, Quartermaster Refrigeration Company, Mobile.

Table of Organization and Equipment 5-88, Engineer Dump Truck Company.

Table of Organization and Equipment 11-67, Signal Heavy Construction Company.

72. For House-keeping Purposes. Practically all organizations, however, have at least one vehicle for house-keeping purposes. Truck companies also have house-keeping vehicles. These vehicles are referred to as administrative vehicles of the unit. They are vehicles used for collecting rations, unit supplies, transporting unit equipment, and are sometimes used as kitchen trucks, and for similar purposes and are usually shown under the column for Company Headquarters. A few examples are:

Table of Organization and Equipment 8-550, General Hospital.

Table of Organization and Equipment 10-367, Quartermaster Base Depot Company.

Table of Organization and Equipment, 11-217, Signal Company Aviation or any of the Tables of Organization and Equipment in paragraph 71 under the Company Headquarters Column.

73. For Administrative Purposes at Installations. At posts, camps or stations or as normally referred to in a theater of operations--installations--there are numerous vehicles required to operate the installations even if not doing any active business. Such vehicles are used for garbage collection, laundry collection, post utilities work, and for other similar duties. These vehicles are usually assigned to the installation from theater allowances of vehicles for such purposes. Quite often they are non-standard or limited standard military vehicles, or, may even be civilian vehicles impressed for the purposes during war time.

74. Efficiency of Use. In the use of vehicles in motor transport units, efficiency of operation must be a constant consideration. Transportation facilities available are usually below the requirements and wastage through inefficiency has a very pronounced effect. By numerous analytical methods and aids the Motor Transport Service in the European Theater of Operations was able to keep a close watch on the operations of the motor transport units, regardless of type of operation. As a result the necessary action was taken to improve the efficiency of the units. The use of administrative vehicles, both in installations and in all type units, however, was not very efficient. This was due to several factors. Installations and units, particularly in the war, did not always have enough administrative or house-keeping work to keep the vehicles operating 100 per cent of the time. It is true that on some days the operations might possibly cause the full use of all vehicles, but most often this was not the condition which existed. When units or installations required additional vehicles for certain operations beyond the capacity of their organic vehicles or allowed administrative vehicles, it was necessary to call upon the Transportation Corps for supplementary transportation. Depending on what facilities were available, this assistance might be by dispatch of vehicles of a truck company in a pool of transportation controlled by the Transportation Corps. Obviously, if the operation of these administrative vehicles in the installations and units could be pooled for full utilization nearly 100 per cent of the time, manpower and equipment could be conserved. In some instances in the European Theater of Operations this was done during critical

shortages of vehicles for static operations when truck companies had heavy commitments due to the requirements on line of communications hauling. This presents the question, then, as to whether in the interests of saving manpower and equipment, by making the operation of administrative vehicles very efficient all the time, it would be the proper arrangement to eliminate the idea of assignment of administrative vehicles in installations and to reduce the house-keeping vehicles in all organizations to the smallest possible size and number. When such units would need to move or have emergency demands the dispatch of vehicles for the job from the nearest truck or car company would solve the problem. It would then be necessary to assemble all the above vehicles removed from units and installations and the driver provided in the Table of Organization or the installation allotment and form them into additional car and truck companies. Thus, by the consolidation of loads, trips, return loads, reduction of idle time and immediate return to the pool for further dispatch, thousands of vehicles and personnel would be saved. European Theater of Operations standing operating procedure required pooling to save personnel and vehicles as much as possible in the absence of such a standard military procedure. During tactical operations the procedure was subject to change by the commander concerned, depending on the situation.

CHAPTER 8

CONTROL OF MOTOR TRANSPORT UNITS IN THE EUROPEAN THEATER OF OPERATIONS

SECTION 1

AT THEATER LEVEL

75. Initial allocation of units to the major commands of the theater by the Theater Headquarters involved the Motor Transport Service. All units arriving in the European Theater of Operations were normally placed in a theater "pool" until specifically assigned. From statistics kept by the Motor Transport Service and knowledge of plans, recommendations for assignment were made to the Troops Branch of G-4, European Theater of Operations. The Troops Branch in the later part of the campaign was transferred to the G-3 Section. Where units, normally intended for assignment to the Armies were not immediately required for operations, they were placed on Communications Zone work under Motor Transport Service supervision until it was necessary to assign them to the combat zone. This method was followed for troops arriving in the United Kingdom and also for those troops arriving direct on the Continent.

76. Reallocation of units between major commands of the European Theater of Operations to meet changing conditions or emergencies was handled in the same way as stated in paragraph seventy-five. On several occasions it was necessary to supplement the motor transport in the Armies, or to temporarily loan them units from the Communications Zone, until arrival of other units equipped with vehicles more useful in the combat zone. The arrangements were made in accordance with procedures set up by the Motor Transport Service or by assignments recommended by the Motor Transport Service. The need for transfer of units between the major commands was normally first envisioned by the General Staff of the European Theater Headquarters by reason of knowledge of impending changes in requirements and first receipt of information, immediately an emergency would arise. The actual reallocation was always made by arrangement with the Motor Transport Service, however, since future planning always hinged on the facilities available in all sectors to make up the Theater-wide transportation system. Thus with the approach of VE-Day, when thoughts began to turn to readjustment and redeployment, the Motor Transport Service received the task of scheduling all the Motor transport units out of the European Theater and designating them by categories. By reason of the centralized theater control and basic statistical knowledge, this was not a difficult task.

77. Regarding Air Force Units. The Motor Transport Service was only involved in the early stages of the European Theater of Operations with the allocation of Car Platoons to the Air Forces. The allocation never amounted to more than a few platoons. These allocations, however, continued throughout until after VE-Day. Aviation truck companies were procured by the Air Force through their own channels. During the course of operations, liaison was maintained with the Air Forces since temporary assistance was given regarding controlled equipment and the 2000 gallon semi-trailers, used to equip nine of the Motor Transport Service truck companies, were air force special purpose vehicles. Temporary assistance was also given to the Air Force by the attachment of several heavy duty companies under control of the Motor Transport Service for the completion of a special mission.

SECTION 2

IN THE COMMUNICATIONS ZONE

78. Initial allocation of units to major subordinate commands of the Communications Zone by recommendation of the Motor Transport Service to the Troops Branch of G-4 Communications Zone headquarters was based on plans of estimated requirements for port clearance and static operations. These initial allocations were to Base Sections in the United Kingdom prior to D-Day and after D-Day to all sections on the continent as new units arrived.

79. Reallocation of units to major subordinate commands of the Communications Zone, in accordance with changing requirements and emergencies, was also by recommendation of the Motor Transport Service, in the same manner as outlined in the preceding paragraph. Changing requirements were normally visualized by knowledge of impending movement programs for the coming month, the preparation of which was the responsibility of the Movements Division of the Office Chief of Transportation. The Movements Division and Motor Transport Service, both being a part of the Transportation Corps integrated system made perfect co-ordination possible. However, in addition, the Motor Transport Service, by analytical methods of documentation was able to determine where motor transport units were not being used efficiently, either by misuse in the Sections or by assignment of units in excess of requirements, and hence could arrange reassignments. Reassignments between Sections was not always an easy task even though basically they were soundly conceived. No command happily gives up transportation and sometimes the delays in effecting the transfers caused interruptions to the smooth operations. A more severe control could have been effected by attaching the units to the Sections for local needs instead of assigning them. Thus the reassignment between Sections in accordance with changing requirements was expedited.

80. Command and Operation of Line of Communications units by the Motor Transport Service was fully attained during the course of operations. During the early stages the control was only partial and numerous difficulties were encountered. With the full responsibility for command and operation, however, these difficulties were naturally overcome. As finally conceived and operated, certain local administrative functions for units engaged in line of communications hauling were made the responsibility of the commander of the Section in which the units were located--these were such things as general courts-martial jurisdiction, hospitalization, supply of common items, financial matters. These are discussed in detail in paragraph 126, in part two of this study.

81. Command, Administrative and Technical Channels. The channels for motor transport units varied with the operations. For units on line of communications operations the command channels were direct from the Motor Transport Service to the groups to battalions to companies. For these same units, however, the administrative channels were split, the Motor Transport Service handling all these matters except as outlined in paragraph 126, in part two of this study. For units engaged in port clearance or static operations the command and administrative channels were direct from the Section Transportation Officer to the groups or separate battalions, thence to subordinate battalions and companies. Car companies assigned to sections were normally part of the Headquarters Command for command and administration, and under the Headquarters Command Motor Transport Officer as part of the Headquarters Command Motor Pool. Technical channels from Motor Transport Service to all motor transport units engaged in port or static operations, including car companies, was

direct to the units, but policy required copies of all technical information to go to the Motor Transport Office of the Section, and on all technical inspections or liaison work the contacts were made through the same motor transport office.

SECTION 3

IN THE COMBAT ZONE

82. By the Army Groups. Principal control exercised by the army groups was co-ordinating the motor transport matters between Armies assigned to the group. When necessary, reassignments were made in accordance with changing conditions. Actual operational control was passed to the Armies.

83. By the Armies. The armies' principal control was by direct command in the tactical use of all motor transport units assigned. The method of such control and dispatch varied with the armies. Briefly, they were as follows:

a. First United States Army. Supervisory control by Transportation Section of G-4, operational control by Quartermaster.

b. Third United States Army. Supervisory and operational control by Transportation Section of G-4.

c. Seventh United States Army. Supervisory and operational control by Transportation Section of the Special Staff.

d. Ninth United States Army. Similar to First United States Army.

e. Fifteenth United States Army. Movement control only Transportation Section of G-4. Operational control by Quartermaster.

SECTION 4

REPLACEMENT PERSONNEL

84. Reception from the United States. Replacement personnel from the United States, if trained in training centers as drivers or second echelon mechanics, were products of Quartermaster replacement training centers. As such, they were shipped from the United States as Quartermaster troops. With the European Theater Transportation Corps, a corresponding transfer of a proportionate amount of the replacement troop basis was not made. The Transportation Corps was not given jurisdiction in the United States over training of replacement troops for motor transport units, and was not provided the facilities nor a proportionate increase in recruits as a result of the transfer in the European Theater. Hence any shift of replacement troops had to be made within the European Theater of Operations.

85. Allocation between Quartermaster and Transportation Corps. During the first year under the Transportation Corps, the replacement requirements for officers and enlisted men did not present a problem, but as D-Day approached and then after D-Day, the problems began to arise. During normal operations prior to D-Day, the normal personnel available to Transportation Corps from normal sources contained enough drivers, etcetera, suitable for replacements to meet the small requirements. The non-supply or automatic build-up was not immediately apparent. When

this became known, there was not an immediate realization of personnel which could be transferred from Quartermaster sources to Transportation Corps sources. Screening by Quartermaster continued, and for some time, replacements for motor transport units were seriously short. The total requirements were never entirely made up and this was then followed by the period when replacements for training for the Infantry were withdrawn from all service units. The result temporarily crippled the ability of the motor transport units to meet commitments, since specialists such as truck drivers, were not readily available and not easily trained from basics. This was especially true of heavy truck drivers, who comprised two thirds of the entire Motor Transport Service fleet. Exemption for the drivers as specialists came too late to prevent the withdrawal of a tremendous part of the force. The effects were long felt; never entirely alleviated.

56. Rehabilitated Personnel. The other source of driver and mechanic personnel was the rehabilitation process of the European Theater replacement system. This source, however, was negligible, especially during the heavy requisitioning after noting the large period of non-transfer of replacement troops from Quartermaster and during the reduction in strength to provide Infantry replacements. Basic fault was the lack of an active driver or mechanic training program in the replacement system. There was a program available but the replacement system was not operating any such training centers for motor transport personnel.

CHAPTER 9

ANALYSIS OF TRANSPORTATION CORPS' FULFILLMENT OF MISSION

SECTION I

GENERAL

87. "From Ports to Destinations". In an analysis of operations regarding the fulfillment of the Transportation Corps' mission we may start from that part of the statement in this mission which reads "transporting bulk supplies and personnel from ports to destinations". In short, this movement from the ports to destinations was primarily a line of communications movement. It may be a line of communications movement by rail, inland waterways and/or motor transport. Within this study, however, we are primarily concerned with motor transport. Such line of communication hauling over express routes such as the "Red Ball Express", "ABC", etcetera, were primary factors in the fulfillment of the Transportation Corps' mission.

88. "And Subsequent Movements". The second part of the statement, which gives the Transportation Corps' mission, reads "and subsequent movements". This covers that part of the Transportation Corps' work of extending forward all supplies and personnel, from the destination originally reached, to points nearer to the combat troops or to the actual final destination. This can be more easily visualized when it is considered that the first movement from the port to destination may have been to a base depot very close to the port, or it may have been to an intermediate depot or to a depot well forward. The "subsequent movement" would displace the supplies and personnel forward from any one of those points, and ultimately either to serve the needs of using troops in the vicinity, or using troops in the combat zone. By placing at the disposal of the Chief of Transportation all the means for transporting such supplies and personnel, he is able to fulfill that mission completely. The assistance by motor transport, as a part of the complete transportation system, in the fulfillment of that mission in the European Theater is discussed in the following paragraphs of this chapter. Comparison of companies and tonnages on one route with those on another cannot be made because only the peak assignments are given whereas the tonnage lift is the total of all assignments. The comments under results give the best comparison.

SECTION II

RED BALL EXPRESS ROUTE

89. Reason for establishment. The Red Ball Express route was divided into two phases. The first phase, was the transporting of 100,000 tons of supplies from the beaches to the vicinity of Le Mans, France (VV 4161) by 1 September 1944, for the purpose of supporting in a possible knockout blow to the enemy. This phase was extended until 4 September 1944 so that motor transport could assist the other transportation facilities which had not completed their portion of the commitment (motor transport's portion was originally 75,000 tons). The second phase of Red Ball continued immediately after the conclusion of the first phase, but was arranged for a daily set commitment for an indefinite period of time.

90. The Operation. The first phase of the Red Ball Express began on 25 August 1944 and continued into the second phase, which ended on 16 November 1944. During part of the operation, supplies were delivered to their army destination by motor transport. During the latter part of the operation the supplies were taken to Paris rail transfer points and

carried forward from there by rail since the rail network up to that point had been severely damaged, but forward of that point it was in fair condition. In the early stages, without authority many convoys were made into mobile dumps, since army truck companies, as organic units of the army, had been used to motorize the infantry in its rapid movements. This seriously handicapped the Motor Transport Service in meeting commitments because the convoys did not return on schedule. The rules presented in European Theater of Operations Standing Operating Procedure Number 53 Red Ball Motor Transport Operations, dated 2 December 1944, are approximately the same as those which were used in experimental form in operation of the Red Ball route, and which were developed as other rules were found inadequate. From time to time, one way routes were established with coordinating bivouacs located near the half way point, so that drivers could be changed. Traffic control points (TCP) regulated the traffic at important places. Traffic control regulating points (TCRP) directed the convoys (at the origin) from the return route to beach or port dumps for loading and then recorded the dispatch in the outbound route. At the destination end (another traffic control regulating point) final instructions were given for exact delivery and convoys recorded for the return route. At the peak 133 truck companies were engaged with an average of 83 truck companies for the 81 days of operation. As to equipment in the companies, the composition varied so greatly that the detail is omitted. Many of the companies were exchanging equipment (light for heavy duty) during the course of operations. Slightly more than 400,000 tons were delivered to forward points at a daily average of a little more than 5,000 tons. This was one of the longest routes in operation, and it is interesting to note that the average round trip was 606 miles with many of the trips over 1,000 miles.

91. Results. Results in general were good, but many deficiencies were encountered. Among these deficiencies were the following:

a. There was inadequate support from the Communications Zone sections involved in regard to military police patrols, delays in loading and unloading of convoys and Ordnance facilities. This had a tremendous effect upon the fulfillment of the Transportation Corps' mission. Lack of military police patrols meant increased pilfering of supplies, black market activities, and speeding which caused accidents. Delayed loading and unloading of convoys obviously reduced the capacity of the truck companies delivering vital supplies forward. Later, the Motor Transport Service through development of analyzation methods reduced loading and unloading delays tremendously. Lack of Ordnance facilities also reduced the delivery capacity by reducing the vehicle strength of truck companies.

b. Inefficiency developed due to the Advance Section's provisional Motor Transport Brigade having command of the motor transport units, and the Normandy Base Section having movement control. The latter resulted in the diversion of truck convoys for local use in Normandy Base Section. This was later eliminated by Motor Transport Service having centralized control of line of communication hauling.

c. Lack of proper communication facilities. The effect of this on control of motor transport units stretched along 500 miles of route each way is obvious.

d. Poor dump selections in low fields resulted in many delays due to mud. This normally occurred because in the selection of dump sites by armies, they did not consider later operations by the Communications Zone, using heavy type vehicles. Later efforts of the Motor Transport Service secured consideration for more care in the selection of

dump sites as the campaign progressed.

e. Poor preventative maintenance of equipment (first and second echelon) soon resulted in reducing lift capacity. This was brought forth by emergency orders to the commander of the Motor Transport Brigade to stop maintenance in order to expedite delivery. The reason given was the hope for a knock-out blow, at the sacrifice of equipment. Efforts of the Brigade Commander to eliminate it were not entirely successful since his command did not cover all vehicles. In later operations when line of communications hauling came under centralized control of the Motor Transport Service, such elimination of preventative maintenance was always guarded against. Another great contributing factor was the organization of provisional truck companies. Truck companies by their very nature required a great amount of technical training. Without such training, operations suffered and maintenance was negligible. Provisional companies represented an assembly without mechanics, tools and training. The resulting poor preventative maintenance had far reaching results. The damaged vehicles lingered throughout the campaign and the resultant shortages in supply of parts and vehicles never were entirely overcome.

f. By Advance Section order, 40-vehicle convoys were established. This was an entire company of operational vehicles. The size of such convoys was too large to control and took too long to load and unload. The Motor Transport Service was able to have such orders changed and the convoys reduced to platoon size.

g. Insufficient truck capacity to support the field Armies beyond Eastern France, resulted in the unfortunate curtailment of the advance. This deficiency was further covered in chapter five of this study regarding the planning for Operation Overlord. Specifically it pertains to the failure to secure early approval of the requisition for heavy duty vehicles and early production and consequent delivery in time for use in the early stages of the European campaign. Additional comment is made in chapter six of part two of this study regarding a general note in the Table of Equipment on equipment substitution to expedite approval and production of requisitions for substituted equipment.

h. Regarding the delivery of gasoline supplies there was a period of poor coordination. Two problems presented themselves. First, by failure to quickly unload gasoline from bulk tank trucks in the army areas, return of trucks was delayed and delivery capacity consequently reduced. In effect the tank truck fleet became a mobile dump. With a shortage due to slow delivery of such equipment from the United States, this further hampered operations. Secondly, local attempts at operation interfered with proper coordination of all the sources of supply. Gasoline was arriving but not being transported. The incoming sources of supply and the transport destinations were intersectional. It was imperative that Motor Transport Service centrally control the operation by reason of full knowledge of all factors. This was finally arranged and later operations functioned smoothly.

SECTION 3

WHITE BALL EXPRESS ROUTE

92. Reason for establishment. The White Ball Express was established to clear incoming supplies at the ports of Le Havre (VL 4027) and Rouen, France (VM 2817). The supplies were to be transported to intermediate depots in the Paris (VS 0544), Soissons (VS 8997) and Rheims (VT 3979) areas and part of the tonnage was to be transferred to rail at Beauvais

and Compiegne, France.

93. The Operation. This express route was started on 6 October 1944 and closed on 10 January 1945. This operation was similar to the Red Ball Express, taking advantage of experiences gained on this route, and in the latter stages was controlled by European Theater of Operations Standing Operating Procedure Number 53, 1944. The largest assignment of truck companies was 48, with a daily average of 29. Like the Red Ball Express, this too had a great variation in the composition of the equipment of the companies. The operation moved a little less than 150,000 tons for a daily average of just under 1,500 tons. The average round trip was 226 miles. This was the first line of communications haul entirely under the command of a Quartermaster Group and served to illustrate the inability of Quartermaster Groups to carry out extensive truck operations when organized in accordance with their Table of Organization and Equipment.

94. Results. Like the Red Ball Express, the White Ball Express also was not under the centralized control of the Motor Transport Service. It began during the period of adjustment of the operational procedure of the Red Ball route. Many of the deficiencies evident in the Red Ball operation were corrected at the opening of the White Ball operation. Some of the deficiencies were:

a. Due to poor coordination the plans for this operation were not properly implemented to the full advantage. As a result the Communications Zone Sections and the depots did not know what tonnages they were to receive or when. This resulted in inadequate labor and insufficient truck unloading points being provided.

b. Channel Base Section was given movement control, and as was the case in the Red Ball operation, trucks were diverted to low priority local depots' work.

SECTION 4

GREEN DIAMOND EXPRESS ROUTE

95. Reasons for establishment. The Green Diamond Express route was established for the purpose of moving tonnage from dumps and depots in the Cherbourg Peninsula to rail loading points at Avranches, France (VT 2817) and Dol, France (VS 9803) where rail then moved the supplies to forward areas.

96. The Operation. This operation began on 14 October 1944 and extended to 1 November 1944, the Quartermaster Group operating 15 companies carried a little more than 15,000 tons during the operation. The average forward distance was approximately 100 miles. The procedure followed the regulations then in effect on the Red Ball route, and was entirely controlled by Normandy Base Section.

97. Results. This operation was not very successful due to three principal factors:

a. There was much confusion as to the responsibility for initiating movements and as a result the initial planning was poor.

b. The command and supervision of the operation was not satisfactory.

c. Heavy mud conditions at the lift point at the beach dumps due to poor initial selection.

SECTION 5

RED LION EXPRESS ROUTE

98. Reason for establishment. The Red Lion Express haul was established to move 500 tons daily of British gasoline and other supplies from Bayeaux, France (VT 7989), to the 21 Army Group (British) railhead at Brussels, Belgium, (VJ 6355). The supplies were to give extra support to the airborne operation in Holland.

99. The Operation. This operation started on 16 September 1944 and ended on 1 October 1944. Part of the responsibilities regarding this operation were assumed by the British. The British were to furnish sites for camps, marshalling areas and control points. They were to deliver rations and water to all sites, medical facilities, engineering construction and maintenance of routes. Motorcycles and dispatch riders for courier service, motorcycle escorts for first serials and labor for loading and unloading were other responsibilities of the British. American forces furnished the other facilities. Procedures for this operation paralleled British experience with additional features. They proved successful and were later incorporated in European Theater of Operations Standing Operating Procedure Number 53, 1944. The total quantity of supplies transported was a little more than 17,000 tons, with a daily average of slightly more than 650 tons. For most of the operation there were eight truck companies operating, two of which were equipped with 10-ton semi-trailers.

100. Results. The results were successful. It may be particularly noted in this operation that regardless of whether the 2½ ton truck or ten ton semi-trailers were used they could be loaded and unloaded in practically the same time if by proper coordination the proper facilities were available. Also the distance could be covered on the same schedule and that convoy discipline could be maintained as outlined in the operating procedure, providing sufficient supervision was available and maintained.

SECTION 6

ABC EXPRESS ROUTE

101. Reason for establishment. The ABC operation was established to clear incoming supplies from the port of Antwerp, Belgium (VJ 6795). Special considerations were necessary here, since the port of Antwerp was in British territory, and the depots and dumps located in American territory were some distance away.

102. The Operation. It was organized on 30 November 1944 and ended approximately on 26 March 1945 as final tonnages gradually trailed to an end. The supplies were cleared from the port area by ten ton semi-trailers. The loaded semi-trailers were assembled in a shuttle arrangement at a "Surge-Pool", which was the marshalling yard just outside the port area. Returning convoys dropped empty ten ton semi-trailers (the only type of equipment which was used in this haul) at the marshalling yard, picked up loaded semi-trailers and prepared for the next forward trip. Although the port operated only during a 15 hour period due to various lighting and labor problems, enough semi-trailers were loaded and placed in the marshalling yard during that period to permit continuous 24 hour convoy operations. The destination were base depots in the vicinity of Liege, Belgium (VK 4727), Namur, Belgium (VJ 9611), Mons, Belgium (VJ 3113) and Charleroi, Belgium (VJ 6706). Marshalling yards were also located at the destinations so that convoys could drop loaded semi-trailers and return with empties. By placing truck-tractors in each of the marshalling yards, shuttle arrangements to the point of

loading and point of unloading were possible. This reduced the turn-around time considerably. During the 117 days of the operation, nearly a quarter of a million tons were moved forward approximately 90 miles to the dump areas from which supplies were forwarded to the First and Ninth Armies. An average of 14 companies operated on the route, all equipped with ten ton semi-trailers.

103. Results. Principal among the good results obtained in this operation was experience in the use of marshalling yards to a speed turnaround time by the use of ten ton semi-trailers. Operations were carried out in accordance with European Theater of Operations Standing Operating Procedure Number 53, 1944, and were considerably smoother than the Red Ball operation. There were, however, several deficiencies.

a. As the operation started many depots would not operate 24 hours a day. This hampered the operation in that even though marshalling yards were in operation, empty semi-trailers did not return promptly. The analytical methods of the Motor Transport Service used in reviewing the reports of the units eliminated this difficulty in due time.

b. Instead of commodity loading, many of the loads were mixed and shipped forward without preliminary sorting. This delayed trucks many vital hours at the destinations.

c. The base depots were too far forward, this caused transportation to be wasted in the hauling of reserve supplies unnecessarily long distances.

104. Comparison of the Second ..BC Operation. ..lthough the second ..BC operation began approximately 10 days after the surrender of Germany, it is important that it should be included in this study because unlike the operations of most services, Transportation Corps activities did not decrease at the same rapid rate following the surrender and actually increased with regard to motor transport. It is also important that the renewal of the ..BC operation should be included by the very nature of the title of this study. The second ..BC operation was established to clear tonnage which had accumulated at ..ntwerp, Belgium (VJ 6795) while trucks of the original ..BC operation were operating in the XYZ express operation in the drive into Germany. In the clearing of the tonnage from ..ntwerp, Belgium (VJ 6795), the second ..BC operation would assist the supplying of the ..rmies, held in static position while they continued minor mopping-up duties, and the organization of the forces for occupation and redeployment. It would aid in the transporting of food, clothing, and supplies for prisoners of war and civilians who needed assistance. In one sense of the word it was a peace time operation with the Motor Transport Service as an integral part of the complete transportation system. Secondly, for the first time in the European Theater, the entire fleet was composed of all Diesel powered trucks. They were 10 ton 6 x 4 cargo vehicles. Fourteen truck companies operated the express route. The additional innovation was the adding of ten ton semi-trailers converted to full trailers by the use of a dolly converter. Five of the companies operated in this manner. The motor transport units operating this second ..BC route had had two years experience in Iran operating Diesel trucks, and training was at an efficient level. In due time, the route was extended as far as Verdun, France (VU 2766) and to include Ghent, Belgium (VJ 1981), as an additional origin. This operation, like the first ..BC route, was very successful and fully served to illustrate that by proper coordination and control, and good training and supervision such operations can be successfully integrated into the complete transportation system, whether in war or peace, and with any type of heavy duty equipment.

XYZ EXPRESS ROUTE

105. Plans for the Operation. During the build-up of supplies in the vicinity of Liege, Belgium (VK 4727), by the operation of the ABC route and continuing after the "Battle of the Bulge", the Motor Transport Service (after a conference with the Chief of Transportation) formulated plans for the motor transport of the part of the transportation system which was to support the operations of the Armies in crossing the Rhine and subsequent operations. These plans called for the movement of supplies and gasoline from the most forward depots of the Communications Zone or from railheads, as the advance progressed, to supply dumps in Army territory. The X phase of the operation called for 8,000 tons per day on a two day turn-around, the Y phase 10,000 tons per day on a two day turn-around and the Z phase 12,000 tons per day on a two day turn-around. During the winter months of 1944, when the plan was under preliminary consideration, the calculations indicated that the original requirement of 240 companies was going to be an absolute necessity. Therefore, action was taken to obtain 75 additional companies which would bring the total Communications Zone troop basis to 245. These companies were received in time and given the necessary additional training in the operation of heavy equipment with which they were provided. The plan was approved by G-4 of the Headquarters Communications Zone. The success of this operation as later described, served to illustrate the completeness and accuracy with which plans could be visualized, coordinated and executed. Such accuracy is possible, however, only when within a single service, there exists not only all the facilities for determing what tonnages are going to arrive and require forwarding, but also complete knowledge of the capabilities of all of the forms of transportation available for effecting the movement. The complete detail of the plan is included in Annex B of the "History of Motor Transport in the European Theater of Operations", on file in the Office Chief of Transportation, European Theater. The two day turn-around of the plans provided for a forward movement of approximately 150 miles. Operation was to follow European Theater of Operations Standing Operating Procedure Number 53, 1944. Centralized direction was concentrated in the Motor Transport Service Headquarters, with command and operations under provisional Highway Transport Divisions, which were organized for the specific purpose of this operation to overcome the deficiencies in organization, found in the Quartermaster Group for truck operations.

106. The Operation as Initiated. As the operation began in the latter part of March 1945, the first two of the Highway Transport Divisions started operations. As the Armies advanced rapidly, the plan proceeded quickly through X, Y and Z phases, requiring the forming of an additional Highway Transport Division and also designation of an additional Quartermaster Group augmented by sufficient personnel. The latter Quartermaster Group operated in the same manner but which was not designated officially as a provisional Highway Transport Division. In the initial stages, two major routes were considered available, for the support of the four Armies with possible development to four routes.

107. The Operation was Developed. As the Armies advanced, close coordination and direction by the Motor Transport Service developed the fact that additional routes were necessary, preferably one to each Army. The truck companies, including supervising battalions, were assigned to each of the Highway Transport Divisions and the one augmented Group in accordance with the estimated requirements. As the companies were brought forward from their assignments to sections in the rear areas, prearranged redistribution of motor transport units in the rear areas took place, thereby preventing the collapse of port clearance and static operations. This part of the XYZ plan was directly controlled by the Motor Transport Service by obtaining the necessary reassignments as required. A maximum of 238 - 2½ ton equivalent companies operated the routes.

108. The Operation behind Each Army. The following resumes indicate the scope of operations behind each of the armies at the front:

a. Behind the Ninth Army, the most northerly of the four United States Armies, the operation started first as a part of the route which supported both the First and Ninth Armies. In the latter stages the responsibility was only for the support of the Ninth Army. During the operation of the XYZ plan, nearly 125,000 tons of supplies were furnished the Ninth Army for a daily average of approximately 3,000 tons by VE-Day. The types of supplies of course varied with each Army because of the differences in amount of armor, number of personnel, proportion of mechanical equipment and type of terrain in which operating. Fifteen truck companies, twelve equipped with 10 ton semi-trailers and including three for bulk gasoline (2,000 gallon semi-trailers), operated this line of communications haul.

b. Behind the First Army, the third of the Highway Transport Divisions was brought into operation, the First Army having originally been supplied by the Highway Transport Division, which later supported only the Ninth Army. Thirty-one truck companies operated this line of communications haul. They were equipped as follows: two 2½ ton standard, two 2½ ton Corps of Engineers, eleven 10 ton semi-trailers, thirteen 10 ton diesel trucks and three 2000 gallon semi-trailers for bulk gasoline. In the operation, a little more than 180,000 tons of supplies were furnished to the First Army for a daily average of approximately 4,500 tons.

c. Behind the Third Army, the Highway Transport Division was originally conceived for preliminary support of the Seventh Army as well. This however, never materialized, since the operation as it developed required more extensive arrangements. The Highway Transport Division which supported the Third Army, was the first to start operations and by VE-Day it had delivered nearly a quarter of a million tons, which included nearly seventeen million gallons of gasoline and over 300,000 personnel. The daily average was approximately 5,700 tons, the largest single day being just over 10,000 tons. The number of truck companies assigned to this route varied with the operation, at the peak of which sixty-two truck companies were assigned. They were equipped as follows; thirty-four 10 ton semi-trailer, eleven 750 gallon tank trucks for bulk gasoline, ten 2½ ton standard, four 2½ ton Corps of Engineers and three 2000 gallon semi-trailers for bulk gasoline. The large number of 750 gallon tank truck companies came about when, by Advance Section order, the quartermaster gasoline supply companies were consolidated with the Transportation Corps' fleet for this operation.

d. Behind the Seventh Army, a Quartermaster Group augmented by additional personnel so that it operated the same as a Highway Transport Division, carried out the operations. The route which operated behind the Seventh Army was named the "Yellow Diamond Route". The number of companies varied as high as twenty-four but for the most part twenty truck companies were assigned to this operation of which seventeen were equipped with 10 ton semi-trailers and three with 3000 gallon tanks for the bulk transport of gasoline. The 3000 gallon tank semi-trailers were from 750 gallon skid tanks mounted on 10 ton semi-trailers. This was the last of the routes to be inaugurated, a few days after the others. During the period it hauled nearly 170,000 tons for a daily average of over 4,400 tons, the largest single day being just over 10,000 tons as as the European War ended.

109. Results. The operations of the four lines of communication routes under the XYZ plan was considered the most successful of all the major undertakings of the Motor Transport Service as part of the Trans-

portation Corps' integrated transport system. The total tonnage delivered to the Field Armies by the operation, up to VE-Day, was well over 630,000 tons, for an average distance of almost 160 miles. The operation continued however for some time after VE-Day in order to build up supplies for the static operations of the Armies for the occupation, and for the troops during redeployment. Certain deficiencies however existed even though this was considered the most successful of operations.

a. Insufficient use often resulted when companies were loaned to Armies and were not controlled by the Motor Transport Service field agencies, resulting at times in low delivery due to lack of close control.

b. Improper documentation often resulted in a lack of proper control since this prevented close analysis of the weak points.

c. Advance Section of the Communications Zone was unable, through personnel resources, to supply or maintain two drivers for each vehicle in the companies; and truck capacity, therefore, was not fully utilized.

d. Lack of supply replacement vehicles in Ordnance areas caused a great loss of time in securing vehicle replacements and reduced the daily capacity of companies.

e. In some cases, Army G-4 did not coordinate movement programs with the Highway Transport Divisions, resulting in disrupted deliveries.

f. In some instances, poor road discipline supervision existed where the Armies, rather than the Highway Transport Division, temporarily operated some of the companies.

g. There were, as usual, inadequate communication facilities.

110. Most Successful Points Established from experiences in the XYZ operation follow:

a. There must be a centralized Transportation Corps agency behind each Army. The provisional Highway Transport Divisions were successful applications of this principle. With coordination by the Motor Transport Service Headquarters, their work could be tied together in the over-all XYZ operation and also with the balance of the entire transportation system.

b. Highway Transport Divisions must be located in the same vicinity as the rear echelon headquarters of the Army being supported.

c. The Highway Transport Division must have full operational control over all Transportation Corps motor transport units, including bulk gasoline units.

d. The Highway Transport Division must establish very close liaison with the Army G-4, and the Army Transportation Officer to keep abreast of the tactical situation which might affect their operations. The Army, through the Regulating Officer (in reality this is the Transportation Officer, since to have both a Regulating Officer and a Transportation Officer would be a duplication), must specify what, how much, when and from where to where, the supplies or personnel are to move. The Highway Transport Division then redeploys its motor transport units and goes into operation. When crossing into army areas convoy procedure is in accordance with army directives.

e. Generally, unless emergencies dictate otherwise, Transportation Corps motor transport units should be used to make hauls between railheads and Army forward dumps. This is the only basis for a well developed schedule, properly coordinated with rail heads of the Transportation Corps transportation system and the Army supply service. Army truck units should be used in forward areas for supplies and personnel hauls for the tactical movement.

f. Adequate service support from Communications Zone sections and the Army throughout the route is absolutely necessary. Contact with the Service must be immediate on all route changes in order that essential functions may continue to be performed. This applies to Ordnance, Signal, Engineers, Provost Marshal, and the other services as well.

g. Adequate loading and unloading facilities (labor, conveyors, depot lights where allowed, and similar aids must be provided in accordance with scheduled programs.

h. As far as possible, the total turn-around distance must be held to less than 400 miles, preferably 350 miles, otherwise the bivouac must be at the center of the hauling. This prevents efficient use of the Battalion Headquarters in administering the companies and at the same time supervising their operations by getting them started on the road. In this arrangement the Highway Transport Division assumes responsibility for road patrol to keep the operation moving.

i. The channel of command direct from the Highway Transport Division to the Battalion is adequate. The absorbed Group used as a nucleus for the Highway Transport Division, need not be considered a channel. It was previously determined that the organization of the Quartermaster Group was inadequate for truck operations. The efficient performance of the augmented Groups (provisional Highway Transport Division) justified this conclusion.

SECTION 8

CLEARING THE PORTS AND OTHER OPERATIONS

111. The operations at the Beaches. The operations at the beaches, corresponding to port clearance, were beset with many difficulties. Poor facilities for loading, very poor roads and very poor dump sites made it difficult to use the heavy duty vehicles efficiently. Operation of the beaches as a separate command with motor transport units assigned directly, made it difficult to carry out technical supervision to the fullest extent. Because of this, operations were quite often inefficient and preventive maintenance was very poor. On some occasions instructions were issued directing that maintenance programs be not carried out to accomplish twenty-four hours a day continuous type operations. The disastrous effect in the long run, is obvious.

112. The Operations in the Several Ports. There were, some small ports, but the principal operations took place at such installations as Cherbourg, France (VO 1522), Le Havre, France (VL 4027), Rouen, France (VM 2817) Marseilles, France (VT 4615) and Antwerp, Belgium (VJ 6795). During the first four or five months following D-Day it was found necessary to clear approximately 70% of tonnages arriving at the ports and beaches by motor transport. Later, by the construction of rail sidings and the use of barges, motor transport cleared approximately 50% of the tonnages. For the port of Antwerp, Belgium it was as low as 25%. Most port clearance hauls averaged approximately eight miles, terminating at local depots or rail loading points. Among the

general deficiencies encountered in port clearance, which hampered the fulfillment of the Transportation Corps' mission of transporting the supplies and personnel from ports to destinations, are the following:

a. The tendency of initial port and beach authorities to press motor operations to the exclusion of preventive maintenance.

b. An inadequate supply of labor and mechanical devices for loading and unloading trucks, resulting in wasted transportation.

c. The lack of supervisory motor transport personnel at critical operating points.

113. The Operations at the Various Installations. Static operations which included rail loading and unloading of supplies to and from the depot, hauling from depot to depot, and miscellaneous housekeeping and personnel movements, comprised a large part of the requirements for motor transport units of the Motor Transport Service. These static operations, and port and beach clearance operations described in the two preceding paragraphs were operated by the Base or other Sections of the Communications Zone. Very often inefficient operations resulted from following poorly conceived operating procedures. The technical manual "Motran" which was written by the Motor Transport Service was officially authorized as operational doctrine for line of communication type operations. At later dates it was adopted by the motor transport staffs of the various sections, as a guide for port clearance and static operations. However, in the initial phase, not having been authorized as a command directive, its principles were not followed and this greatly handicapped efficient local operations. Static operations normally moved supplies an average distance of ten or eleven miles. Among the special types of operations was the "Red Horse Operation". This comprised transporting large numbers of personnel (entire divisions, etcetera) their equipment, and impedimenta from the ports of debarkation in the Le Havre, France (VL 4027) area to the staging camps where they were held temporarily before movement forward. House-keeping support of the area was included. Twenty-three truck companies, eight of which were equipped with ten ton semi-trailers had a daily average personnel haul of 14,000 troops and a tonnage movement of 4,000 tons. The average turn-around distance was forty-five miles with a maximum of 100 miles. In an emergency, through movements reached 500 to 600 miles. This was stretching static operations into a temporary line of communications haul. Another special type operation occurred during the German counter-offense in the Ardennes region, when the necessary motor transport units were supplied by Motor Transport Service to haul personnel of several divisions from their bivouac areas, into the battle area. In this emergency move over 37,000 personnel and more than 10,000 tons of supplies were transported. This is an important example of the speedy advantages which can be gained by the concentration of all facilities for mass movement in a single service, as part of a complete transportation system. There were other occasions of the special handling of out-of-gauge items of equipment or supply, among which was the hauling of Landing Craft Vehicle, Personnel overland, Diesel locomotives and 90 foot bridge pilings. Among some of the deficiencies which were encounted, and which, as time progressed, the Motor Transport Service was able to clear up or definitely improve, were the following:

a. Poor maintenance during the early stages, and a lack of experience and proper supervision was evident in local truck operations by groups and battalions. Maintenance personnel was not included in the Tables of Organization at the start of operations.

b. There was poor coordination and undue delay in loading and unloading.

c. There was inefficient loading of trucks in spite of carefully prepared directives on proper loading.

d. Communications Zone Section motor transport staffs were often inadequate or composed of inexperienced personnel.

e. Generally there was insufficient use at installations of the other forms of transportation, such as rail and barge (where possible) and a lack of pooling of organic motor vehicles.

f. The organization and use of provisional truck companies resulted, in almost every case, in very poor maintenance and highly inefficient operations. The use of provisional trucking units should be discouraged. They were necessary in the early stages to make up for lack of transportation facilities. This lack of facilities was due to the failure to obtain early approval in the United States of the requisitions for heavy duty vehicles and their early production. This resulted in later delivery to the Motor Transport Service in the European Theater.

114. Results. The results obtained in the port clearance operations, including the beach clearance, and the static operations were inefficient at the start but in the course of time were improved by the efforts of the centralized motor transport headquarters. Through the use of Motor Transport Service publications, including "Motran", Truck Loading Reference Data and "Maintenance Bulletins", the deficiencies were either overcome or the conditions definitely improved.

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

SECTION 1

CONCLUSIONS

115. Motor Transportation is one of the means for transporting bulk supplies and personnel from ports to destinations. The Transportation Corps must include it as a part of its complete transportation system if success is to be realized.

116. Motor Transport as a part of the complete transportation system of the Transportation Corps must be an integral part of the Transportation Corps' facilities. Centralized movement control and the control of the units organic to each form of transportation, permits ready adjustments at any time to meet increasing or decreasing requirements and so assure fulfillment of the mission without interruptions. No other service is in a position, by reason of knowledge of operations, receipt of shipping information or control of any sizable amount of transport facilities, to carry out such an integrated plan for this tremendous job.

117. The most successful method of movement of supplies and personnel is by continuous coordinated movements as performed by the Transportation Corps in the European Theater, when controlling all the means to effect the delivery.

118. The realization of an integrated transportation system has been accomplished indirectly by War Department action. Within the European Theater it was accomplished directly by the policies set forth, the procedures issued and the organizations established.

119. The Motor Transport Service as established in the European Theater as an integral part of the Transportation Corps' complete transportation, was successful in properly analyzing needs for the campaign, preparing detailed plans for the entire operation, and in carrying out the actual operations. The results demonstrated the feasibility of the arrangement.

120. Technical Responsibilities. While carrying out the above operational duties, the Motor Transport Service staff successfully performed additional functions: that of making technical development studies on motor transportation problems, and advising the Chief of Transportation on motor transport matters of a theater-wide nature which affected the operation of vehicles other than in motor transport units. As the largest single operator of motor vehicles, the Chief of Transportation was called upon by the European Theater and Communications Zone Headquarters to give technical advice, on special staff level, regarding the operation of motor vehicles.

SECTION 2

RECOMMENDATIONS

121. Motor Transport Service in Transportation Corps. It is recommended that Motor Transport Service be made a permanent part of the Transportation Corps and that pertinent Tables of

Organization and Equipment be changed to the 55 series as covered in Part Two of this study.

122. Change of Doctrine. It is recommended that following the establishment of Motor Transport Service as an organic part of the Transportation Corps, appropriate action be taken to revise pertinent field manuals, technical manuals, army regulations and such other documents as are necessary to set forth the organization, mission and functions of the Motor Transport Service in the Transportation Corps in all echelons and elements of the army.

123. Technical Responsibilities. It is recommended that in the revision of the manuals, army regulations, the Chief of Transportation also be assigned the responsibilities for the technical development of bodies for bulk cargo and mass personnel hauling vehicles and for Special Staff technical advice on all vehicle operation matters.

THE GENERAL BOARD
UNITED STATES FORCES EUROPEAN THEATER
APO 408

MOTOR TRANSPORT SERVICE AS A PERMANENT PART
OF THE
TRANSPORTATION CORPS

PART TWO

ORGANIZING MOTOR TRANSPORT SERVICE IN TRANSPORTATION CORPS

CHAPTER 1

THE HEADQUARTERS UNITS

SECTION 1

HEADQUARTERS AND HEADQUARTERS COMPANY, MOTOR TRANSPORT SERVICE

124. Historical Development. The history of the Headquarters and Headquarters Company, Motor Transport Service, began in the United States in June 1941. The original Headquarters Company was organized in accordance with Table of Organization 10-500-2 dated 1 November 1940. The Headquarters (Table of Organization 10-500-1 dated 1 November 1940) was never organized. On establishment of the European Theater of Operations slightly more than half of the Headquarters Company personnel were sent to England in July 1942 and assigned to the Transportation Corps. The Headquarters Company was inactivated. A new Table of Organization 10-500-1, Headquarters and Headquarters Company Motor Transport Service dated 21 July 1942 was published just prior to the transfer of certain Quartermaster Corps functions regarding supply and maintenance to the Ordnance Service as previously outlined in paragraph nine of part one. This transfer included the above Table of Organization 10-500-1 dated 21 July 1942, since that organization was mainly concerned with supply, vehicle assembly, etc. The Table of Organization has since been declared obsolete. Concurrent with the transfer of supply and maintenance responsibilities to Ordnance Service, the operation of motor transport units in the European Theater of Operations was transferred from the Transportation Corps to the Quartermaster in August 1942. Later, in July 1943, the operation of Motor Transport small units was returned to the Transportation Corps (the detail and authority was covered in section two, chapter two in part one of this study). Immediately upon return to the Transportation Corps, action was initiated to provide a Motor Transport Service organization parallel to the Military Railway Service, and also including an organization comparable to the Railway Grand Division. Action was not forthcoming during actual operations, therefore, provisional organizations were activated by European Theater of Operations and Communications Zone authority. These organizations were the 6955 Headquarters and Headquarters Company, Motor Transport Service, and the 6956, 6957, and 6958 Headquarters and Headquarters Companies, Highway Transport Division (discussed in section two which follows). Coupled with the negotiations regarding these headquarters units, there have always been discussions regarding the more appropriate name for this activity: "Motor Transport Service" or "Highway Transport Service." Throughout this study the term Motor Transport Service has been used since that was the original army term, and the term used during actual operations. "Highway Transport Service" is

more all inclusive of the functions carried out by the Transportation Corps regarding motor transport facilities. A separate paper discussing the proper name to use is included as Appendix Number 1. On 7 May 1945, the day before VE Day, Table of Organization and Equipment 55-402T for a Headquarters and Headquarters Company, Highway Transport Service was published. It was too late for effective use, but will be considered in the paragraphs which follow, since its construction did not fully agree with what had been found successful in the European Theater of Operations.

125. Relation to Theater and Communication Zone Headquarters. The relation of the Headquarters and Headquarters Company Motor Transport Service to the European Theater Headquarters and the Communications Zone Headquarters was very close. The organization operated in a dual capacity and at times in a triple capacity. As will be shown in the next paragraph the commanding officer of the organization commanded the motor transport units engaged in line of communications hauling. Carrying out this command in the field and the related operational duties, together with certain technical supervision of other units, were among his responsibilities. As a means of conserving personnel and at the same time affording the best technical advice on motor transport operations for the Chief of Transportation, and consequently for the European Theater and Communications Zone Headquarters, the same personnel performed staff duties for the two headquarters. For the Headquarters European Theater of Operations, this concerned theater-wide planning and recommendations, through the Chief of Transportation, for allocation or reallocation of motor transport units to the major commands. For the Headquarters Communications Zone it meant producing the motor transport plans and recommendations, through the Chief of Transportation for allocation or reallocation of motor transport units in accordance with requirements to the major subordinate commands, one of which in the later stages was the Motor Transport Service Command itself.

126. Command, Operation and Technical Supervision. The commanding officer of the Headquarters and Headquarters Company, Motor Transport Service as established in the European Theater of Operations, commanded the motor transport units assigned for line of communications hauling. Actually, as established in the European Theater of Operations, this command provided that certain administrative matters were the responsibility of the section of the Communications Zone within whose territory the units were located at the time. The administrative matters were general courts-martial jurisdiction, hospitalization and evacuation, personnel accounting (including machine records servicing), all fiscal transactions, supply of common items, readjustment and redeployment of personnel and units, assisting the commander of of the Motor Transport Service in administrative and disciplinary inspection of units. By experience, the Motor Transport Service later found it was advisable that the following administrative matters should also be the responsibility of the local section commander-postal matters, Special Service functions (including provisions for athletics and recreational materials), information and educational matters, claims and Army Exchange Service matters. Unless Ordnance third and fourth echelon maintenance units are attached to the Motor Transport Service as shown in the remarks column of Table of Organization and Equipment 55-402T dated 7 May 1945 these services must also be provided locally. In major operations, however, it was found necessary to attach Ordnance Maintenance units to the Motor Transport Service. Supervision of operations of the units commanded was maintained by representatives from the headquarters acting as liaison officers and inspectors. Operations were effected through the Quartermaster Groups and Quartermaster Battalions (Mobile). As will be shown in

section two of this chapter, it was necessary to augment the Quartermaster Groups to carry out the operation. For those motor transport units assigned for port clearance and static operations, command was vested in the commanders of the sections of the Communications Zone in which they were located and they were under the direction of the section transportation officer. In order to standardize training, operational procedures, and documentations, in these latter units, technical supervision was made the responsibility of Motor Transport Service. This responsibility was established by the Communications Zone headquarters and was carried out by liaison officers and inspectors from the Motor Transport Service. In this way motor transport units were transferred about the theater to meet changing conditions, and all followed standardized procedures and training programs and operated uniformly.

127. Successful Experience and Organization. General experience of the Motor Transport Service indicates that it was perfectly logical and practical for the chief of Motor Transport Service to command and operate units on line of communication hauling, technically supervise all other motor transport units and at the same time have the headquarters personnel act in the dual capacity of a staff for matters concerning the European Theater and Communications Zone Headquarters. All of the above were part of the centralized control system. In order to describe the organization which was the most successful and at the same time provide for use of the Table of Organization and Equipment 55-402T and Change 1 dated 1 June 1945 described in the first paragraph of this section, the description following will be made in the form of suggested changes to that Table of Organization and Equipment.

a. In the remarks column the assignment and capacity should be broadened to operate two or more Quartermaster Groups (or Highway Transport Divisions).

b. The Headquarters should be reconstructed to cover the following sections.

(1) Executive section - commanding officer and executive officer; attached troops commander.

(2) Administrative section (S1) - include duties of an adjutant and all personnel matters for all motor transport units.

(3) Status section (S2) - should include the functions of the control section and statistical work (both static and operational statistics). The analysis of statistics is a form of intelligence by which requirements and efficiency of use are determined. These analyses are passed on to all the other sections.

(4) Operations section (S3) - should include the functions of the planning section and vehicle operating section. The Motor Transport Service carried out the same functions with a Staff Branch and an Operations Branch, but logically they should, and can, be combined.

(5) Equipment section (S4) - should include the functions of the maintenance and supply sections. Supply, unlike rail and water, is a function of the other Services for motor transport. For motor transport it is more a case of expediting and processing requirements, for parts, vehicles, and associated equipment. Separate sections for maintenance and supply are unnecessary. Standards and procedures for maintenance are established by the Ordnance service, and are performed accordingly by the motor transport units. The maintenance

as visualized in the Table of Organization is an Ordnance function.

(6) A full time executive officer should be provided, instead of it being an additional duty of one of the other officers. In such an organization commanding, controlling and/or supervising two or more Quartermaster groups (or Highway Transport Divisions) as later described, has a field of activity so vast as to require both officers. This increase in one officer is justified by experiences in the European Theater.

(7) Rank of the Commanding Officer should be Colonel and executive officer, Lieutenant Colonel, with a note in remarks column providing for increase one rank for each when scope of operations warrant and when recommended by the theater commander and approved by the War Department.

(8) Ranks of the chiefs of the four sections, S1, S2, S3, and S4, should be Lieutenant Colonel. Experience in the European Theater has indicated that the scope of planning, operations and liaison warrants such ranks. This does not increase the number of Lieutenant Colonels in the Tables of Organization but merely changes their assignment.

(9) Attached troops commander should be in the grade of Lieutenant Colonel, since some of the attached troop units may be as large as battalions. This will give comparative rank.

(10) Car Companies (Table of Organization and Equipment 10-87) should be added to the remarks column.

(11) The total number of officers, warrant officer and enlisted personnel are sufficient, if inspection teams can be provided as proposed in section four of this chapter. It was found necessary in the European Theater of Operations to have available as many as twenty additional officers in the Motor Transport Service in order to provide for field inspections, liaison, and comparable duties. The efficient use of the motor transport facilities obtained, justified their assignment.

(12) Extra vehicles for the tremendous amount of field work can be provided by the attachment of a car detachment from Table of Organization and Equipment 10-500.

SECTION 2

HEADQUARTERS AND HEADQUARTERS DETACHMENT QUARTERMASTER GROUP

128. Ability to Perform Trucking Mission. The Headquarters and Headquarters Detachment Quartermaster Group, Table of Organization and Equipment 10-22 dated 4 January 1945 when provided for the command and operation of the more or less static Quartermaster Services (other than motor transport) is probably of sufficient size. For motor transport operations, which are highly mobile and extend over wide geographical areas or for long distances of road networks, the Quartermaster group was found to be too small. Assistance was necessary and was provided by sending additional personnel into the field from the Motor Transport Service, attaching other personnel from traffic regulating groups, providing additional battalion headquarters units on certain operations for headquarters work, etcetera. The Quartermaster group

was approximately half the size actually required.

129. Provisional Highway Transport Divisions. As a good comcomparison with the Quartermaster group headquarters, the operations of the three provisional Headquarters Highway Transport Division and the one augmented Quartermaster group headquarters, all of which operated behind the four Armies after they crossed the Rhine, serve to illustrate the requirements for such an organization. These provisional organizations operated what was perhaps the most successful of all the line of communication hauls, the XYZ operation. Their work was coordinated by the 6955 Headquarters and Headquarters Company Motor Transport Service. Each had as a nucleus, a Quartermaster group augmented by additional personnel from the Motor Transport Service Headquarters, and other personnel from Traffic Regulating Groups. Their sizes varied slightly, but in general were the same and serves as the basis for the proposals set forth in paragraph 132 of this section.

130. Command and Operations. The Quartermaster group headquarters (and the Highway Transport Divisions) had full command of all motor transport units assigned to them for their mission. Normally each command included up to five battalions. Likewise, they carried out all the details of the operation in accordance with the plan provided. Operations were hampered by lack of signal communications and lack of Military Police as security guards against pilferage. Had Table of Organization and Equipment 55-402T been available and in operation, the necessary attached troops to the Motor Transport Service Headquarters would have been provided.

131. Operations with the Staffs of the Communications Zone Sections varied. In most cases personnel obtained through allotments to the Communications Zone Section, or from traffic regulating groups was organized into a motor transport branch of the Transportation Section. Personnel thus organized was usually inadequate and quite often not fully qualified. However, in the latter part of the operations it was recommended, after some experimenting, that a Quartermaster group headquarters commanding all the battalions engaged in port clearance and static operations in a Section should be used as a nucleus for the staff, augmented by additional personnel from other sources. Thus, the Quartermaster group served in a dual function similar to that of the Headquarters, Motor Transport Service.

132. Successful organization for duties as a control agency in the European Theater of Operations illustrated that, in addition to the Commanding Officer and Executive Officer, there should be an S-1 section of three officers and one warrant officer; an S-2 officer performing functions similar to those in the Motor Transport Service headquarters; an S-3 section of eight officers; and an S-4 section of three officers and one warrant officer, including a maintenance officer for whom an urgent need existed throughout the campaign. Actually, a maintenance officer was added to the Table of Organization in the late phases of the campaign. Enlisted personnel at a two to one ratio is sufficient. A Headquarters Detachment of one officer and ten enlisted men will provide for the necessary drivers for the vehicles used for field trips for supervision of operations, as well as personnel for other house-keeping duties. Dental personnel should be added as in the present detachment. Chaplain service should be provided by Communications Zone commanders. Experience showed that it was difficult to properly perform those duties in mobile operations.

SECTION 3

HEADQUARTERS AND HEADQUARTERS DETACHMENT

QUARTERMASTER BATTALION (MOBILE)

133. Ability to Perform Trucking Mission. The Headquarters and Headquarters Detachment, Quartermaster Battalion (Mobile), Table of Organization and Equipment 10-56 dated 3 May 1944 was, with one exception, sufficient for normal trucking operations. Even when operating continuously (around-the-clock) the battalion was able to operate efficiently. This, however, was only true where road patrol over the greater distances was a function of the Quartermaster group or Highway Transport Division with the battalion functioning in the relatively confined area of the unit bivouac, and at the origin of operations. Road patrol by the battalion was possible when the distances were short, or the operations of a local nature. The exception mentioned above, as will be discussed further in paragraph 135 of this section, was the lack of a maintenance officer. This has since been overcome by the addition of a maintenance officer through Change Number two, dated 2 August 1945 to the Table of Organization and Equipment 10-56.

134. Command and operations were, in principle, the same as described in section two for the Quartermaster group. Normally, each command included up to six truck companies. However, five companies proved to be the best working figure.

135. Successful organization for duties in the European Theater of Operations demonstrated that the only need, and an extremely vital one, was for a maintenance officer. Lack of maintenance personnel seriously hampered successful follow-up and coordination of the maintenance program, expediting parts, and maintenance inspections. In the final stages, over fifty civilian automotive advisers were obtained in order to overcome this deficiency. The Medical Detachment should continue as presently organized.

136. Aviation Units. The original plan of the organization of aviation truck companies did not provide for battalion organization. However, as the operation developed the greater part of the transportation facilities were pooled for economy and the separate companies thus assembled were formed into battalions (and in some instances regiments). The other truck companies were assigned to the service teams and depot groups only in a quantity sufficient to enable them to perform the daily functions required at the station concerned. Thus the pooling under battalions provided a flexible and economical system.

SECTION 4

CELLULAR UNITS

137. Existing Cellular Units. The existing cellular units in Table of Organization and Equipment 55-500 dated 29 September 1944 and changes 1 and 2 dated 29 January 1945 and 25 February 1945 respectively, Transportation Corps Service Organization, contains no columns applicable to motor transport operation. It does, however, contain certain cellular units expressly designed for highway traffic regulation. This does not mean traffic direction such as military or civilian police would perform but the orderly processing,

scheduling and over-all regulation of convoy traffic in accordance with demands of the shipper and the capabilities of the receiver. Since these provisions already exist in the Transportation Corps, the addition of Motor Transport Service to the transportation system will place at the disposal of the transportation officer, on any staff, the means for transporting supplies and personnel, uninterrupted, from origin to destination. This was the case in the European Theater of Operations. The group, battalion and company headquarters shown in Table of Organization and Equipment 55-500 are intended for a type of work other than actual operation of motor transport units. Obviously, in the incorporation of motor transport cellular units of Table of Organization and Equipment 10-500 dated 10 January 1945, Quartermaster Service Organization, into Table of Organization and Equipment 55-500 at the time of official transfer of motor transport activities from the Quartermaster Corps to the Transportation Corps, it will be necessary to revise the group, battalion and company cellular provisions. This can best be done by adding additional columns, since the existing columns in Table of Organization and Equipment 55-500 are not suitable for motor transport organizations.

138. Inspection Teams. Coupled with the successful operation of the Motor Transport Service Headquarters was the continued field inspections on efficiency, proper technical procedure and training. This should not be confused with the type of inspection performed by the Inspector General or the occasional informal or formal command inspection. It was a regular scheduled routine check on the operations of every unit. In order to carry out this detail, it was necessary to carry additional officers on the staff, provided from various sources. Whenever these inspections concerning good motor transport operation were not carried out, the operations were unmistakeably less efficient. Cellular units should be adopted to provide personnel for such technical inspections on approximately a schedule of six to twenty per motor transport service headquarters, depending on the size of the command, or four to six per group when operating separately within a small command.

CHAPTER 2

THE TRUCK COMPANIES

SECTION I

LIGHT TRUCK COMPANY (TROOP TRANSPORT COMPANY)

139. Truck Company versus Troop Transport Company. The term "Troop Transport Company" should be eliminated, based on experience of the European Theater. Motor Transport units which arrived in the European Theater designated as Troop Transport Companies operated the same as truck companies. The equivalent is the same, and by experience it was found there were no conditions warranting the exclusive designation, and subsequent exclusive use, for troop transporting only. As a matter of fact the greater percentage of any truck company's operations (and also the troop transport companies) was hauling supplies, and not personnel.

140. Drivers. Experience in the European Theater demonstrated the need for two improvements in the training of drivers:

a. That more training be given in the proper method of performing first echelon maintenance. The failure of most drivers to properly perform this maintenance can be attributed to lack of proper training. The drivers generally did not know:

(1) When and what to do for each type inspection.

(2) In what order to do each item of the inspection (very important if "habit" is to be developed to prevent omitting an item continuously, and hence a more rapid part failure).

(3) How to perform each operation (each item of first echelon maintenance) so that uniform inspection of vehicles was obtained. Tests were made and it is considered feasible that first echelon maintenance should be reduced to merely servicing the vehicle and more of the items transferred to the second echelon maintenance as a means of obtaining better performance.

b. Familiarity with more than one type vehicle. On assignment to a new command it is always possible that the company will be equipped with other than the standard 2½ ton 6 x 6 truck. Either because of non-availability for training or to meet requirements for increased loads, troops often had to be assigned to new type vehicles and drive them off directly into operations with little (or without any) pre-instruction, due to the pressure of operations. This did not assist maintenance. Such conditions could be eliminated in training by courses of instruction on all types of vehicles being included in the Zone of Interior training programs. In the new Table of Organization and Equipment 10-57 date 21 July 1945 the additional drivers for continuous operations which was column CN in Table of Organization and Equipment 10-500, has been included as a part of the Table of Organization in the remarks column. The same comment covered in section three of this chapter applies.

141. Mechanics. From experience in the European Theater most mechanics were well qualified and performed well. The number of mechanics is sufficient when engaged in port clearance or static operations. When engaged in line of communication hauling however, second echelon maintenance was hampered in the European Theater of Operations because one mechanic went with each platoon on convoy, leaving only

four mechanics to carry out the daily second echelon inspection of eight vehicles, perform second echelon repairs on other vehicles and compensate as well for any mechanics sick or otherwise off duty. Ordnance Service is preparing a study on roadside service stations (Number 97) which will offset this need along established routes. Provisions should be made for increasing the mechanic strength when engaged in line of communication operations unless Ordnance Service provides roadside service stations to offset the need. Likewise, additional 3/4 ton weapons carriers should be included so that platoons operating away from the company, can carry the second echelon tool set which is provided.

142. Officers. From experience in the European Theater of Operations many replacement officers were not qualified motor transport operators. This handicapped operations considerably. The basic fault can be corrected in the training centers (Military Academy, Reserve Officers Training Corps units, Officer Candidate Schools, etcetra.) A survey of such courses will indicate little time is devoted to motor transport training. The best officers were those who, by long association in the units had become unit trained. During active operations, however, replacements begin operating upon arrival. At this time, lack of training may seriously hinder the accomplishment of the mission. Some officers had received only ten hours of motor transport training. Any one of them on being commissioned might have been made motor officer for a unit involving only a few vehicles or perhaps many, regardless of the type unit, or worse, might be made a platoon officer in a motor transport unit. The responsibilities as far as vehicle operations are concerned, are the same for the company with few vehicles or the truck company with many and the primary mission of trucking. In discussing the addition of officers to the cellular units for companies engaged in continuous operations (section three of this chapter) it may be of advantage under such continuous conditions to promote the two most qualified enlisted men to warrant officers (Junior Grade); one for administration and one for motor maintenance. This would permit the commanding officers and the maintenance officer to rotate with the platoon officers in handling convoys. The use of the junior officers, however, is considered the most desirable since this leaves the company commander free to supervise the company.

143. Equipment versus Mission. The new Table of Organization and Equipment 10-57 dated 21 July 1945 provides for substitution of certain vehicles for the standard 2½ ton 6 x 6 cargo truck, when authorized by a theater of operations commander outside the limits of the continental United States. Experience in the European Theater indicates that such a note will simplify the procedure for obtaining substitute equipment, provided of course, the equipment necessary for accomplishing the mission is the same as listed for substitution in the Table of Equipment. Since any mission may require almost any type of vehicle it would simplify procedure if the note was made general for any type vehicle, when authorized by the Theater Commander. The process of planning, justifying, requisitioning, obtaining production, delivery, shipment, etcetra, of vehicles not listed by name (since they are not considered Table of Equipment unless so listed) is complicated and results in tremendous delay. Much delay was experienced by the European Theater for such reasons and the retarded delivery seriously hindered carrying out the transportation mission.

144. Aviation Units. In general the equipment as covered by the Table of Equipment was sufficient. However, in operations it was necessary to form some units into bulk gasoline companies to provide the necessary delivery. Such arrangements were handled by the Air Force A-4 Section and were made independently of the Transportation Corps'

Motor Transport Service. The overall problems were the same and applied equally to truck company (Table of Organization and Equipment 10-517) or separate platoon (Table of Organization and Equipment 10-518).

SECTION 2

HEAVY TRUCK COMPANY (AND PETROLEUM TRUCK COMPANY)

145. Drivers. The same comments stated in section one in this chapter concerning drivers in light truck companies apply equally to drivers in heavy truck companies (and the petroleum truck companies), Table of Organization and Equipment 10-37 dated 11 August 1944. Generally it was slightly worse regarding familiarity with vehicles since practically none of the drivers had been previously trained in heavy truck operation (such as truck-tractors and 10 ton ton semi-trailers or prime movers and 45 ton tank transporters). The present Table of Organization still depends on the cellular unit in Table of Organization and Equipment 10-500 for additional drivers in continuous operations. Comment in section three of this chapter therefore applies.

146. Mechanics. The mechanics in general were well qualified and performed well in the heavy truck companies. Additional training was afforded by the use of civilian automotive advisers in the battalions in latter stages of the European Campaign. The Heavy Truck Company Table of Organization provides twelve mechanics which was sufficient for normal second echelon maintenance and inspections, participation in convoys, and caring for the increased number of vehicles (due to extra ratio of semi-trailers to truck-tractors and the two parts to each combination instead of the usual single vehicle). In training mechanics, especially those intended for Heavy Truck Companies, it should be remembered that much of the heavy equipment is often powered with Diesel engines. Additional 3/4 ton weapons carriers should be provided so that the second echelon tools can be transported when platoons operate away from the company.

147. Officers. The same comments stated in section one of this chapter concerning officers in light truck companies applies equally to the officers in the heavy truck companies.

148. Equipment versus Mission. The Table of Organization and Equipment 10-37 dated 11 August 1944 provides for substitution of certain vehicles for varying conditions or missions when authorized by the theater commander. The same comment in section one of this chapter, concerning making the substitution of vehicles general, applies to the heavy truck company Table of Organization and Equipment as well. For example, in the European Theater, units were equipped with tank transporters, refrigerator vans and 10 ton Diesel cargo trucks with 10 ton semi-trailer converted to full trailers by use of a dolly converter. Further, it was found logical and practical by experience in the European Theater to equip the petroleum truck companies with 96 semi-trailers in the same manner as the heavy truck companies hauling general cargo. A three to one ratio is a more ideal arrangement, especially when tandem operations are in full use and turn-around distances are short.

149. Aviation Units. The air force units do not provide separate Table of Organization and Equipments for light and heavy truck companies, substitution being made in the same Table of Equipment. Comments regarding the equipment were made in paragraph 144 above.

SECTION 3

CELLULAR UNITS

150. Driver Augmentation Teams. The driver detachment columns of Table of Organization and Equipment 10-500 dated 10 January 1945 (columns CN to CQ inclusive) which would be transferred to Table of Organization and Equipment 55-500 must be revised in view of European Theater experience. As the detachments are shown it is necessary for squad leaders to drive on regular schedule daily. This defeats the purpose of a motor transport squad leader. The primary duty of a motor transport squad leader is to maintain convoy discipline of his squad, supervise first echelon maintenance before operations, during operations (by riding with each driver alternately), at halts and after operations. In addition he must be an aircraft spotter for the convoy and machine gunner for his squad. When 24 hour continuous type operations are in effect a squad leader cannot perform any of these duties if he must daily take his turn at driving. This is obvious since he cannot observe and maintain convoy discipline while actually driving, which requires his full attention for safety. He cannot supervise first echelon maintenance of his other drivers when he is acting as a driver since he must perform similar maintenance on his own vehicle at the same time. Experience in the European Theater of Operations demonstrated that maintenance suffered tremendously, because of the lack of, or reduction of non-commissioned officer supervision. Likewise while driving the squad leader cannot be the aerial observer and machine gunner. Erroneously it was believed by some staff officers that eight additional drivers were always available by reason of eight vehicles being out daily for second echelon inspection. The driver, however, must accompany the vehicle and perform his weekly first echelon inspection under supervision of the motor sergeant and the mechanic and also assist the mechanic during the second echelon inspection of the vehicle. This is approximately an eight hour job to cover the above. In addition, the eight vehicles are used for local housekeeping or static operations if they are completed before the normal time or before the next convoy dispatch. The detachments for these specialized cases of continuous operations must be increased so that two drivers (exclusive of squad leaders) are available for driving. The squad leader should drive only in emergencies such as when the driver is taken sick, wounded, killed, or otherwise incapacitated, in order to keep the supplies moving. Thirty-six additional drivers per company were used in the European Theater with good results prior to the issue of the Table of Organization cellular units. On change to twenty-four the efficiency was reduced as outlined above.

151. Augmentation of Non-Commissioned Officers and Officers. There is one other deficiency in the augmentation teams for continuous operation, the detachments do not provide for relief of non-commissioned officers or officers. Experience in the European Theater of Operations proved the value of adding additional officers and non-commissioned officers although it was done only by authority of the Communications Zone command from a temporary loan of replacement personnel. Good results were obtained only intermittently because of constant reshuffling of this personnel and the lack of a holding Table of Organization. The need for officers and non-commissioned officers in continuous operations is just as apparent as the need for additional drivers, especially when the need for long hauls into Army territory arises.

152. Truck Platoons at Installations. Columns AJ and AK and

columns GD to CI inclusive of Table of Organization and Equipment 10-500 dated 10 January 1945 would be transferred to Table of Organization and Equipment 55-500 dated 29 September 1944 when Motor Transport Service becomes a part of the complete transportation system. More extensive use of such truck detachments to provide proper maintenance and operation of administrative vehicles assigned to posts, camps or stations (installations) would have solved some of organizational and pooling difficulties experienced in the European Theater.

CHAPTER 3

THE CAR COMPANY

SECTION I

CAR COMPANIES AND SEPARATE PLATOONS

153. Drivers. The same comments regarding the truck driver's failure to perform first echelon maintenance properly, as stated in section one of chapter two above, apply equally to car company drivers (Table of Organization and Equipment 10-87 dated 1 August 1944 and change 1 dated 29 September 1944). The effect, however, was not as noticeable since the conditions under which operations for car companies were carried out required a longer period of time for the effects to become noticeable. Since it is possible that there may be inter-change of drivers between car and truck companies, the car drivers should complete familiarization courses during training on the various trucks as well, even though in a car company they may have been assigned to 3/4 ton weapons carriers, with which the companies are equipped.

154. Mechanics. Generally, the mechanics in the European Theater car companies were well qualified and performed their mission satisfactorily.

155. Officers. The same comments regarding the qualifications of officers in truck companies apply to the officers in car companies. The effect was not readily apparent because of the operating conditions. The possibility of transfer to truck companies makes it all the more important that the training be just as thorough.

156. Operating as separate platoons. Not all car companies in the European Theater of Operations were kept intact. It was necessary on occasion to split companies and assign the platoons to small headquarters. This is the principle of operation of the car company, since they are normally trained to operate as separate platoons. However, some companies were so divided that the company headquarters and one platoon would be at one station and the other three platoons scattered far and wide, even under different commands or elements of the Army. Unless the operation is for a very short period or of temporary duration, or unless it is conducted at fairly closely located stations of a single command, this scheme makes a car company practically useless as an entity. Recourse should be made to the use of car detachments as covered in section two of this chapter.

157. Equipment versus Mission. The equipment of car companies as provided in Table of Organization and Equipment 10-87 dated 1 August 1944 and change 1 dated 29 September 1944 basically is sufficient for the mission. It provides for 1/4 ton trucks and 3/4 ton weapons carriers for passenger transportation. Thus individuals or small groups can be transported at the headquarters to which assigned. The Table of Equipment also provides for substituting 24 five-passenger light sedans for 24 weapons carriers when authorized by the Theater Commander. Thus more elaborate passenger transportation can be made available. A comparison of this Table of Organization and Equipment with the former organization of a car company suggests a more appropriate arrangement of the Table of Organization. Formerly the car company was arranged in the form of three squads to each platoon, a squad of sedans, a squad of 1/4 ton trucks ("Jeeps") and a squad of 1/2 or 3/4 ton reconnaissance and command cars. The use of the reconnaissance and command cars has been fading from the scene in favor of the 1/4 ton truck or the 3/4 ton weapons carrier if merely a matter of transporting personnel. The present Table of Organization still provides three squad leaders (corporals) in each

platoon, therefore it would appear proper, in the interests of good organization and esprit de corps, to show the platoons as composed of three squads. According to the present Table of Equipment, in each platoon there are 10 - 1/4 ton trucks and 11 3/4 ton weapons carriers and one 1/4 ton for the platoon leader. When sedans are substituted there would be five 3/4 ton weapons carriers and six sedans per platoon in addition to the 10 1/4 ton trucks. Squads composed of an equal, or near equal number of vehicles would be much better. The squad leaders are necessary to provide dispatch personnel, for close supervision of first echelon maintenance and to act as relief drivers since other non-commissioned officers for operations are few in a car company. European Theater experience indicates that it matters very little one way or the other, whether the number of 1/4 ton trucks or the weapons carriers vary slightly. It would seem appropriate to have one squad of six motor trucks, one squad of seven weapons motor trucks and one squad of eight weapons carriers. When substituting cars the first squad would have six sedans instead of weapons carriers. Provisions should also be made in the Table of Organization, preferably in the remarks column, for substitution of the normal administrative vehicles of all types and sizes at an installation in a car company. This can be done by a general note on substitution. This would have overcome some of the many difficulties in the European Theater of Operations regarding poor maintenance and operation of the administrative vehicles at installations.

SECTION 2

CELLULAR UNITS

158. Cells Used as Separate Platoons. As discussed in section one of this chapter, platoons of car companies when operating separately from the company headquarters are usually of little value to the company as a unit. Therefore it was found advisable in the European Theater to activate numerous car detachments from Table of Organization and Equipment 10-500 dated 10 Jan 1945. The operation works as well and saves personnel. On transferring Motor Transport Service activities from Quartermaster Corps to the Transportation Corps, column GA and GB of Table of Organization and Equipment 10-500 should also be transferred. Second echelon maintenance personnel for such units is furnished by columns AJ and AK in Table of Organization and Equipment 10-500 which previously have been suggested for transfer.

159. Cells for Use at Small Installations. The experiences in the European Theater proved the worth of small car detachments for use in the small installations or headquarters. These cells as part of the transportation system reach the last ends of the requirements for transportation in such a unified network. These cells are particularly useful in administering, maintaining and operating the miscellaneous administrative vehicles of all types and descriptions found at installations. A general note on substitution should be made to that effect in the remarks column of the Table of Organization.

CHAPTER 4

CIVILIAN MOTOR TRANSPORT

SECTION I

ARMY VEHICLES, CIVILIAN DRIVERS

160. Experiences in the United Kingdom. In the United Kingdom prior to the invasion most of the installations had a total of thousands of administrative vehicles. The vehicles were a part of the vast transportation system down at its very finger tips. In order to conserve military personnel, civilians were hired to drive non-standard or limited standard military vehicles and, in a few instances, standard military vehicles. The non-standard and limited standard vehicles having been brought from the United States pending manufacture of standard vehicle. The operation of these vehicles in installation motor pools, including civilians for maintenance and dispatch personnel, were very successful when operated under directives of the Services of Supply. The basis for these directives was established by the Motor Transport Service in order to assist the functioning of the transportation system as a whole and to eliminate poor operational methods. The final plan used in integrating this transport into the system in the United Kingdom was covered by the directive prepared by the Motor Transport Service and issued as Services of Supplies Circular 9, 1944, which was a revision of Services of Supplies Circular 57, 1943.

161. Experiences on the Continent. Experiences on the continent were similar except the drivers were placed on mostly standard military vehicles when it became necessary to provide military personnel for replacements forward and later as the readjustment and redeployment plan went into effect and hundreds of enlisted men left the European Theater.

162. Supervision by Army Personnel. In each of the instances described in the two preceding paragraphs, supervision was carried out by a nucleus of officers and enlisted men. Normally it was the motor transport section of the installation or Headquarters Command and was administered by the Motor Transport Officer.

163. Successful Organization and Operations. The successful organizations and operations are more or less described in detail by the aforementioned Services of Supplies Circular 9, 1944, which was used in the United Kingdom. In several instances at principal headquarters where car companies or car platoons operated, these organizations formed the backbone around which the organization of civilian drivers, dispatchers and mechanics was woven. However, operations were just as successful when using only a supervisory officer and enlisted staff in accordance with directive, thereby conserving military personnel and permitting reassignment or redeployment of many individuals.

SECTION 2

CIVILIAN VEHICLES AND DRIVERS

164. Experiences in the United Kingdom. In the United Kingdom the operations followed two trends. First was the requisitioning of civilian vehicles from the British - termed "Impressed Vehicles". These vehicles were normally driven by civilian personnel as described in section one of this chapter. These vehicles were placed in the installation motor pool with the military vehicles. The second method

was by hiring commercial vehicles, including the driver, and dispatching them through the motor pool. These contracts were arranged through the purchasing service on a reverse lease-lend basis. In the first instance maintenance was carried out in the motor pool second echelon shop (either by military or civilian personnel). In the second instance maintenance was the responsibility of the owner of the vehicle. In all, the operation was successful in that military vehicles and personnel were released for other duties, and in the case of the hired vehicles, which was a major item of the plans of the Motor Transport Service in the Transportation Corps, it released practically every truck company from duty in the United Kingdom for duty on the continent. Buses were also hired for personnel moves in order to conserve the use of trucks.

165. Experiences on the Continent. On the continent the taxi was the principal vehicle with driver which was hired in order to conserve personnel and vehicles, particularly in Paris for use by the headquarters. There were other instances of hired vehicles, but most of the civilian transport was required in order to aid the population since the transport facilities had been seriously reduced during the occupation. Some buses were hired in order to conserve the use of trucks in personnel moves and for shuttle movements between headquarters, airports, and other installations. Horses and wagons were hired to some extent to conserve trucks on static operations in depots and around ports. Usually the Motor Transport Section of the Transportation Office in the Communications Zone Section concerned, handled the use of horses and wagons as an additonal duty.

166. Dispatch and Coordination. Dispatch and coordination by Army personnel was the same as described above in section one of this chapter.

167. Successful Organization and Operations. The methods followed as to organization and operations are as described in the document which was used in the United Kingdom - Services of Supplies Circular 9, 1944. In general the operations were the same for civilian vehicles and drivers as for army vehicles with civilian drivers.

CHAPTER 5
TRAINING

SECTION I
DRIVERS

168. On Driving. In previous paragraphs of Part Two deficiencies in driver training have been mentioned briefly. Motor Transport Service as a principal part of the transportation system depends on capable and dependable drivers. The principles set forth in TM 21-300 dated February 1945, Driver Selection and Training, are sound. Unfortunately, experience in the European Theater of Operations indicated that a great many, apparently, had not been selected in accordance with such principles. Drivers with low aptitude when judged by the standards given in the manual should be eliminated from the driver category. The safety of many lives, important cargo and valuable pieces of equipment worth thousands of dollars, should not be entrusted to one of low aptitude or weak character. This was clearly demonstrated in numerous instances in the European Theater. Once selected for soundness as a potential driver, the training course is equally as important. There should be no short cuts. Driver training should cover as many of the standard vehicles as possible, expert in one and at least familiarization with the others. A driver may be called upon to drive nearly any vehicle— his company may be equipped with almost any type,—or he may be transferred from time to time. He should be qualified before receiving a driver's permit and periodic reviews should be held to determine his fitness to keep it. Appendix No. 2, hereto is a training program used in the European Theater of Operations by the Motor Transport Service covering a review of all a driver is required to know. References to theater directives of course concern local rules such as speed limits, etcetra, and would be adjusted for the locality concerned.

169. On First Echelon Maintenance. A considerable portion of the training of the driver must be devoted to first echelon maintenance, particularly as set forth in Technical Manual 37-2810 dated March 1945,"Motor Vehicle Inspections and Preventive Maintenance." European Theater experience demonstrated this to be one of the weakest parts of the training of drivers arriving from the United States. As covered in section one of chapter two, drivers were particularly weak in knowledge of procedure. Appendix No. 2 covers a detailed review of first echelon maintenance as used in training in the European Theater. It is the experience of the Motor Transport Service that by continuous repetition of the principles of first echelon maintenance the driver will in due time perform them automatically, promptly, and when required.

170. Light versus Heavy Vehicles. Instruction in driving all type vehicles was discussed in paragraph 168 of this section. The number of drivers arriving in the European Theater of Operation who were familiar with driving and performing first echelon maintenance on only the standard 2½ ton 6 x 6 cargo truck was almost one hundred percent. True, they could get in the others and move them away, standard gear shift made this much possible. But proper driving and maintenance on each of the several light types of vehicles has points which require additional training. As a major factor in the overall transportation system, Motor Transport Service should be deeply concerned with furthering such training in all enlisted training centers.

SECTION 2

MECHANICS

171. On First Echelon Maintenance. Although mechanics are primarily concerned with second echelon maintenance and drivers with first echelon maintenance, it is also a responsiblity of mechanics to know how to perform first echelon maintenance as well. Every mechanic is also a driver, and he, at some time or other, drives the task vehicles and regularly drives the maintenance vehicles. In starting a second echelon inspection, he automatically performs part of the first echelon maintenance as a preliminary check.

172. On Second Echelon Maintenance. Mechanics must be of the best when performing second echelon maintenance. Higher echelon mechanics may or may not be expert in second echelon work. They may specialize for example, in a single operation in a higher echelon and become quite expert at that operation but know very little about second echelon maintenance. Second echelon mechanics, however, must have a wide knowledge of auto maintenance, for it is the second echelon mechanic who keeps the vehicle tuned to its highest pitch and operating smoothly. He must be able to trouble-shoot and make a considerable number of repairs. In the interests then of maintaining a smooth operating Motor Transport Service, so as not to break a vital link in the Transportation Corps' transportation system, it is important that the enlisted training centers carefully select and train the second echelon mechanics; diesel training should be included. Fortunately, in the European Theater of Operations, the mechanics in most cases performed well.

173. Light versus Heavy Vehicles. It is sufficient to say that like driver training, including the driving and first echelon maintenance of all types of standard Army vehicles, so it is with mechanics in second echelon training. Most light vehicles are more or less alike but in the heavy types many new units, mechanisms, etcetra, are brought into the picture. In engines for example -- diesel engines are a complete change. The scope of second echelon inspections covered in Technical Manual 37-2810 dated March 1945 should be closely followed in the establishment of training courses and closely allied with training in trouble-shooting and repairs on all types of vehicles.

SECTION 3

OFFICERS

174. Military Training versus Motor Transport Training. In section one of chapter two above, the training of officers was briefly discussed in connection with the Table of Organization and Equipment for truck companies. Here it should be emphasized that for the magnitude of motor transport in the army, in this mechanized day and age, the time given to motor transport training as compared to all other subjects taught in officers' courses is entirely too brief. A "priority one" job of the Motor Transport Service, in the interests of preventing a break in the chain of the vast transportation system, should be the assurance of increased emphasis on training in motor transport maintenance and operation in the Military Academy, Reserve Officers Training Corps courses and any other schools for the training and commissioning of officers. Consideration should also be given toward development of a suitable course in the Command and General Staff School in connection with the Transportation Corps and the transporting of the United States Army. More on this is covered in paragraph four of this section. Considerable thought should be

given toward a special course for all present officers in the Regular Army or in the Reserve Corps since any one of them may at any time become the motor officer in a company or the commander of a motor transport unit. The responsibilities are the same for one truck as for 100 and it requires the same knowledge. Motor Transport Service is too vital a part of the Transportation Corps' transportation system to allow it to fail in its mission because of unqualified officers— when they can be qualified.

175. Driving and Maintenance. Every officer should be a qualified driver, providing such aptitude tests as vision, color perception, reflex response, and the like, do not eliminate him from driving. As a qualified driver, he should be able to drive any of the vehicles, including operation in convoy procedure, and perform the first echelon maintenance. Thus, he will have a first hand knowledge of what to require of men under his command. For second echelon maintenance he should have a familiarization knowledge at least. Mechanics improve with practice and because it is impractical for every officers to continually practice like a mechanic at work, the above should suffice. An officer with such a knowledge who is designated maintenance officer will in a short time become more proficient by daily work. At any rate he will know what is required, should he ever have the responsibility of vehicles in his command either as a commanding officer, motor officer of a unit, or motor transport officer at an installation.

176. Platoon Officers versus Maintenance Officers. Here a slight change takes place in efficiency or knowledge as to maintenance or operations. If all officers have the training set forth in the preceding paragraph they will have a starting knowledge. As they branch out, the platoon officers will improve in their knowledge of operations by actual experience in convoys, etcetra, and the maintenance officer will improve in maintenance by experience in the unit second echelon shop. Additional training courses for maintenance officers should be provided to afford them the opportunity to obtain detailed technical knowledge.

177. Staff Officers. A difficulty experienced in the organizing of Motor Transport Service in the European Theater was in the locating of sufficient officers with ability for staff work. This applied, of course, to the headquarters of Motor Transport Service. Staff work required of the officers from the battalions up through the groups and the motor transport branches of the Communications Zone section headquarters normally is strictly operation from day to day or short range planning based on current situations. At the Motor Transport Service Headquarters, however, the planning was long range— from one to two years into the future. Without such available data as to planning factors, and current situations having no bearing, it meant considerable reasoning was required to plan an operation such as the part Motor Trensport Service was to take in Operation Overlord. During the Spring and Fall of 1943 the European Theater headquarters, through the Services of Supplies Staff, operated a school for staff planners— The Joint Planning School. The school was operated in conjunction with the British and was a miniature Command and Staff School. The officers who gained experience and training in lecturing at this school or attending the school formed a nucleus around which a staff was built for Motor Transport Service to begin. This point is of sufficient importance to warrant special consideration being given to including Motor Transport Service, together with studies of the Transportation Corps transportation system, in future courses at the Command and General Staff School. A quota of Regular Army and Reserve Officers should be set for attendance at each session. Thus, for any future need, qualified officers capable of producing completed staff work,

will be easily obtained. A shortage of such officers would prove serious in any future operation if planning time were short.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

SECTION I

CONCLUSIONS

178. The Highway Transport Service Headquarters as organized in the European Theater (as Motor Transport Service) attained a tremendous success and was capable of all the functions imposed upon it. The organization structure was logical and sound in comparison with Table of Organization and Equipment 55-402T dated 7 May 1945. The latter should be revised accordingly.

179. The Highway Transport Division. In view of the experiences of the Transportation Corps' Motor Transport Service in the European Theater that the existing Headquarters and Headquarters Detachment Quartermaster Group, Table of Organization and Equipment 10-22, dated 4 January 1945, was totally inadequate for truck operations (without augmentation by addition of a great number of personnel), the Table of Organization and Equipment should be completely revised to correspond to the successful provisional Headquarters and Headquarters Companies, Highway Transport Division, which were used by the Transportation Corps' Motor Transport Service in the European Theater.

180. The Highway Transport Battalion and Companies. In view of experiences by the Transportation Corps' Motor Transport Service in the European Theater with the deficiencies of the other motor transport units listed below, the Tables of Organization and Equipment should be revised to correct those deficiencies in a manner compatible with the successful adjustments made by the Motor Transport Service in the European Theater in overcoming or minimizing those deficiencies.

a. Headquarters and Headquarters Detachment Quartermaster Battalion (Mobile) Table of Organization and Equipment 10-56, dated 3 May 1944, and changes 1 and 2 dated 29 September 1944 and 2 August 1945 respectively.

b. Quartermaster Truck Company or Quartermaster Troop Transport Company. Table of Organization and Equipment 10-57 dated 21 July 1945.

c. Quartermaster Truck Company, Heavy and Quartermaster Truck Company (Petroleum) Table of Organization and Equipment 10-37, dated 11 August 1944.

d. Quartermaster Car Company. Table of Organization and Equipment 10-87, dated 1 August 1944 and change 1 dated 29 September 1944.

e. Cellular Units. Table of Organization and Equipment 10-500 dated 10 January 1945, Quartermaster Service Organization; Table of Organization and Equipment 55-500 dated 29 September 1944 and changes 1 and 2 dated 29 January 1945 and 25 February 1945 respectively, Transportation Corps Service Organization.

f. Tables of Organization and Equipment for Aviation Truck units should be changed from the 10 series to 55 series in a change of motor transport operations from Quartermaster to Transportation Corps.

181. Doctrine Concerning Civilian Assistance. In view of the successful experiences of the Transportation Corps' Motor Transport Service in the European Theater of Operations with the use of civilians (driving army controlled vehicles, and hiring commercial vehicles and horses and wagons to assist and supplement the motor transport facilities) and with the long term difficulties encountered in organizing them for use and effective operation, the pertinent field manuals, technical manuals, and army regulations should be revised to include recommended procedure parallel to the successful methods used in the European Theater.

182. Training. In view of the tremendous difficulties experienced by the Transportation Corps' Motor Transport Service, due to inadequate training of officers and enlisted men in motor maintenance and operations, the training programs of enlisted training centers and all officer training commands should be revised and reviewed to eliminate the deficiencies. Further investigation should be made in the possibilities of increasing the training of officers for staff duty in motor transport headquarters organizations in view of the Motor Transport Service's experience in the European Theater. Although the performance of mechanics was considered satisfactory, review of training programs at training centers should be made in order to make them compatible with the changes in the driver training programs.

SECTION 2

RECOMMENDATIONS

183. Designation of Highway Transport Service. It is recommended that upon reorganization of motor transport as an integral part of the Transportation Corps the designation be Highway Transport Service.

184. The Highway Transport Service Headquarters. It is recommended that Table of Organization and Equipment 55-402T, dated 7 May 1945, Headquarters and Headquarters Company Highway Transport Service and change 1 dated 1 June 1945 be revised as follows:

a. Restate capacity as commanding and operating two or more highway transport divisions, each comprising up to five truck battalions of up to five companies each.

b. Reconstruct headquarters sections as follows with notes in remarks column covering functions as listed beside each:

(1) Executive Section--Commanding Officer (Colonel) executive officer (Lt. Col.), and attached troop commander (Lt. Col.).

(2) Administrative Section— S1, include duties of an adjutant and all personnel matters.

(3) Status Section-- S2, control, static statistics, operational statistics, preparation of operational intelligence.

(4) Operations Section-- S3, planning, training, operations.

(5) Equipment Section--S4, maintenance, supply,

c. Provide for a full time executive officer instead of an additional duty.

d. Provide a note in remarks column for increasing rank of commanding officer and executive officer one rank when scope of operations warrants and when recommended by the theater commander and approved by the War Department.

e. Rearrange the four Lt. Colonels in the Table of Organization so that one is in each section as S1, S2, S3 and S4.

f. Add Car Company, Table of Organization and Equipment 10-87 to remarks column.

185. The Highway Transport Division. It is recommended that Table of Organization 10-22 dated 4 January 1945 Headquarters and Headquarters Detachment Quartermaster Group with attached medical detachment be revised and republished in the 55 series for truck operations with the following changes:

a. Change designation to "Headquarters and Headquarters Detachment, Highway Transport Division."

b. Reconstruct the Table of Organization as follows with notes in remarks column covering normal functions or as listed beside each:

(1) Headquarters Section--Commanding Officer, executive officer.

(2) S1 Section--three officers, one warrant officer.

(3) S2 Section--one officer, control, static and operational statistics.

(4) S3 Section--eight officers.

(5) S4 Section--three officers, one warrant officer (one officer to be a maintenance officer). Enlisted men for above sections at two to one ratio.

(6) Headquarters Detachment--one officer, ten enlisted men. Attach dental as at present for Quartermaster group.

c. Change mission to specifically state truck operations and a capacity of up to five battalions of up to five truck companies each.

d. Provide sufficient 1/4 ton trucks for continuous road patrol and other operational work.

186. The Highway Transport Battalion. It is recommended that Table of Organization and Equipment 10-56 dated 3 May 1944, as amended by changes 1 and 2 Headquarters and Headquarters Detachment Quartermaster Battalion (Mobile) with attached medical detachment be changed to the 55 series for truck operations and the designation changed to "Headquarters and Headquarters Detachment Highway Transport Battalion with attached Medical Detachment."

187. The Light Truck Company. It is recommended that Table of Organization and Equipment 10-57 dated 21 July 1945, Quartermaster Truck Company or Quartermaster Troop Transport Company be changed to the 55 series and revisions made as follows:

a. Change designation of unit to simply "Truck Company."

b. Change augmentation provisions for continuous operations in remarks column in accordance with the following:

Provide 36 additional drivers for all type continuous operations.

Provide 3 additional mechanics when operations are line of communications and additional 3/4 ton weapons carriers for second echelon tool sets except when Ordnance provides adequate Roadside Service Stations along stable routes.

Provide 12 additional non-commissioned officers when operations are line of communications.

Provide 2 additional Officers when operations are line of communications.

c. Add a general note in the Table of Equipment under vehicles, substantially as follows: "Or other standard light type vehicles shown in War Department lists as may be required to complete a special mission outside continental United States, when authorized by theater of operations commander."

188. The Heavy Truck Company. It is recommended that Table of Organization and Equipment 10-37 dated 11 August 1944, Quartermaster Truck Company (Heavy) or Quartermaster Truck Company (Petroleum) be changed to the 55 series and revisions made as follows:

a. Change designation of unit to "Truck Company (Heavy)" and "Truck Company (Petroleum)."

b. Add augmentation provisions for continuous operations in the remarks column similar to provisions in Table of Organization and Equipment 10-57 and in accordance with the following:

(1) Provide 36 additional drivers for all type continuous operations.

(2) Provide 12 additional non-commissioned officers when operations are line of communications.

(3) Provide 2 additional Officers when operations are line of communications.

(4) Provide additional 3/4 ton weapons carriers for second echelon tool sets when operations are line of communications.

c. Add a general note in the Table of Equipment under vehicles substantially as follows: "Or other standard heavy duty vehicles shown in War Department lists as may be required to complete a special mission outside continental United States when authorized by theater of operations commander."

d. Change number of semi-trailers, 2-wheel, 2,000 gallon gas tank to 96 and 50 per cent equipped with dollies.

e. Provide an additional note that 48 additional semi-trailers, any type, may be authorized for special missions when authorized by theater of operations commander and approved by the War Department.

189. The Car Company. It is recommended that Table of Organization and Equipment dated 1 August 1944 and change 1 dated 29 September 1944 be changed to the 55 series and designated simply "Car Company". Further experimentation should be conducted in the United States and by the occupying forces on feasibility of more appropriately utilizing the squad leaders by organizing the platoons into definite squads of six 1/4 ton trucks, seven 1/4 ton trucks and eight weapons carriers respectively, with permitted substitution of six sedans, 5 passenger, light, for the six 1/4 ton trucks in the first squad.

190. The Cellular Units. It is recommended that columns AJ and AK, columns CA to CI inclusive and columns CP and CQ of Table of Organization and Equipment 10-500 dated 10 January 1945 be transferred to Table of Organization 55-500 dated 29 September 1944. Further that columns CN and CO of Table of Organization and Equipment 10-500 be rescinded.

191. Inspection Teams. It is recommended that columns for motor transport inspection teams, composed as shown below, be added to Table of Organization and Equipment 55-500 dated 29 September 1944:

> For attachment to a Headquarters and Headquarters Company Highway Transport Service or to a Headquarters and Headquarters Detachment Highway Transport Division when operating separately--one team for each twenty companies in the command. Each team composed of one operations officer and one maintenance officer.

192. Aviation Truck Units. It is recommended that all Tables of Organization and Equipment of aviation motor transport units, presently in the 10 series, be changed to the 55 series upon establishment of the Transportation Corps in all elements of the Army, and the establishment of motor transport as an organic part of the Transportation Corps.

193. Doctrine Concerning Civilian Assistance. It is recommended that specific points concerning the use of civilian motor transport and/or horses and wagons, to augment and supplement motor transport facilities in a theater of operations, be included in revisions of appropriate field manuals, technical manuals and/or army regulations as a guide in future operations.

194. Training. It is recommended that the necessary action be taken in the United States and, as far as possible, in the occupation forces to correct existing deficiencies in the training programs (at training centers, at schools and in every unit insofar as it pertains) as follows:

a. For Drivers.

(1) When to do each type first echelon inspection.

(2) What to do at each type first echelon inspection, including the order in which to perform

each item and detailed instruction on how to perform each item. Consideration should be given in the United States to reviewing all first echelon items with a view toward reducing them to servicing only and adding the balance to second echelon maintenance in order to obtain better performance.

(3) Familiarization with all types of army vehicles covering pertinent points in driving and the difference in carrying out the first echelon inspections.

(4) Periodic refresher training on the above, making use of actual operations for training, and periodic retesting of drivers to determine qualifications to retain army driving permit.

b. For mechanics.

(1) Provide for some training as covered in sub-paragraph a above for drivers.

(2) Training courses in second echelon maintenance on all types of vehicles covered in the familiarization course for drivers.

c. For officers.

(1) Increase training time in all schools and courses with regard to maintenance and operation of motor vehicles. Time should be sufficient to cover the features which follow in sub-paragraphs (2) to (7).

(2) Responsibilities of officers for maintenance and operation of vehicles in their command.

(3) Duties of a motor officer of a unit and a motor transport officer of an installation.

(4) Duties of a maintenance officer in a unit having a large number of vehicles.

(5) Qualification as a driver, including operation in convoy procedure and first echelon maintenance. Training in driving and first echelon maintenance procedure must be thorough.

(6) Familiarization course in second echelon maintenance for officers designated in later periods as maintenance officers, additional training courses should be provided to qualify the officer.

(7) Command and Staff school training for selected officers of the Regular Army and the Officers Reserve Corps regarding Motor Transport Operations.

DISCUSSION OF AN APPROPRIATE NAME FOR THE FORM OF TRANSPORTATION INVOLVING THE USE OF TRUCKS, BUSES, AND PASSENGER CARS ON HIGHWAYS, ROADS, OR STREETS.

1. Each form of transportation involves many supervisory and technically different activities as are required for general supervision, planning, design and procurement, physical operation, maintenance, communications, traffic control; also design, construction and maintenance of necessary facilities such as terminals, roads, rails, etcetra. No form of transportation can operate with any degree of efficiency without the services of these technical skills.

2. In the efficient utilization of the various forms of transportation there are few situations where any one form will operate independently of one or more of the others.

3. The general War Department definition of Motor Transport - "motor vehicles used for transporting military personnel, weapons, equipment, and supplies, excluding essentially combat vehicles such as tanks, scout cars, and armored cars", does not incorporate the technical services necessary to provide a transportation service, but confines itself to the vehicle used. Other definitions confine the scope to allocation of the empty vehicle to someone else and their maintenance as necessary. In theater publications the term motor has been used in connection with both rail and water transport.

4. The dictionary definition of motor does not indicate a particular form of transport but rather the power unit for any form of transport. Thus, the means by which mobility is provided for the various forms of transport is basically similar and in many cases the same so far as the motor or power plant is concerned.

5. The dictionary definition of highway is "A main road or thoroughfare; hence, a road or way open to the use of the public." Synonyms given are road, street, track, or path.

6. The great and distinct difference in the various forms of transport are in the conveyances and the obvious place where the conveyance is operated, i.e. aeroplane with air; boats or ships with water; railroad trains with railway or railroad tracks; trucks, buses, passenger cars, or horse drawn vehicles with highways, roads, or streets.

7. The greatest development of the form of transportation which utilizes trucks, buses, and passenger cars on highways, roads, and streets has been in the United States. Privately owned companies which own and operate such vehicles use a varied combination of names. The names chosen follow no specific pattern, and obviously are but few chosen to convey the kind of service.

8. The activities of the various truck and bus companies in the United States are confined to supervision, physical operation and maintenance within laws and regulations which themselves do not establish. Other agencies furnish engineers who design the trucks and give technical assistance in operation and maintenance, do all highway engineering including traffic engineering, provide communications, handle gasoline distribution, etcetera. The highway and street facilities are such in the United States that there is no need for convoy and movement control activities of the kind needed in most of the army highway operations.

9. In selection of a name to indicate the form of transportation, and in general the conveyance, and also incorporate the

technical services essential to its operation, it is not considered wise to use terms which are common to other major forms of transport or which according to any War Department definition is limited or implies limitation of activities to but a part of the essential components.

10. In the design of a table of organization for coordination, direction and operational control of a common carrier trucking service, the need for including specialists is a positive one. They would be in such fields as army administration, truck fleet operation, certain vehicle maintenance, highway engineering from the standpoint of determining capabilities of highways to support proposed loads and required additional facilities for carrying the required highway transport load. Also highway traffic engineering from the standpoint of movement control, providing essential traffic control and coordination for directional signs, communications and enforcement coordination for procurement, storage and issue, and in addition planning and training, are all considered essential to efficient operation and need to be incorporated in the organization.

11. To indicate the form of transportation, the kind of conveyance and inclusion of technical subdivisions, which when coordinated and operated under one supervisory organization provide a transportation service - the rail people selected the names"Military Railway Service" and"Railway Grand Division."

12. To indicate the form of transportation and in general the kind of conveyance, and also inclusion of technical services, which when coordinated under one supervisory organization provides a theater common carrier service involving the use of trucks, and in some cases buses, passengor cars or horsedrawn vehicles on highways, roads, or streets, the term"Highway Transport Service" and"Highway Transport Division"are considered to be most logical.

HEADQUARTERS
COMMUNICATIONS ZONE ETOUSA
OFFICE OF THE CHIEF OF TRANSPORTATION
MOTOR TRANSPORT SERVICE
APO 887, US ARMY

SUBJECT: Training in Maintenance and Operation of Motor Vehicles.

TO : Commanding Officers of all QM Groups (TC); all QM Battalions (M) (TC); all QM Truck Companies (TC), all QM Car Companies (TC) and detachments.

1. Paragraph 5, Sec XXXVI, of "Maintenance and Operation of Motor Vehicles", Hq ETOUSA, dated 24 Jan 44, requires that not less than 5% of a driver's daily time be devoted to continuous training in the maintenance and operation of motor vehicles. It further recommends the use of actual operations to carry out such training. 5% of a driver's daily time approximates 4½ hours per week.

2. The simplified program contained in the Annex hereto provides a continuous training schedule for all drivers and their non-commissioned officers in all TC Hq Companies (Motor Transport Service and Highway Transport Division), TC Hq Detachments (QM Groups and QM Battalions (M)), QM Truck Companies (TC), and QM Car Companies (TC) or Detachments. All drivers, including those who handle "Housekeeping" vehicles only, should complete this training. Every motor transport subject which drivers are required to know is covered.

3. a. It will be noted that 4 different weekly programs have been prepared, each of which provides 4½ hours of training. There are 17 subjects covered in each weekly program, each of which comprises a class and most are very short. Most classes can be given in actual operation and do not take excessive time from other duties.

b. A simplified record form is also furnished in order that you may conveniently control your training to the end that no driver or NCO will fail to receive any phase of the training. All training is to be supervised by an officer. The use of this record permits squads, sections, platoons or any convenient miscellaneous group to receive training at one time. An additional column is provided at the end of each week's record for the use of recording any additional training which the unit commander may desire to insert or which may be required from time to time.

c. The weekly programs are lettered "A" for the 1st week, "B" for the 2nd week, etc, the subjects are numbered 1, 2, 3 etc., within each week. They need not be followed in numerical order since they have been arranged in order of time required.

4. This 4-week program should be continued indefinitely. Near perfection will result when by familiarity with the program, through repetition, inspection, and vigorous supervision between classes - the methods taught in the training become standard practice. If this program is followed the apprehension normally connected with inspections will disappear. These inspections by MPI representatives, Groups, Battalions, etc. to determine the efficiency of the unit are necessary to maintain high standards. The inspection reflects the degree and the success of the training and it is the training which assures the ability of the organization to perform its mission. A well

trained unit can feel certain of a good rating. Is your unit ready?

For the Chief of Transportation:

S/ROSS B. WARREN
t/ROSS B. WARREN
Colonel, T.C.
Chief, M.T. Service, OCOT

Incl: Annex A - Training Program
and Attendance Record.

TRAINING PROGRAM

List of references used in this training program:

AR 850-15, dated 28 Aug 43 and Change 8 dated 27 Jan 45.
AR 850-20
TM 37-2810
FM 25-10
ETC SCP 53 Hq, ETO Cirs. 26, 12 Mar 44, 9, 25 Jan 45
TM 21-300 dated Feb 1945
TM 31-200, Hq, Com Z Cirs. 20 and 54, 1945
ETO "Maintenance and Operation of Motor Vehicles", file AG 451/3 PubGC, dated 24 Jan 44, amended by 34 changes, herein abbreviated "M&O".
TM 21-305 (Use whenever possible in connection with every subject.)
TM 37-250 (Use in connection with all maintenance subjects).
In all reference to TM 37-2810 use in conjunction with TM of specific vehicle being operated.

First Week (A Series):

A1 - Road Driving. TM 21-300 (Par.44 & 45). By lecture discuss the principles of good road driving including proper braking. One hour. Make use of regular convoy (10 min lecture before convoy, practice procedure during 45 min enroute with corrective action enroute by NCOs riding in convoy and by convoy commander changing position, followed by 5 min. critique at first halt.)

A2 - 1st Echelon Before Operations Check. TM 37-2810 (Par.8). By lecture explain that every item to be checked is on back of Trip Ticket (or mimeo sheet in glove compartment), every item is checked every time, items are checked in same order shown every time-do not skip around. By group performance have each driver perform the check "by the numbers", 30 min. Make use of motor stables before a routine trip.

A3 - Basic Driving Principles. TM 21-300 (Par.41-43). Have an office lecture during ten minutes on the basic principles of driving, followed by practice including backing and turning with NCOs taking corrective action. 30 min.

A4 - Fundamentals of Driving. TM 21-300 (Par.19, 19 k. l.m,) By lecture and discussion cover all of the fundamentals of good driving habits. 20 min.

A5 - Use of Brakes. TM 21-300 (Par.30). By lecture and use of charts describe brake system, nomenclature of principle parts, and explain correct usage. 20 min. Make use of a regular convoy. (After 10 min. lecture before convoy have NCO ride with each driver during regular convoy operation for 10 minutes for corrective action).

A6 - Trip Ticket. TM 37-2810 (Par.4a(1)), TM 21-300 (Par.24), M&O (SecXXVII). By lecture and demonstration explain the proper method of filling in all of the items on a trip ticket and the reasons the information is required. Cover the recording of casual drawing of fuel and lubricants (see also Sec.XXVIII,M&O). Check last 3 trip tickets turned in by each driver with the driver concerned, pointing out corrections to be made on future trip tickets. 15 min. (10 min lecture and instruction - 5 min personal instruction for each driver. Dispatcher can handle latter instruction).

A7 - Echelons of Maintenance and Responsibilities. &C (Sec VII,par 2), AR 850-15 (par.27). By lecture describe the five different echelons of maintenance and explain the driver's responsibilities or relation in connection with each echelon. 10 min. Make use of the motor stables after a routine trip.

A8 - Tires. TM 37-2810 (par 8b(14) & 11b(15)), M&O (Sec XXIV). By lecture explain that items 14 (before operations check), 45 (at halt check), 68 (after operations check) all concern tires. Give book detail how each check is made. Explain it is done same way every time. By demonstration have one driver demonstrate each of the checks. By lecture (TM 31-200), explain effect on tires by improper driving, use exhibits if available. 10 min. Make use of motor stables after a routine trip.

A9 - Tampering and Damage. TM 37-2810 (par 8b(1)). By lecture explain book detail how item no.1 is checked. Explain it is done same way every time. By demonstration have one driver demonstrate the check. 10 min. Make use of motor stables before a routine trip.

A10- Fuel, Oil and Water. TM 37-2810 (par.8b(3) & 11b(1)), M&O (Sec.II Par 6&7). By lecture explain that items 3, 38, and 54 all concern fuel, oil, and water. Give detail and demonstration. Make special mention of radiator obstructions. (par.12 Sec II M&O). 10 min. Make use of motor stables before or after a routine trip.

A11- Engine Warm-up. TM 37-2810 (par.8b(7)). By lecture explain book detail how item 7 is checked. Explain it is done same way every time. By demonstration have one driver demonstrate the check. 10 min. Make use of motor stables before a routine trip.

A12- Glass & Rear Vision Mirror. TM 37-2810. (par.8b(11)). By lecture explain that items 11, 52 & 58 all concern glass and rear vision mirror. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 10 min. Make use of motor stables before or after a routine trip.

A13 - Lamps & Reflectors. TM 37-2810 (par.11b(6)). By lecture explain that items 12 & 59 all concern lamps and reflectors. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 10 min. Make use of motor stables before or after a routine trip.

A14 - Air Brake Tanks. TM 37-2810 (par 8b(5) & 11b(22)). By lecture explain that items 5 & 75 all concern air brake tanks. Give book detail how each check is made. Explain it is done same way every time. By demonstration have one driver demonstrate each of the checks. 5 min. Make use of motor stables before or after a routine trip.

A15 - Leaks, General. TM 37-2810, (par.8b(4)). By lecture explain that items 3, 43 & 73 all concern leaks. Give book detail how each check is made. Explain it is done same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

A16 - Engine Operation. TM 37-2810 (par.8b(20)). By lecture explain that items 22 & 55 all concern engine operation. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

A17 - Engine Controls. TM 37-2810 (par.11b(14)). By lecture explain book detail how item 67 is checked. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables after a routine trip.

Second Week (B Series):

B1 - Convoy Procedures. M&O (Sec.IV,V,& Par.6,SecVII). ETO SOP 53, FM 25-10. By lecture explain all regulations and principles for convoys. Cover prohibition of purchasing of food, arrangements for meals and billets, intervals etc. 1 hour. Make use of regular convoy (10 min. lecture before convoy. Practice procedure during 45 min, enroute with corrective action enroute by MCO's riding in convoy, and by Convoy Commander changing position. Follow by 5 min. critique at first halt.).

B2 - 1st Echelon During Operations Check. TM 37-2810 (par.9). By lecture explain that every item to be checked is on the back of the trip ticket (or on mimeo sheet in glove compartment), as soon as vehicle begins to roll every item is checked in the order shown and every item is checked every time. Explain that this check is made continuously while

driving and emphasize each of the general signs which will indicate trouble, such as rattles, knocks, squeals, smoke, etc. Give detailed explanation of items 26 to 36. 30 min. (15 min. lecture, before a routine convoy have NCO's ride with each driver for 10 min during the convoy and 5 min critique during a regular halt).

B3- Map reading. FM 21-25. ETO Cirs. 25, 12 Mar 44, & 9, 25 Jan 45. By lecture describe the standard map symbols and explain the use of grids and compasses in locating positions on the map. Have drivers practice use of compass by "coach and pupil" method of instructions. 30 min. Include army road signs, strip maps, etc. This instruction must be varied in accordance with capabilities of the pupils. For some it may be only elementary map reading to find destination.

B4- Functions, Nomenclature, etc. TM 21-300 (par.30-35). By lecture and demonstration cover the nomenclature and functions of the principal part of the vehicles in use by the unit. 30 min.

B5- Loads, Loading and Lashing. F&O (Sec LI), TM 21-305, TM 25-10, TM 21-300 (par.37-39). By lecture and charts describe correct loading and lashing of loads, also explain waste of space and detrimental effect on equipment of incorrect loading. Have individual demonstrations of correct loading and lashing; also group performance. 20 min. Group performance part of this class can be incorporated in the regular operations. Describe when overloads are permitted.

B6- 1st Echelon at Halt Check. TM 37-2810 (par.10). By lecture explain that every item to be checked is on back of the trip ticket (or on mimeo sheet in glove compartment). Every item is checked every time. Items are checked in same order shown every time - do not skip around. By group performance have each driver perform the check "by the numbers" 15 min, Make use of convoy halt during a routine trip.

B7- Speed. F&O (Sec XXXIII), TM 10-460, AR 850-15 (par.23). By lecture explain the military necessity for the control of speed, adherence to local speed limits, speed limits for each type of vehicle. Explain convoy speeds in built-up areas, responsibility for speed control, special authorization for speeding. Have each driver repeat speed limit for his vehicles. 10 min.

B8- Tools and Equipment. TM 37-2810 (par.8b(21) & 11b(32)), F&O (Sec.XXXV). By lecture explain that items 21 & 85 all concern tools and equipment. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 10 min. Make use of motor stables before or after a routine trip.

B9 -Battery & Volt Meter. TM 37-2810 (par.11b(9)). By lecture explain book detail how item 69 is checked. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 10 min. Make use of motor stables after a routine trip.

B10 - Lubrication. TM 37-2810 (par.11b(30)). By lecture explain book detail how item 83 in checked. Explain it is done the same way every time. 10 min. lecture followed by driver assisting the mechanics at a regular lubrication of the vehicle.

B11 - Abuse and Neglect. AR 850-15 (par.15). &C Sec XLI. By lecture explain the scope of abuse and neglect, including tools, tires, chains, tarpaulins, etc. Cover disciplinary action in case of abuse or neglect. 10 min.

B12 - Temperatures - Hubs, Brake Drums. TM 37-2810.(par.10b(2)). By lecture explain book detail how item 39 is checked. Explain it is done same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of time during a regular halt of a trip.

B13 - Axel & Transfer Vents. TM 37-2810(Par.10b(3) & 11b(19)). By lecture explain that items 40 & 72 all concern axel and transfer vents. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

B14 - Gear Cases. TM 37-2810 (par.11b(21)). By lecture explain book detail how item 74 is checked. Explain is is done same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables after a routine trip.

B15 - Military Police Patrol. M&O (Sec.XXIV). By lecture explain that duty of Military Police is to enforce all traffic regulations, including all of the principles of operation whether traveling singly or in convoy. 5 min.

B16 - Use of Vehicles.AR 850-15(par.6). M&O (par.3 Sec.XXVII). By lecture explain uses for which army transport may be used. Stress official business only. 5 min.

B17 - Passengers in Vehicles. M&O (Sec VI & Par.3 Sec XXVIII). By lecture explain prohibitions and limitations for transporting civilian and military personnel in army vehicles. Presently on continent, "lifts" are forbidden. 5 min.

Third Week (C Series):

C1 - Clean Engine & Vehicle. TM 37-2810 (par.11b(31)), M&O (Sec X & XXVI & XLIX). By lecture explain book detail of item 84 for after operations check and additional detail for weekly check. Cover precautions in painting engine and touching up of rust spots. Have drivers thoroughly clean engine and vehicle. 1 hr. 30 min. Make use of weekly check.

C2 - 1st Echelon After Operations Check. TM 37-2810(par.11). By lecture explain that every item to be checked is on back of the trip ticket (or on mimeo sheet in glove compartment). Every item is checked every time. Items

are checked in same order shown every time-do not skip around. By group performance have each driver perform the check "by the numbers". Time 1 hour. Make use of motor stables after a routine trip.

C3 - Supervision. TM 21-300(par.51,52,53). By lecture explain to all drivers that upon completion of any one of the preventive maintenance checks they are to report to their squad leader. Explain to the NCO's that the squad leader reports to the section leader, section leader to platoon leader & platoon leader to the platoon commander. Point out to the NCOs that pending the report from the NCO or driver under them they are to directly supervise his work and make corrections where order of procedure or method if incorrect. 30 min. Make use of motor stables before a routine trip by having each driver and NCO perform his job and make the necessary report.

C4 - Safety. TM 21-300 (par.40), TM 10-460, FM 0 (Sec. II), and AR 850-20 (par.3) AR 850-15 (par.19).By lecture explain all safety measures. Have a driver demonstrate proper use of hand signals, precautions in handling gas line, etc. 15 min. If possible exhibit drawings of local road signs in use.

C5 - Accidents. TM 21-300(par.23), FM0(Sec.I), AR 850-15 (Par 18). By lecture explain what to do in case of accident. Explain how to fill out accident report form. Have each driver exhibit the accident report form from his own vehicle which is always carried in glove compartment. 10 min.

C6 - Fire Extinguishers. TM 37-2810 (Par.8b(8)&11b(7)). By lecture explain that items 8 & 60 all concern fire extinguishers. Give book detail how each check is made. Explain it is done same way every time. By demonstration have one driver demonstrate each of the checks. 5 min. Make use of motor stables before or after a routine trip.

C7 - Accessories & Drives. TM 37-2810 (par.8b(4)). By lecture explain book detail how item 4 is checked. Explain it is done same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before a routine trip.

C8 - Horn and Windshield Wipers. TM 37-2810 (par.8b(10) & 11b(4)). By lecture explain that items 10 & 57 all concern horn and windshield wipers. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

C9 - Decontaminator. TM 37-2810(par.8b(20) & 11b(61). By lecture explain that items 20 & 61 all concern decontaminators. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

C10 - Accessories & Bolts. TM 37-2810(par.10b(10) & 11b(10)). By lecture explain that items 47 & 63 all concern accessories and bolts. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables after a routine trip or time during a regular halt of a trip.

C11 - Operators Publications. TM 21-300 (par.92), TM 37-2810 (par.4), M&O (par.4 Sec.XXXVI & Sec. LVII). By lecture explain what publications driver must have available when operating vehicle (see item 23), 5 min.

C12 - Use of Road. M&O (Sec. LIX). By lecture give details of precautions drivers are to take in use of roads, particularly with regard to mud. 5 min.

C13 - Bridge Classification. M&O (Sec. VII). By lecture explain reason for classification and use of marking on vehicle when crossing bridges. 5 min.

C14 - Road Courtesy. M&O (Sec.VIII & par 7 Sec. XVI), TM 10-460 (chapt.3). By lecture cover principles of road courtesy. Point out disciplinary measures. 5 min.

C15 - Overnight Trip. M&O (Sec.IV). Stress complete preparation for personal comfort and protection. 5 min.

C16 - Safeguarding Vehicles. M&O (Sec.XLIV). By lecture explain each method of safeguarding vehicles. 5 min.

C17 - Vehicle Waybill. M&O (Sec. IV). By lecture explain reasons for waybill and driver's part in execution. By demonstration indicate action by driver. 5 min.

Fourth Week (D Series)

D1 - 1st Echelon Weekly Check. TM 37-2810(par.11). By lecture explain that every item to be checked is on back of trip ticket (or on mimeo sheet in glove compartment). Items to be checked are marked with an asterisk (*) and every item is checked every time. By group performance have each driver perform the check, "by the numbers" after explaining in detail what work is done and how for each item. 2 hr. 30 min. Make use of a regular weekly check.

D2 - Cross Country Driving. TM 21-300(par.46,47). By lecture cover all principles of cross country driving. 40 min. (10 min lecture followed by demonstration to illustrate principles of cross country driving 15 min; have each driver make 15 min practice cross country driving). If unit is equipped with semi-trailers normally used on good highways only, this part of course can be completed with one of standard house-keeping vehicles of the unit.

D3 - Wheel & Flange Nuts. TM 37-2810(par.8b(13) & 10b(7)). By lecture explain that items, 13, 14, all concern wheel and flange nuts. Give book detail how each check is

made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

D4 - Springs & Suspensions. TM 37-2810 (par.8b(15 & 11b (1). By lecture explain that items 15,42,69 all concern springs and suspensions. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

D5 - Steering Linkage. TM 37-2810 (par.8b(16) & 11b (17). By lecture explain that items 16, 43 & 70 all concern steering linkage. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

D6 - Fenders & Bumpers. TM 37-2810(par.11b(23)). By lecture explain that items, 17, 49 & 76 all concern fenders and bumpers. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

D7 - Towing Connections. TM 37-2810 (par.8b(18) & 11b(17). By lecture explain that items 18, 50 & 77 all concern towing connections. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

D8 - Body Loads & Tarps. TM 37-2810(par.8b(19) & 11b(25)). By lecture explain that items 19, 51 & 78 all concern body loads and tarps. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have 1 driver demonstrate the check. 5 min. Make use of motor stables before or after a routine trip.

D9 - Propeller Shift. TM 37-2810(par.10b(4) & 11b(18)). By lecture explain that items 41 & 71 all concern propellor shafts. Give book detail how each check is made. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables after a routine trip or time during a regular halt of a trip.

D10 - Electrical Wiring.TM 37-2810(par.11b(11)). By lecture explain book detail how item 64 is checked. Explain it is done same way every time. By demonstration have 1 driver demonstrate the check. 5 min. Make use of motor stables after a routine trip.

D11 - Fuel Filter. TM 37-2810 (par.11b(13)). By lecture explain book detail how item 66 is checked. Explain it is done the same way every time. By demonstration have one driver demonstrate the check. 5 min. Make use of motor stables after a routine trip.

D12 - Tightening. TM 37-2810(par.11b(29)). By lecture explain book detail how item 82 is checked. Explain it is done same way every time. 5 min. Lecture followed by all drivers performing work on their own vehicles. Make use of motor stables after a routine trip.

D13 - Aircleaners. TM 37-2810(par.10b(11) & 11b(12)). By lecture explain that items 48 & 65 all concern air cleaners. Give book details how check is made. Explain it is done the same way every time. By demonstration have 1 driver demonstrate the check. 5 min. Make use of motor stables after a routine trip or during a regular halt of a trip.

D14 - Ignition Supression. MWO (par.4Sec.VII). By lecture and demonstration explain reason for and location of ignition supression and bonding devices and care to be taken when performing maintenance around the equipment. 5 min. Make use of time during weekly check.

D15 - Choke or Primer. TM 37-2810(par.8b(8)). By lecture explain book detail how item 8 is checked. Explain it is done same way every time. By demonstration have 1 driver demonstrate the check. 5 min. Make use of motor stables before a routine trip.

D16 - Instruments. TM 37-2810(par.8b(9)&11b(3)). By lecture explain that items 9, 32 & 56 all concern instruments. Give book detail how each check is made. 5 min. Make use of motor stables before or after a routine trip.

D17 - Esprit de Corps. M&O (Sec III), Hq, Com Z, ETO, Circ.20,Sec III, 3 Apr 45 & Cir 54, Sec.I, 3 May 45. By lecture discuss the driver's part in achieving a good record for the unit and at the same time completing the units mission in the Army. Describe requirements for Drivers Award, & ETS Distinctive Insignia & Distinctive Insignia for Windshields. 5 min. If possible present any new awards at a formal ceremony at conclusion of this subject.

As additional subjects for inclusion in the preceding weekly schedules (to be recorded in the blank column at the end of each week of the attendance record), the following are suggested:

Retest all drivers in accordance with par.13, TM 21-300 and par. 17, AR 850-15.
First Aid, TM 8-220
Practice formal command inspection. Par.26, AR 850-15 and par. 19 to 24, TM 37-2810.
Motor Transport Training Films and film strips on motor transport subjects. FM 21-7.

Any of the following preventive maintenance items (from trip Ticket), if and when they apply to equipment in use:
24 - 37 - 53 - 79 - 80 - 81 - 86 - 87 - 88

Time for these additional subjects is over and above the required 41 hours per week.

APPENDIX 2

RESTRICTED

TRAINING ATTENDANCE RECORD OF ______________ (unit) FOR ____ and ____ SERIES, WEEKS OF ________ and ________
(Letters) (Dates)

Subjects for ____ Series | Subjects for ____ Series

DRIVER AND NCO NAMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	

When a subject is completed fill in appropriate square opposite soldier's name with an X, color or date.

RESTRICTED