

# A Military Encyclopedia

## Based on Operations in the Italian Campaigns, 1943-1945.

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### *Chapter Eleven*

## **TRANSPORTATION**

### ***Section 1. Development and Organization of the Fifth Army Transportation Section***

The advent of the Fifth Army in Italy provided decidedly new problems in every military field; Transportation was beset with its share of these problems. The geography of Italy provided only a limited highway net and the enemy had been most thorough in his demolitions of the existing rail lines. These two factors, coupled with the unprecedented expenditure of ammunition and other supplies and the limited Army truck cargo lift, dictated the establishment of a centralized control of all non-organic transportation, and road movements, rails and railheads as developed, with a coordinated liaison with beach and port agencies.

Since there was no Army Transportation Section provided in the Army T/O [Table of Organization], it was necessary to improvise such a section. Personnel and equipment were provided, based on the then current and anticipated problems.

Under the Army Transportation Officer, operating sub-divisions were formed, with a Freight Division to handle the movement of all Army supplies, salvage, or troops, and evacuations by truck, rail, or water; a Movement Control Division to regulate and control all movements over Army roads; and a Traffic Engineer Division to survey new road nets, plan circulation, devise and request road improvements, and to sign all main routes using a standard system.

Expanding from that rudimentary basis, the Transportation Section, Fifth Army, became a seventh Special Staff Section of the Army Headquarters, and successfully supplied and coordinated the movements of the entire Fifth Army from one end of Italy to the other.

The organization of the Transportation Section as a Special Staff Section was a decided departure from the normal make-up of an Army Headquarters.

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However, the Army Commander, realizing the important functions of this section in the channels of supply, and the number of personnel and the quantities of equipment under its command, decided that this step was merited and essential.

Its performance proved the necessity of incorporating a Transportation Section in an Army Headquarters T/O and providing the necessary operating units for carrying out the functions of controlling motor transport in the Army zone of action.

Charts I and II portray the Transportation Section, showing the composite sections, together with the necessary attached units, required to provide complete coverage of Transportation's responsibilities.

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["Chart I: Operations Chart - Transportation Section - Fifth Army" is not included at this time.]

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["Chart II: Administrative Command - Transportation Section - Fifth Army" is not included at this time.]

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The Traffic Regulation Group provided trained officer and enlisted personnel for the operating sections, including personnel for field installations of TCPs [Traffic Control Posts], sub-freight officers at railheads, etc., together with administrative personnel necessary for normal billeting, messing, and headquarters functions.

The attached Signal Operating Company provided all necessary signal service (telephonic, radio, Teletype® and messenger) necessary for operations.

The attached Military Police Company provided guards necessary for covering movements of pilferable items on Transportation freight convoys.

the QM [Quartermaster] Truck Group, with its attached Truck Battalions, provided the required lift necessary for freight operations.

The Italian Labor Battalion provided necessary labor for railhead or truck transfer points, as required in freight operations.

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## ***Section 2. Policies of the Transportation Section***

The following policies were developed and followed in the Italian campaign and proved to be practical and sound.

### ***1. Centralized Control***

Within the Army area, the Transportation Section retained centralized control of all available transport and lift other than organic; railheads within the Army area were under Army control, and were operated by Army with labor attached to Transportation for that purpose; further, the Transportation Section exercised central control over road movements within the Army area.

Transportation's centralized control included authority over manner and time of shipment of supplies to Army by Base [Section], since rate of reception was the critical factor rather than rate of shipment.

## **2. *Other Nationals***

It was essential that transport facilities and control personnel attached to Corps of other nationals be pooled under the Army Transportation Section for the performance of third (or Army) echelon transportation, offsetting the tendency of Corps of other nationals to establish separate transportation echelons at Army levels.

## **3. *Depot Levels and Supply***

Since transportation flexibility and efficiency depends largely upon relief from the necessity of moving large dumps forward as Army advances, it was necessary for the services to maintain low levels in forward truckheads and to hold main reserves in or near port or railhead areas. The lowest possible levels, consistent with insurance of adequate supply, were maintained in Army base dumps.

In so far as possible, supplies in Army base dumps were kept static, as a reserve, and maintenance supplies for forward truckheads were loaded direct to truckhead by rail - Army truck combination, or Base truck - Army truck combination.

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The latter combination was set up by mutual agreement on a basis of the normal ton-mile obligations of Base and Army which would have applied if Base had hauled only to Army rear and Army to forward truckheads.

## ***Section 3. Location of the Army Transportation Section***

Transportation Section, Fifth Army, although a Special Staff Section of the Army Headquarters, was seldom located physically or geographically in the immediate vicinity of either of the Army echelons. The most important reason was the necessity for close association with its operating agencies, which, in turn, for reasons of economy and efficiency were located near the sources of supply. These sources were the railheads, truckheads, and port facilities. Another factor largely dictating the Section's location was the desirability of locating it somewhat centrally in relation to the road network over which it exercised control of freight movements and traffic circulation.

## ***Section 4. Truck Control Group***

Normally over a thousand cargo vehicles were assigned to an Army in the field for the lift of Army supplies. In the Fifth Army these vehicles were assigned to and operated under the Transportation Officer.

To facilitate control, the several Truck Battalions assigned were combined under a central "Truck Group Headquarters". This headquarters maintained administrative control of the group. It also supervised the training of all truck unit personnel in order to insure coordinated, efficient, and standardized operations.

The Truck Group Headquarters had as a part of its staff one or more well qualified experts on motor maintenance to supervise the operation of this important function within the Truck Battalions and Companies.

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### ***Section 5. Transportation Road Patrols***

At times of heavy movement, every possible expedient was utilized to assure an uninterrupted flow of traffic. Two of the most important expedients were the "Company Commander Patrol" and the "Wrecker Patrol", both maintained and operated by Transportation's Truck Group Headquarters.

A Truck Company Commander, with one or two of his mechanics and with tools and equipment, was assigned to patrol a section of road. This patrol checked convoy stragglers, assisted in minor repairs, gave directional information whenever required, checked convoy reception and handling in the dumps, and in general kept Transportation convoys moving. It reported frequently to the Freight and Movement Control Divisions on the progress of freight and movements.

In addition to the heavy wreckers stationed at each of the Traffic Control Posts wreckers, from units assigned to Transportation, patrolled specific sections of the road net at a minimum interval of six hours, effecting and assisting in minor repairs, and when necessary clearing the road of stalled vehicles, wrecks, and roadblocks.

Upon determining that a loaded vehicle would not be able to proceed to destination under its own power, either of the patrols above would, after removing it from the road, immediately notify the driver's unit. If the truck was near its destination, another truck of the convoy was recalled when unloaded and the load transferred from the disabled vehicle. If this were not possible, the parent unit would immediately dispatch another truck, with sufficient labor to transfer the load, and the unit wrecker to haul in the disabled truck.

### ***>Section 6. Feeding Stations***

Rapid advances during several periods of the Italian Campaigns resulted in extremely long lines of supply. Because of this, freight convoys of the Transportation Section were on the road for periods of from twenty to twenty-four hours, and driver fatigue became a dangerous factor.

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To combat this danger, rest halts were scheduled, but this did not fully solve the problem. "Feeding Stations" were set up at the far end of freight routes to provide hot meals for Army freight convoy drivers at any time of the day or night. This broke the driver's almost continual diet of cold rations, bolstered his morale, noticeably decreased his fatigue, and thereby reduced accidents.

## **Section 7. Transport - Maintenance**

Maintenance of vehicles must be highly organized and rigidly pursued to reduce deadline and grounding.

This problem in the Fifth Army with respect to vehicles under control of the Transportation Section was met primarily by strict supervision of pre-planned maintenance and strict mechanical training of mechanics and drivers under the direction of the Group Motor Maintenance Officer, and secondly by the provision of two Ordnance Medium Maintenance Companies for direct support.

It was made clear to all transport personnel that maintenance is a command function, and that this responsibility passes down without diminution to Truck Company Commanders, Motor Officers, Convoy Commanders, Platoon Sergeants, and last, and most important, to each truck driver.

However, the effective functioning of maintenance operations depended largely on the efficiency of the Truck Company Motor Officer.

The duties of this officer were prescribed as follows:

*a.* To arrange, within his Company area, a satisfactory motor park, with adequate protection against fire and other hazards; with facilities for keeping parts and equipment in good condition; and with two or more grease pits for normal maintenance and for a thorough check of each vehicle after each run.

*b.* To devote his entire time to vehicle maintenance, organizing and supervising the work performed by the Motor Sergeant and mechanics.

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*c.* To maintain and secure required parts.

*d.* To keep a constant workload of four trucks deadlined for first and second echelon maintenance. (These trucks were completely checked and corrected and given either a 1000-mile or 6000-mile check, whichever was applicable.)

*e.* To contact the Ordnance unit servicing his Company and work with the unit in accordance with existing standard operating procedure of such unit.

*f.* To maintain a truck duty roster, posting the following: Mileage each day, 1000-mile checks, 6000-mile checks, third echelon repairs, and first and second echelon repairs.

*g.* To establish and maintain stock records in accordance with instructions set down by the Truck Group Headquarters.

*h.* To submit a daily availability report as of 0600 hours to Truck Group Headquarters, indicating number of trucks on first and second echelon maintenance, number in Ordnance, date entered and date of probable release, number tallied in with date of tally, and the number of trucks on detached service.

*i.* To emphasize, in addition to their mechanical condition, the appearance of his vehicles, and the care of their tools and accessories.

A daily bulletin published by Truck Group Headquarters to its command indicated the percentage status of truck availability for the Battalions with the Group; a like publication within the Battalions depicted

the Company percentages. These publications promoted a keen competitive spirit among all units, developed appreciably higher standards, and maintained greater effort toward perfection.

### ***Section 8. Permissible Load on 2 1/2 ton, 6 x 6 Cargo Truck***

Limited lift availability in the Italian Theater dictated that all transport be loaded to its maximum capacity without causing damage to the vehicle.

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Tests were conducted and it was determined that the 2-1/2 Ton, 6x6, Cargo Truck, when properly loaded and operating on roads (not cross-country), will lift five tons without substantially increasing maintenance.

Load charts were prepared, using a weight maximum of five tons, or with light bulky commodities, the cubic capacity as limiting factors.

Examples:

- 5 Tons Ammunition (other than powder increments),
- 3,750 lbs. Bread,
- 1-1/2 Tons Hay,
- 3 Tons Grain,
- 1100 Gal. Gasoline in 5 gal. cans,
- 990 Gal. Gasoline in 55 gal. drums.

### ***Section 9. Use of the One Ton Trailer***

Tables of Equipment provided, within the QM Truck Companies attached to Transportation, a "Trailer, one ton, two wheel" with each of the supply vehicles allowed. This would theoretically provide an additional one-ton lift for each movement of the truck.

The mountainous road conditions and the generally rocky or muddy dump conditions presented difficulties in loading, unloading, and maneuvering the truck with trailer attached, which rendered impractical the use of this trailer in the normal movement of supplies. By test it was determined that the efficiency and acceleration of movement of the truck without trailer outweighed the additional tonnage gained by use of the trailers in supply movement. Another factor affecting this balance was the fact that we loaded to five tons all classes of supply which could cube such a weight in the 2-1/2 ton truck.

### ***Section 10. Transport - Special Equipment***

The "Truck, cargo, 2-1/2 ton, 6x6, LWB" was proven a most efficient general purpose vehicle for cargo lift. However, the Transportation Section received many transportation orders for "Special Lift" of items or materiel, the weight or dimensions of which prohibited their being loaded on a 2-1/2 ton truck.

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To meet this problem, the Transportation Section requested and received the following equipment then available from Theater Stocks:

- a. A Company of 4 ton, 6x6, cargo trucks, capable of lifting 8 tons or towing a 16 to 20 ton load.
- b. Several of the 16 ton Engineer trailers, suitable for handling large pieces of equipment, long timbers, etc.
- c. a Platoon of tractors, 1-1/2 ton, 4x4, with trailers, 6 ton, flat bed, stake body, suitable for handling light bulk items, such as baled straw, gasoline in cans or drums, baled or crated clothing, etc.

In addition to controlling the above mentioned equipment, the Transportation Section maintained close liaison with organic units possessing heavy tank transporters capable of carrying 40 to 50 tons. Should a transportation order call for such a heavy lift, the Ordnance unit furnished the equipment, and the lift was made on a Freight Division Dispatch.

## ***Section 11. Transport - Heavy Lift Equipment***

Experiences in transportation operation throughout the Italian Campaigns indicated that a combination of 2-1/2 ton Truck Companies and Companies equipped with heavy trucks would provide the most efficient supply support to the Fifth Army, i.e. it would more quickly and economically move greater tonnage, and still meet the varied conditions and problems of terrain, roads, and weather that might arise.

In keeping with this premise, one Truck Battalion of five Companies was re-equipped with the tractor, 5 ton, 4x4, with trailers, 10 ton, flat bed, stake body.

The characteristics of the 10 ton trailers made them admirably adaptable to many diversified loads, and too, they provided an average lift on a ratio of three-to-one over the 2-1/2 ton truck. The necessity for maneuverability and high power in relation to load in Army area made the retention of a suitable number of 2-1/2 ton trucks necessary.

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Specific features in the use of the 10 ton trailer were:

- a. In level country, the use of "dollies" permitted the tow of a second trailer, and thus a second load.
- b. Issue of additional trailers, on a ratio of approximately three trailers to each two tractors provided a constant flow of supplies between two fixed points, with tractors running continuously - one trailer running, one loading, and the third unloading at the same time.
- c. The bodies of the trailers were easily adapted to side loading and unloading, and when sufficient labor was available, the trailers were loaded or unloaded in the same time required for a 2-1/2 ton truck, since men could work at both sides and in the rear of the trailer at the same time.
- d. Average running speed through mountainous terrain was far slower than that of the 2-1/2 ton truck, but this was compensated for by the additional lift provided when speed was not essential.

Specific tested load capacities were as follows:

*QM Class I*

"10 in 1" rations	548 cases	12 tons
"K" rations	520 cases	11 tons
"C" rations	576 cases	12 tons

*QM Class II & IV*

*QM Class III*

Gas, diesel oil, and kerosene in drums	48 drums	10.5 tons
Gas, etc. 5 gal. cans	571 cans	12 tons
Oil, in cans	511 cans	12 tons
Greases, gear lube	511 pails	12 tons
Empty 5 gal. cans	828	2.5 tons

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*Engineer*

Concertina & barbed wire	148 rolls	7 tons
Sand bags	41,500 bags	8.3 tons
Summerfelt matting	33 rolls	8.2 tons
Nails	225 kegs	12.1 tons
Lumber	7,500 board ft.	11.2 tons
Cement	235 bags	12.1 tons

*Ordnance Class I*

Ammunition, solid ammo and/or projectiles	12 tons
Ammunition, bulk or powder increments	8 tons

## **Section 12.      *Communications for the Transportation Section***

Because of the heavy and variable requirements placed on the Transportation Section, efficient operation required practically instant communication with its divisions and outlying sub-divisions, and with dumps and other headquarters.

To meet the signal requirements in the many aspects presented by the extensive operations of the Transportation Section, Fifth Army, the following services were established by a Signal Operating Company attached to the Transportation Section.

A complete Signal Center was furnished at Transportation Headquarters, consisting of a Message Center; Cipher Section; Dispatch, Radio Control, and Teletype Section; and a Telephone Switchboard. The messenger requirements were met by seven daily messengers throughout a twenty-four hour period, with properly classified officers satisfying courier requests for "Top Secret" materiel. Two radio nets were

operated at the Headquarters, one an Army Forward Echelon net with Army as Net Control Station, the other strictly a Transportation net, having from three to eight sub-stations depending on wire facilities and possible emergencies. The clearance of schedules by the Movement Control Division and the dispatch of transport by the Freight Division had to be completed in minimum time to be effective.

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Since the processes of coding and decoding necessitated by the use of radio entailed undesirable delays, experience showed that the maximum use of wire was absolutely essential, thus allowing radio to become increasingly effective by virtue of the reduced traffic. Teletype was required for cable traffic, and since most traffic was destined for multiple addresses located at all larger headquarters of the theater, a direct circuit to Army Forward Echelon was required. Circuits were also established, wherever possible, through Base centrals to provide alternate routing. The telephone installations required a TC-2 board, which proved very satisfactory. One such board was maintained in reserve to provide continuous service, as Transportation Headquarters had to move by echelon to maintain uninterrupted operation. A fixed installation and telephone numbering plan was established. Since reliable contact had to be kept with all Truck Battalions it was necessary either to wire them directly to Headquarter's switch board, which was most desirable, or to provide a displaced switchboard depending on the physical relationship of the Headquarters to the Truck Battalions. Further, in order to control properly supplies and movement at forward dumps, a small switchboard was often required, particularly when such dumps were centralized. Trunking, as direct as possible, was then provided to Headquarters to give efficient control. Telephones were installed at Traffic Control Posts wherever possible. The necessity for telephone service warranted the provision of reasonable long field wire circuits. When wire was not feasible, radio was provided requiring additional Message Center personnel at each Traffic Control Post so operated.

The Commander of the Signal Unit attached to the Transportation Section acted as a member of the Transportation Officer's staff, coordinating with the heads of the operating sub-divisions of the Transportation Section in providing their communication needs. He maintained close contact with the Army Signal Officer and Base Signal Officer to secure maximum mutual benefits in the construction and provision of efficient and economical services.

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### ***Section 13. The Freight Division - Organization***

As one of the operating divisions of the Transportation Section, the Freight Division was made responsible for:

- a. the arrangement for lift, or lift on order, of all Army tonnage from Base Section depots into Army base depots.
- b. the coordinated movement, on order, of all Army freight from Army base depots to forward truckheads.
- c. the provision of transport for tactical lift of troops or equipment, or for movement of hospitals or other non-mobile installations.
- d. the evacuation of Prisoners of War, refugees, and salvage, and for making the necessary arrangements for hospital trains.

To perform these functions, sub-sections within the Freight Division were organized as follows:

The Commitment Group received all transportation orders from the Army services or other agencies, together with all related information, decided the transportation medium to be utilized, and made allocation of available truck lift or rail space against that order. They prepared a commitment form showing all pertinent information, which was sent to the Truck Dispatch Section or the Rail Section for action. The Commitment Group maintained a graphic chart showing progress of all outstanding commitments, trucks dispatched, balance of lift required, and time of completion of each commitment.

The Truck Dispatch Section performed the physical function of dispatching trucks against the outstanding commitments - either in convoy, on shuttle, or on miscellaneous dispatch as the situation required, phasing the trucks into points of origin and destination in accordance with their known loading and unloading capabilities.

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This point was carefully checked in order to prevent unnecessary tie-up of transportation at any depot or other installation. The progress of all convoys was followed carefully, delays or difficulties noted, and immediate corrective action taken.

The Rail Section, on receipt of a commitment requiring a rail lift, immediately placed a requirement on the proper Base Rail Agency, arranged for sufficient cars of the proper type to be spotted at point of origin; then in accordance with the required loading time and travel time, indicated a specific scheduled train for delivery of the commodity to the Army Railhead. The car numbers were determined at time of loading, and cars followed through until delivery was accomplished. Records for future reference were maintained on all orders and the cars numbers relating thereto.

A Baggage Section was formed when the responsibility for handling baggage was transferred from the Quartermaster Corps to the Transportation Section. This section acted as a collection and screening agency for the baggage of all Army troops, arranged for forwarding to any point designated, and tracing lost or delayed baggage. It cooperated with similar Base, Theater, and Zone of Interior baggage sections.

The Statistical Section compiled and assemble all reports emanating from the Freight Office, and provided such files and charts as were necessary to insure efficient statistical control of truck use. Each dispatch, whether Convoy, Shuttle, or Miscellaneous, was carefully processed on completion and the pertinent information recorded.

Specific reports prepared for the Army Transportation Office and for the Army G-4 were as follows:

- a. Convoy Report - Daily.
- b. Miscellaneous Hauls - Daily.
- c. G-4 Availability Report - Daily.
- d. Organizational Breakdown - Daily.
- e. Hourly Truck Availability - Daily.
- f. Commitment Report - Daily.
- g. Dump Performance Report - Daily.

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The section was further charged with daily posting of the following:

- a. Operational Log Book.
- b. Operational Graphs.
- c. History Log Book.

Sub-Freight Sections, in sufficient numbers to operate existing Army railheads or "off the axis" truck lifts were maintained by the Freight Division. They performed the functions of sub-area control or of railhead clearance, operating a minor dispatch system (controlled by the Central Dispatcher at Freight Division Headquarters), and controlling the necessary labor.

#### ***Section 14. The Freight Division - Sub-Freight Operation at a Railhead or a Sub-Area of an Army Supply Zone***

In so far as possible the Military Railway Service extended its rail lines into the Army area, in some cases up to within but a few miles of the actual battle line. In order to provide for the acceptance of Army freight from these rail lines, Transportation, in conjunction with the Military Railway Service and the Army Engineer, set up, at a location which best supported the existing tactical and supply plans, a railhead or railheads with sufficient sidings and unloading facilities to meet Army's tonnage requirements.

Upon completion of a railhead and prior to the receipt of freight, a complete Sub-freight Section was sent to assume control. Such a section consisted of one or two officers, enlisted dispatchers, office clerks, car clerks, operation personnel for a convoy assembly area and convoy motor pool, and checkers and interpreters to handle Italian Military labor.

Labor in sufficient quantity to handle the anticipated tonnage receipts were moved into the area, and sufficient trucks to handle clearance bivouaced in operational proximity to the railhead.

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Then as the trains arrived on prearranged schedules, trucks were ordered in and dispatched under the same dispatch system as was maintained by the Freight Division, and under the control of that Division, clearances for movement being obtained from Movement Control Division.

In a situation where an Army must operate on an extremely wide front, distances and communications may dictate that a sub-area control be established to support and move supplies to a remote section of the Army area. In this event, the Sub-freight Section would again be called into use, and established in this Army sub-area with sufficient transportation to support specified Corps or Divisions. It would then operate in the same manner as Freight Division Headquarters.

In all situations, whether operating a railhead or a sub-freight area in a sub-area, the Sub-freight Section remained under the direct control of the Freight Division, received instructions as to what would be loaded forward, at what points and at what rate, and made periodic reports of activity, availability, trend of

orders, etc., in order to maintain the centralized control so very necessary for coordinated, economical operation.

## **Section 15.        *The Freight Division - Coordination of Operations with Base Section***

Consistent with the plan for centralized control of vehicular lift and road movements, the Army Transportation Section worked in a closely knit pattern with the Base Transportation Section in the handling of freight destined for Army and in the regulatory control of Army and Base convoys moving between Base and Army territories.

In accordance with established policy, Base's responsibility was the stocking of all Army base depots, Army's to lift from the Army base depots to forward truckheads. However, due to Base's responsibility for the operation of two large and widely separated ports, and the supply of the intervening territory between these ports, a tremendous initial drain was placed on their available truck lift.

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Under these conditions, a cohesive plan was pursued in the stockage of Army base depots calling for a coordinated system of joint haulage by Army and Base trucks. The Army Freight Division received all transportation orders from the Army services or other agencies and worked out a cooperative plan with Base Transportation to assure lift of the required tonnage to destination within the specified time limits, as indicated in the Transportation Order. To prevent congestion, both Base and Army trucks and convoys were phased into Army base depots at the hours requested by the services and in accordance with the service's unloading capability.

In the coordinated handling of rail lift of Army freight, the Base Rail Division, on order of the Freight Division, spotted sufficient cars of the proper type at the designated point of origin, and the Base Highway Section provided sufficient truck lift to load the cars. Base Rail then followed through to see that the train arrived on schedule at the Army railhead.

## **Section 16.        *Evacuation - Prisoners of War***

To economize on the use of transportation, a coordinated procedure was devised by the Army Transportation Section and the Army Provost Marshal to utilize returning supply trucks for the evacuation of Prisoners of War.

This plan called for the establishment of an advance Army PW Collecting Cage near the forward Army and Corps dumps, permitting evacuation by Division or separate organization through usage of empty ration supply vehicles going to Army dumps. The guards were furnished by the units delivering the Prisoners of War.

Another cage was established near the Army base depot so that the Army supply trucks, on their return from the forward dumps, could deliver the PW's to the Army Rear PW Cage for eventual pickup by returning Base convoys. Necessary guards were furnished by the Provost Marshal.

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## **Section 17. Traffic Control**

To meet his responsibility for assuring efficient movement of traffic on the Army roadnet, the Army Transportation Officer maintained two operating divisions, i.e., the Movement Control Division and the Traffic Engineer Division, and designated a Traffic Control Officer to supervise their functions.

The responsibilities of the Traffic Control Officer were as follows:

- a. To make the road reconnaissance necessary to the planning of traffic circulation and control.
- b. After conferring with the Army Engineer, to recommend to AC of S [Assistant Chief of Staff], G-4, the publication of plans for the traffic circulation on the roadnet, including the designation of main supply routes and circulation restrictions.
- c. To indicate to the Provost Marshal necessary types and degrees of traffic regulation, and changes therein when necessary.
- d. To make, procure, and maintain traffic signs (guide, warning, and regulatory).
- e. To recommend road and bridge improvements to the Army Engineer, indicating priority of importance.
- f. To regulate the movement of convoys.
- g. To regulate the movement of vehicles of unusual size or weight.
- h. To prescribe movement schedules for groups of vehicles moving by infiltration, when the volume warranted control.
- i. To maintain and operate Traffic Control Posts.
- j. To coordinate traffic control measures in the Army area with those of adjacent areas.

## **Section 18. Highway Traffic Control Code**

Regulations governing the operation of vehicles on roads in the Army area were prepared by the Army Transportation Officer and the Army Provost Marshal. These regulations were published as a "Highway Traffic Control Code", printed in all applicable languages - English, French, and Portuguese

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This Code provided Corps, Divisions, and smaller unit staffs with rulings to be observed in the planning of movements, large and small, through or into the Army area. The Code gave in detail the rules of the road, instructions for convoy operation, instructions for casual vehicles, and explanations of road signs.

The Code was disseminated down to include the individual truck driver. Necessary revisions were published from time to time in Army "Administrative Instructions".

## **Section 19.        *The Movement Control Division***

The Movement Control Division, another operating division of the Transportation Section, was charged with the responsibility of regulating convoys and other vehicular movements within the Army area and to and from Corps and Base areas.

The above responsibility entailed the solution of a multitude of complex problems. The large volume of traffic (up to 12,000 vehicles per day on a two-lane road); limited road nets, mountainous roads, adverse weather conditions, road demolitions, and other enemy actions all contributed to the difficulties that had to be overcome to assure an uninterrupted flow of essential traffic.

The Movement Control Division developed a unique system of "Time Division Control". All convoys, large infiltration movements, or special vehicles operating on or across MSRs [Main Supply Routes] (and such secondary roads as were designated from time to time) required "road movement control".

"Convoys" were defined as movements of ten or more vehicles in a group.

"Large Infiltration Moves" were defined as those involving ten or more vehicles at a rate of more than four per hour, dispatched by an organization over one route between two fixed points.

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"Special Vehicles" were those (such as tank transporters, pole trailers, etc.) so constructed or loaded that they could not maintain a speed on 15 MPH, or were over 60 feet in length or over 10 feet wide.

Supply convoys had first priority, except when the Army AC of S, G-3 indicated a higher priority for a troop movement. In cases of conflict as to priority between troop and supply movements a decision was reached by coordination between AC of S, G-4 and AC of S, G-3.

All scheduled movements were recorded and plotted on a March Graph in the Central Office of the Movement Control Division. This graph provided a visual outline of all movements, depicting locations of convoys on specific roads at specific times. The graph was kept current, and permitted the movements situation to be constantly monitored to permit the forecast of any possible movement conflicts and the initiation of possible corrective action. All schedules were passed to the Traffic Control Posts covering the section of road over which the moves were routed, and the actual running times [were] checked, controlled, and reported to the Movement Control Headquarters.

The Movement Control Division maintained close contact with Corps and Base Section Movement Control Officers for the clearance and coordination of moves entailing the crossing of Base or Corps and Army boundaries.

Close liaison was also maintained with the G-3 and G-4 Sections of the Army to ensure the coordination of current movements, and to keep Movement Control currently informed of the tactical

situation and possible tactical trends. This information enabled the Planning Section to prepare tentative plans for indicated future movements.

Periodic "traffic counts" were made by checking the number of vehicles, casual or convoy, passing given check points on MSR's or important secondary roads, or at important junctions or bridges. This information was recorded and graphed as a basis for the assignment of Military Police Posts, Traffic Control Posts, road patrols, and wrecker service, and for use in the planning of large movements.

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Further, since Transportation's authority included control of casual and civil traffic, the "traffic counts" provided a basis for restriction, curtailment, or elimination of traffic of this type.

At the end of each twenty-four hour period, a report was made to the Transportation Officer, which contained the following information:

- a. Number of Northbound Convoys.
- b. Number of Vehicles - Northbound.
- c. Number of Southbound Convoys.
- d. Number of Vehicles - Southbound.
- e. Total Number of Convoys.
- f. Total Number of Vehicles.
- g. Convoys Off Schedule.
- h. Delinquencies Noted by TCPs.

The above information was filed and used as a basis for planning by the Transportation Officer and the Army Staff.

## ***Section 20. Movement Control - Traffic Control Posts***

The Movement Control Division maintained and operated Traffic Control Posts at such locations as to assure control of the principal MSR's throughout the Army area. Generally, they were located near Corps and Army rear boundaries on principal routes running forward, and near the extremities of any important lateral routes. Intermediate locations were also covered when it was necessary to control important junctions or provide control at lesser intervals along a route. When practicable and desirable, TCPs were situated at junctions where control of two or more main routes could be exercised. The mission of a Traffic Control Post was to control and expedite traffic circulation, particularly convoy movement, so that the Army roadnet could be most efficiently employed for troop, supply, and administrative movements.

The specific function of a TCP were as follows:

- a. To control , expedite, and record convoy movements.

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b. To regulate and enforce movement priorities as directed by the Transportation Officer and the Movement Control Division.

c. To regulate the flow of traffic into adjacent areas in an orderly and disciplined manner, in conjunction with the Military Police.

d. To maintain the most complete, up-to-date, and accurate data possible in order to assist Convoy Commanders and casual drivers moving through the Army area by supplying them with directional and other information.

e. To prevent road congestion and convoy conflicts by the regulation of time schedules and routes of road movements as directed by the Movement Control Division.

f. To report at specified times to Movement Control Division all actual data on convoy movement past the Post, and all pertinent information on road and traffic conditions.

Unscheduled convoys, and convoys more than thirty minutes off schedule, were, without exception, removed from the road and scheduled or re-scheduled through Movement Control. A convoy park to accommodate a minimum of 50 vehicles, and preferably 100 or more, was therefore made available as near to the TCP as possible.

Military Police in proper number to provide a twenty-four hour coverage were stationed by the Army Provost Marshal at all Traffic Control Posts to assist Transportation personnel in their functions, to enforce highway traffic regulations, and to direct traffic flow. They also handled any accidents occurring in the vicinity of the TCP.

Heavy wreckers were stationed at each of the TCPs and remained on twenty-four hour call for the removal of wrecks, disabled trucks, or other road obstructions which tended to congest traffic.

## ***Section 21. Movement Control - Field Supervisors***

In a further effort toward perfection in the control of movements, the Movement Control Division obtained a further physical check on road movements and conditions by the use of officer Field Supervisors. [p. 481]

The Field Supervisor operated actively throughout the Army roadnet, checking convoy movements, TCP operations, Military Police operation, road conditions, and depot conditions, and also provided liaison service to Corps or Divisions.

In the event of a particularly heavy movement or series of movements over a wide area, the Field Supervisor checked conditions from an observation plane. In this way, he immediately detected any tie-ups, or difficulties along the roads, and passed on this information to the nearest TCP, Movement Control Headquarters, or Military Police Post for action.

## ***Section 22. The Traffic Engineer Division***

Another important operating division of the Army Transportation Section was the Traffic Engineer Division, the Traffic Engineer acting in an advisory capacity to the Transportation Officer through the Traffic Control Officer.

The Traffic Engineer made the road reconnaissance necessary to the planning of traffic circulation and control, conferred with the Army Engineer, and presented their joint findings to the Transportation Officer to enable him to formulate plans for submission to the AC of S, G-4 for publication.

He recommended to the Army Engineer road and bridge improvements such as cloverleaves and overpasses, or any other construction necessary for the maintenance of fluidity of movement.

On request from the Freight Division for the establishment of a railhead at a certain point, the Traffic Engineer obtained from that Division the required tonnage capacity of the railhead. He then surveyed the proposed site together with the Army Engineer and the construction engineer of the Military Railway Service, laid out a plan for the terminal and access roads, and prepared drafts requesting construction. He closely followed the construction to ensure proper working facilities and traffic circulation.

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In order to facilitate planning of MSRs, rail development, traffic circulation, and depot sites for a future phase of operations, a continual map reconnaissance and actual road and area reconnaissance of forward areas was maintained. Tentative plans were prepared, tied in with tactical trends and Army "future" planning, and continually checked for accuracy and workability.

To further the above planning, constant liaison was maintained with the Army Engineer, the Provost Marshal, and the Supply Services. Whenever possible, joint reconnaissance involving all of the above-mentioned agencies was made to provide coordinated, comprehensive planning in the selection of roads, depot sites, etc.

A "Master Road Condition Map" was maintained by the Traffic Engineer Division showing all information pertinent to the roads and installations in the Army area, including bridge classification, one-way roads, by-passes, road widths, etc. This information was compiled from reconnaissance reports, Engineer operation reports, TCP reports, and other sources.

In addition to the road condition map, a "Road History Book" was maintained, containing a compilation of all information pertinent to each road from the time of its initial use. This consolidated information was available at all times to the other divisions of the Transportation Section, and to all Base, Corps, and Army units.

At the time of the Arno flood, and through other periods of emergency, the Traffic Engineer Division acted as a clearing house on road information; compiling, sorting, and acting on same as required.

### ***Section 23. Traffic Engineer Division - Signing***

The Traffic Engineer Division was charged with the construction or procurement, installation, and maintenance of traffic signs to supplement the markers and signs installed by the [Army] Engineer. A Sign Section was developed, staffed with trained personnel, and equipped to discharge this responsibility.

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Traffic signs were invaluable in the maintenance of orderly and safe circulation on the Army roadnet. However, their purpose was accomplished only if the signing were properly accomplished. Improper practices defeated the intent and hindered the traffic rather than helped it. Realizing the importance of the signing factor in traffic circulation, a system of Army signs, made to standardized specifications, was evolved by the Traffic Engineer.

Directional signing was of particular importance. Early in the campaigns, freight convoys were frequently lost due to a lack of signs during fast moving situations. To prevent this, the Sign Section developed its technique to such a degree that they could sign new roads and new depots as soon as they were opened.

The Traffic Engineer Division was responsible for the installation of the following signs:

- a. Route markers.
- b. Route Junction signs.
- c. Town names, directional and other guides.
- d. Warning signs.
- e. Regulatory signs.

It was further responsible for the construction of standard depot signs, Corps "light line" signs, and miscellaneous emergency signs.

To provide for the installation and maintenance of signs in the Army area, the Sign Section maintained six mobile sign crews, charged with, and equipped for the erection, clearing, and replacement of all Army signs.

## ***Section 24. Traffic Engineer Division Sign Production***

Production of road signs and other traffic aids presented many problems due chiefly to lack of experience and to difficulties in procuring necessary tools and materials.

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Sign blanks were made chiefly of lumber. Some new lumber was used, but the chief source was salvage lumber from ammunition boxes, etc. Metal signs were also used, but limited supply prohibited their extensive use. Metal blanks were made chiefly of Terneplate, an Engineer supply item. This was supplemented by the procurement of some civilian stocks and by salvaging large metal food containers. Some "Masonite"® signs were procured from the U.S., but they proved too fragile to be satisfactory. No paper or cardboard signs were used, as installations were generally established for relatively long periods of time which warranted more durable materiel.

The best type of stake for mounting signs was found to be the British 6-foot angle iron stake normally used for barbed wire. Two by four lumber was used for mounting large signs. To conserve stakes, available mountings such as trees, posts, and walls were employed whenever possible.

Paint was generally secured from Engineer supply sources although some civilian supplies were also used. Large amounts of "ammunition yellow" paint were secured from Ordnance. Camouflage paints were unsatisfactory as they did not permit the washing of signs.

Considerable effective use was made of reflecting materials behind the "light line". Sign faces were reflectorized by the use of "prismo paint" (glass beads mixed into paint). Letters and symbols were reflectorized by the use of "Scotchlite"®, a glass bead substance produced commercially in sheets and rolls which could be cut to form desired letters, numbers, or other desired designs, and glued or tacked on the signs. Scotchlite was also used to make small reflector tabs for road delineation and obstruction marking. Lucite reflector buttons were used to a limited extent for this purpose; however, the Scotchlite reflectors were found to be a satisfactory substitute, and less subject to pilferage. Forward of the "light line", limited use was made of radium buttons. They made effective signs and arrows for road delineation and hazard marking on very dark nights and with very low vehicle speeds. However, stocks were limited and the pilferage rate was high. Phosphorescent materials were found unsatisfactory due to the rapid decrease in light output and to obscuration by dust.

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Interior-illuminated signs meeting blackout requirements were satisfactory traffic guides, but presented serious problems of maintenance.

Essential sign production tools and equipment were found to be the following:

- a. Paint spray guns (1 qt. type).
- b. Motor-driven air compressor, with oil and water separator for use with spray guns.
- c. Metal stencils, cut to meet actual needs, rather than procured from commercial sources (ready-made).
- d. Cutter, large enough to cut metal up to 20 gauge.
- e. Motor-driven circular saw.
- f. Carpenter tools, paint brushes, stencil paper, nails, wire, etc.

## **Section 25.        *Military Police Traffic Posts and Patrols***

Traffic Posts and Patrols maintained by Military Police were an indispensable part of the Traffic Control Plan. They were fully coordinated with the Movement Control and Traffic Engineering operations of Transportation.

Motorized patrols were provided on main routes, with fixed posts established at key road junctions, bridges, etc. Military Police Posts were also established at all Traffic Control Posts operated by Movement Control. It was found that one Military Police Company normally could police up to about 75 miles on a heavily travelled road. This distance was increased on roads possessing fewer critical junctions.

Coordination of the Military Police and the Traffic Control personnel was effected by detailing an MP Liaison Officer to the Transportation Section. This facilitated the coordination of control plans, and provided

the Military Police with advance notice whenever heavy or unusual road movements were contemplated, or special circulation restrictions were to be placed on the roadnet.

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Essential traffic control duties performed by Military Police included:

- a. Regulating traffic flow at road junctions, one-lane bridges, and other conflict points.
- b. Controlling and enforcing traffic regulations at TCPs.
- c. Patrolling roads to enforce driver discipline, with special emphasis on excessive speeds, improper doubling, unauthorized stopping on roads, violation of circulation restrictions, and improper convoy intervals.
- d. Giving route and location information.
- e. Clearing traffic jams and establishing special control in emergencies.
- f. Escorting oversize loads.
- g. Reporting road traffic conditions requiring road or control improvement, detours, etc.
- h. Investigating and handling emergencies such as accidents.
- i. Operating vehicle check points.

It was found practicable to substitute Italian Military Guard personnel for MPs at some fixed traffic points, such as one-lane bridges in rear areas. This helped to relieve the shortage of regular Military Police. However, this could not be done at critical locations or at points where the ability to give information and directions was important.

A high degree of motorization of MP units was necessary for effective traffic control work. Both motorcycles and jeeps were required for patrols under varying conditions.

Experience demonstrated that a single Field Army type Military Police Battalion was inadequate for traffic control and other duties required to be performed by the Military Police of an Army, especially since a Company had to be attached to each Corps. Two or preferably three such battalions were required to cover adequately the long lines of communication which prevailed in Italy without impairing performance of other Military Police functions.

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## ***Section 26. Light Lines and Blackout***

After the initial enemy air activity in Italy was counteracted by the advent of sufficient Allied air strength, it was found that undue emphasis on blackout of vehicle lights in rear areas of Corps and in the Army area handicapped night transportation operations. A general policy of operating vehicles as far forward as tactically possible was followed. Operation under this policy proved that by the use of headlights, night operations compared favorably with normal daylight operations, and further, that the decrease in accidents more than compensated for the negligible casualties and damage from enemy air action incurred by their use.

## ***Section 27. Emergency Traffic Control Under Winter Conditions***

Winter conditions in Italy threatened extensive and prolonged interference with road movements. Road blocks developed due to the failure of bridges, flooded areas, slides, washouts, or deep snow.

It was imperative that road communications be kept open during such critical periods, for troop, supply, and administrative movements had to continue. This required prompt and effective initiation of pioneer work and traffic re-routing. Accomplishment of these necessary actions was in turn primarily dependent upon an up-to-date and accurate flow of information regarding road and traffic conditions to the coordinating headquarters.

Assurance of adequate roadnet facilities and control of traffic thereon was secured through combined action of Engineer, Provost Marshal, and Transportation Officers, who in turn called upon other sections for necessary auxiliary service. These three sections each had specific duties, and coordinated their efforts closely. This coordination involved the mutual exchange of information as to road conditions and remedial plans, agreement on measures to be taken, and mutual support in the execution of such measures.  
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The specific responsibility of each section within its own sphere of operations was as follows:

*a. Engineer*

The Operations Section of Engineer Headquarters collected and served as a central source of road information, directed operation of Engineer units, and maintained liaison with Transportation. Each Engineer unit was responsible in an assigned area for:

- (1) keeping MSRs open or developing suitable by-passes if possible;
- (2) operating Road Posts;
- (3) posting signs to guide traffic through by-passes;
- (4) immediately notifying the nearest TCP of emergency conditions.

The TCP informed the Movement Control Division, which in turn advised the Military Police and directed necessary changes in routing, etc. Similar reports were made to Engineer Operations Section.

*b. Transportation*

The Transportation Section was responsible for:

- (1) routing traffic in accordance with existing road capabilities;
- (2) prescribing circulation restrictions applicable to specific routes or types of traffic;
- (3) advising the Provost Marshal of restrictions to be enforced and points requiring MP control;
- (4) collecting data on road and traffic conditions;
- (5) maintaining liaison with Engineer Operations Section and with Road Posts.

*c. Provost Marshal*

The Provost Marshal directed the operation of MP units. He maintained liaison with Transportation Section on matters of road and traffic conditions, circulation plans and restrictions, and MP control requirements. MP units:

(1) established necessary posts and patrols as directed by the Provost Marshal, or as indicated by their own observation of emergency needs, or by requests from the Transportation Section;

(2) directed traffic and enforced circulation restrictions in accordance with plans indicated by Transportation or, in emergencies, in accordance with the requirements of the situation as determined by them or indicated by Engineer units;

(3) reported need for Engineer work and for traffic re-routing to Transportation.

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The existing telephone net was used insofar as possible for contact between the Road Posts, the TCPs and the [Army] Staff Section Headquarters. In the event of failure of telephone communication, contact was immediately made by radio, using radio equipment and Signal personnel at Road Posts and TCPs, with mobile transmitters standing by for dispatch to crucial points. The Road Post radio net and log messages were continually monitored by Transportation's Signal Operating Company and reports passed on to Traffic Engineer Division for action.

## ***Section 28. Road Posts***

In order to cope with snow and ice conditions, and in general to expedite traffic over the mountain roads during the winter, the Army Engineer operated Road Posts and Sub-posts in sufficient numbers to insure complete coverage of the Army roadnet.

These Road Posts and Sub-posts were charged with the following services:

- a. Removal of snow.
- b. Recovery of and assistance to damaged or stalled vehicles.
- c. Provision of first aid and medical assistance.
- d. Provision of food and shelter for stranded personnel
- e. Furnishing of information on road conditions.
- f. Stockage of an adequate supply of gas and oil for the emergency refueling of vehicles.
- g. Assistance in traffic control

The Posts were staffed with Engineer, Transportation, Signal, Ordnance, and Medical personnel, and proved to be an indispensable adjunct to the transportation and traffic control establishment.

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## ***Section 29. Port Development by a Field Army in Fast Moving Situation Paralleling a Shore Line***

In the rapid push through Rome and to the north, the Army completely outran railroad construction. Truck transportation proved inadequate despite the utilization by Army Transportation of every available truck. To meet this situation, the Fifth Army initiated an entirely new phase of supply technique. Based on its experiences in port operation at Anzio, the Army brought about the rapid reconstruction of the Ports of

Civitavecchia and Piombino, and actually operated these ports under Army G-4 control. In each instance, tonnage was flowing ashore less than a week after the ports were captured.

These operations demonstrated the practicability of the organization and opening of sub-ports by Army, and of their operation by Army until such time as it was most expedient for the Base Section to take over.

Since considerable planning and organization was necessary prior to the capture of the ports, a group was formed in the Army G-4 Section to plan and coordinate the port project at hand. Based on the anticipated port tonnage and other factors of supply, this group organized the necessary staff and operating agencies as follows:

- a. A properly equipped Army Engineer Regiment.
- b. Port Operating personnel (from Base Section).
- c. Naval Officer In Charge (NOIC), with necessary Naval Detachment, small craft, signals, control craft, mine sweepers, and salvage unit.
- d. Transportation representative, with Sub-Freight Section, and sufficient transport (trucks and DUKWs [amphibious trucks]) to clear anticipated tonnage.
- e. Provost [Marshal] representative, with MP Detachment.
- f. Army Signal representative, with Signal unit staffed and equipped to supply required port communications other than naval.

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- g. Representative of each of the Supply Services, with Depot Companies, for supply liaison and depot operation in port area.
- h. British liaison (British supplies were to be received).
- i. Air Corps liaison (Air Corps supplies were to be received).
- j. Anti-Aircraft [Artillery] and Barrage Balloon units.
- k. AMG [Allied Military Government] unit.
- l. Engineer Real Estate unit
- m. G-1 representative, for handling personnel.
- n. G-3 representative, for periods when troops are staged in or out.
- o. Sufficient labor for port clearance.

Maps, naval charts, recent air-photographs, relevant Italian technical literature, and G-2 information were closely studied by the Engineer and Naval Groups so as to pre-plan, insofar as possible, the entire reconstruction.

The G-4 Group set up shipping and supplies for basic lift, and figured supply for concurrent shuttles.

Tentative circulation plans were laid out by the Transportation Officer, and tentative depot areas allocated to all the services by the Real Estate Officer. All parties collected sufficient equipment, supplies, and personnel to initiate operation.

If possible the Engineer Regiment was relieved of other responsibilities a few days prior to the date of anticipated capture of the port, to permit it to devote all of its time in preparing for the port work. At the

same time, the Naval party was collecting necessary craft and harbor clearance equipment in a sea assembly area near the port.

As soon as tactically possible, under the supervision of G-4, a reconnaissance party with representatives from all sections of the operating group moved into the port area to plan the installation locally. As a result of this reconnaissance, actual reconstruction was started by the Engineer; a Port Headquarters established; naval mine clearance and salvage operations begun; depot areas allocated, set up and signed; anti-aircraft weapons and barrage balloons installed; port area road circulation designed and signed; communications installed and tied into Rear Area Headquarters and Base Section; depot and port labor moved into area; port clearance trucks and DUKWs moved into area; safe sea lanes plotted; initial craft lift ordered forward; and actual port operation started as soon as practicable.

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The G-4 Section at the port controlled all shipping and supply functions in conformance with the policies prescribed by AC of S, G-4, Fifth Army. The Section maintained constant liaison with Army Headquarters and all information concerning supply and shipping was immediately passed on to the Army G-4. Assisting the Chief of this Section were two officers. One officer maintained contact with all services, keeping records of stock levels. The second officer maintained constant contact with the shipping situation.

The Commanding Officer of the Port Engineer Regiment was appointed Port Commandant, with responsibility for the entire port area. He sub-divided the area, using his Battalion Commanders as Harbormasters, or beach and jetty commanders; his S-3 operated the Port Operations Office, maintaining liaison with G-4 and the NOIC, and submitting daily situation reports to G-4 covering the entire shipping and tonnage situation. Under this [Port] Command, the Engineer Regiment was responsible for the following:

- a. Maintain and build roads.
- b. Repair damage to port installations.
- c. Continually improve dock and beach facilities.
- d. Record berthing or arrival and sailing hours of all ships or craft entering or leaving the harbor.
- e. Record all cargo and personnel entering and leaving the Port.
- f. Supervise labor and clearance of supplies in port area

The Naval Officer in Charge (NOIC) controlled all ship and landing craft movements in the waters off the port. He also:

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- a. Scheduled and dispatched to ships for unloading duty all LCTs [Landing Craft, Tank], LCIs [Landing Craft, Infantry], LCMs [Landing Craft, Medium], or other small craft.
- b. Maintained communication with NOIC in Base Port.
- c. Protected ships and craft lying off port by mine sweeping and by maintaining constant vigil against E-boat and air attack.
- d. Maintained communications with ship and craft, issuing anchorage orders, sailing orders, etc.
- e. Salvaged naval materiel.
- f. Succored survivors of ships sunk and provided transportation for them to Base Port.

The NOIC maintained a Naval Operations Section, which notified the Port Operations Office and the NOIC of Base Port of the arrival and sailing of ships and craft, and of damage to shipping resulting from enemy action. A signal ship or tower was maintained for visual signalling to ships and landing craft. A control ship patrolled the waters in and near the harbor. The personnel of this ship included a representative from NOIC and one from the Port Commandant for the purpose of controlling small craft engaged in unloading ships.

The Detachment of a Base Port Battalion assigned for Port operations supplied the labor and gear for the unloading of the ships. The Headquarters personnel of the Detachment acted in an advisory capacity to the Port Command.

The Transportation representative, operating his Sub-Freight Office, set up "control towers" and "check points" in sufficient numbers to control the flow of trucks and DUKWs to the "hards" and piers, and to clear rapidly the loaded trucks and DUKWs from the congested port area. The Sub-Freight Office remained in close contact with the Port Operations Office and the NOIC in order to keep informed of the types and quantities of incoming tonnage so as to provide special lift equipment if necessary, or increase or decrease the flow of clearance trucks into the Port in accordance with the fluctuating unloading program. This office also remained in close contact with all Port Depots, and with Depot Supervisors in the field, to check handling of Port clearance trucks, unloading capacities, labor difficulties, depot road conditions, depot signing, route signing, etc., and to advise the depots in the event of the arrival of heavy quantities of any particular commodity.

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It continually checked traffic circulation, signing, and control, making improvements when necessary, and maintained constant liaison with the Provost Marshal, making necessary recommendations for MP control.

The Provost Marshal was charged with local security and the regulation of traffic in accordance with the orders of the Port Commandant and Transportation.

The Service representatives and Depot Commanders maintained continuous records of their receipts and issues. They maintained sufficient supervised labor to receive and unload trucks without delay.

The area AMG Officer cleared refugees from the port area, secured civilian labor when necessary, and provided covered storage space when required.

In both Piombino and Civitavecchia the tactical situation continued to be fast moving and the Base Section was alerted at an early stage to be prepared for a rapid assumption of Port responsibilities without bringing operations to a halt. By phasing Base personnel, equipment, and transport into the operations, allowing them to work for a time with the Army agencies, gradually taking over the actual operations, no loss of tonnage was experienced.

Port operation is essentially a Transportation function. However, since there was no Water Division in the Transportation Section, the development and operation at Piombino and Civitavecchia were carried out directly under Army G-4 control. However, the normal function of providing a tie-in to Base and higher

Headquarters to cover the movement and receipt of Army supplies and personnel by water, and the function of dealing with Port operations as required, could best be handled by the inclusion of a Water Division in the Army Transportation Section.

### ***Section 30. Supply Maintenance of a Limited Beachhead for a Prolonged Period Based on the Anzio Operation***

The amphibious operation against a hostile coastal sector is in every instance a gamble; each and every possible adverse factor, such as the weather and enemy air, land, or sea action, must be taken into consideration in the planning.

#### ***A. SUPPLY BY WATER***

##### ***1. Planning***

During the planning of the Anzio operation, it was recognized that the element of surprise would play a large part in the ultimate success of the operation. Under the circumstances, this seemed almost unobtainable since a large fleet of various types of ships and landing craft could not be assembled in and around Naples without the enemy's knowledge. He would know a force was gathering, but not when or where it would attack. From past experience, he knew that we had always captured large ports to facilitate resupply of our invasion force. Along the west coast of Italy between Naples and Leghorn [Livorno], there were no ports of sufficient size to support a force large enough to worry about. The largest was Civitavecchia, just above Rome, which had facilities for the docking of ships. The next largest port was Anzio, and this was so small that it probably not considered by the enemy. The surprise achieved was due, in part, to the fact that the enemy did not think we could support a large force by resupply through the port of Anzio.

The plan for resupply was well organized and executed. After the initial assault it was necessary to place 2700 tons of supplies daily into the beachhead dumps for maintenance, and 3750 tons to permit a build-up of four days supply every ten days.

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This was changed, subsequently, to a maintenance level of approximately 3300 because of an increase in troops.

VI Corps organized and mounted the assault forces while Fifth Army prepared to support the force. To accomplish the latter, two methods of operation were used. The first was to load Liberty ships in North Africa, to be unloaded at Anzio in a ship to shore operation. The second was to organize a large group of trucks to ferry supplies by LST from Naples to Anzio, the trucks to return empty (or loaded with salvage) for the next turnaround.

##### ***2. Loading of Liberty Ships in North Africa***

Based on supply needs of the beachhead, requisitions were sent to North Africa for supplies to be loaded on Liberty ships. These ships were to sail from North Africa to Naples upon completion of loading. At Naples some ships were top-loaded with supplies unavailable in North Africa, and with other supplies that were needed.

Due to exposure to enemy surface [shelling] and aircraft in the Anzio sea area, a limitation was set by the Naval Officer in Charge on the number of ships that could be unloading at any one time. Thus Liberties were scheduled to leave North Africa in flights of four, as the plan contemplated the unloading of four Liberties at a time at Anzio. Later, other Liberties were added to the scheduled flights to carry supplies that were found to be over and above those planned. When the port of Anzio was released by VI Corps to Fifth Army, the number of Liberties unloading simultaneously was increased to five.

After the first flight, as Liberties completed their unloading, they were immediately replaced by an equal number so that the semblance of "flights" was broken.

### **3. *Unloading Liberty Ships at Anzio***

Various experiments were tried in order to speed up the unloading of Liberties, some of which were very successful.

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Original plans provided for the unloading to be accomplished by a Port Battalion with Headquarters at Anzio. Each Port company was to unload a ship using LCTs and DUKWs to carry supplies from the ship to the shore. Because of the constant shelling by enemy artillery, it was decided after several weeks of operation to send each Port Company back with the ship it unloaded thus providing an incentive for speedy work and eliminating the need for changing companies from ship to ship or for maintaining a Port Battalion Headquarters at Anzio.

Another problem was the scarcity of LCTs after a month of operations. Initially, 32 LCTs were available for unloading but under the conditions at the port, many became non-operational. We could not depend on using the total number of LCTs available at any one time. In order to supplement the LCTs, 10 LCIs were used as an experiment, carrying deckloads of from 10 to 20 tons. This proved successful and the number of LCIs was increased from 10 to 20. This practice was discontinued when LCTs again became available.

Between 450 to 490 DUKWs were provided for unloading Liberties. Even allowing 25% on deadline, the DUKWs were never taxed to capacity. Because of the constant shelling of the harbor, the ships were sometimes forced several miles out to sea which rendered the use of DUKWs impracticable. Weather conditions had to be excellent or we lost DUKWs by sinking [swamping]. However, when both conditions were favorable, the DUKWs performed to the maximum of their capacity and accounted for about 25% of the tonnage unloaded by ship to shore operation on peak days.

Ten LCMs were sent to Anzio to unload Liberties but their use proved unsuccessful for two reasons. The first was that the LCMs were old and subject to frequent breakdowns. The second

was the lack of berthing space in the harbor during bad weather when all the port landing craft were tied up, and the landing craft of ferry service from Naples were trying to unload.

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#### **4. *Resupply direct from Naples***

Most of the supplies shipped directly from Naples were handled by 2-1/2 ton trucks which were ferried between Naples and Anzio on LSTs. A reserve of 1500 trucks was set up under one command and organized as a Truck Group (Provisional). This unit operated under the supervision of the Fifth Army Transportation Officer.

The first flight consisted of trucks from various units embarking with VI Corps on the assault flight. After depositing their loads at the beachhead dumps, the trucks dispersed and reported to their respective units. Since the LSTs were to land on a prepared beach, the number of trucks was limited to 35 trucks per LST. Five-ton loads on each truck plus the weight of the trucks totaled 350 tons, which was the limitation set up by the Navy.

The second and succeeding flights of trucks were organized, loaded, and mounted by Fifth Army. The second flight consisted of 541 trucks, some of which were British lorries. All trucks were assembled at a truck assembly area in Naples and were dispatched to Class I, III, and V dumps. When they returned, they were assembled by LST loads and waterproofed. Each truck carried only one type of supply so that it stopped at only one dump in Naples and one dump in Anzio. The LSTs were spread-loaded, for example: 20 truckloads of 105mm ammunition was broken up and loaded on 15 different LSTs to prevent total loss of one type of supply through the loss of one LST.

Each [LST] craft load of 35 vehicles was staged at the Provisional Group assembly area. A combination passenger list and manifest was prepared and submitted to Transportation Section PBS [Peninsula Base Section]. No pre-stowage plan was prepared because of the simplicity of loading only thirty-five 2-1/2 ton trucks per LST. Each craft load was assigned an Army Serial Number, for instance those assigned on the 28th of January began 28A, 28B, 28C, etc. In that way, any backlog could be immediately identified as to day and craft load. Ferry control and PBS then assigned LSTs to Army Serial Number and called forward, for example, 28A to load when its assigned LST was reported by Naval Operations as being berthed and ready.

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The third flight of 500 trucks followed the same procedure. About the time it reached Anzio, the empty trucks from the second flight were returning and were reloaded with supplies for the fourth flight.

At this time the Navy changed the loading limitations because the LSTs were unloading at the docks in Anzio harbor. This allowed a loading of 50 instead of 35 trucks per LST and eliminated the need for waterproofing. From then on, 8 LSTs daily were scheduled to sail to Anzio to be split as directed between tactical troops and supply trucks. Previously there had been enough LSTs sailing daily to permit the number of empty trucks reloading at Anzio to be limited to 25, thereby speeding up the

reloading of LSTs. This was very important because of heavy shelling and frequent air raids. When the number of LSTs was reduced to 8, it was imperative that all 8 LSTs returned the same number of trucks they brought in order to keep the backlog of trucks at an irreducible minimum of 150 trucks. These 150 trucks remained on the beachhead overnight and were loaded on the first LSTs arriving in the morning.

The general schedule for LSTs was as follows:

- a. Loading of LSTs at first light in Naples area.
- b. Convoys sailed at 1700 and arrived at Anzio at 0600 the following morning.
- c. Unloading at 4 LST berths at Anzio during morning, usually four at a time; sometimes less because of enemy shelling or congested roads.
- d. Average unloading time - one hour and a half.
- e. Average reloading time - one hour. Trucks were driven aboard head-on at Anzio to save valuable time during reloading.
- f. Reassemble Anzio harbor to sail to Naples between 1600 and 1800.

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## **5. Casualty Evacuation**

The evacuation of casualties was, for the most part, by hospital carrier. The carriers were not able to dock at Anzio so two LCTs were used to transfer the casualties to the carrier's side. For the comfort of the litter cases, canvas canopies were set up over the entire deck of the LCT. During inclement weather, when the sea was too high for the transportation of the casualties to the carriers, they were loaded on the tank decks of the LSTs. Because of the importance of sending back empty supply trucks to Naples, this method was not used unless it was impossible to load casualties on the carriers. Casualties were the only personnel to take priority over supply vehicles on the LSTs. The most difficult part of the evacuation was the coordination of shipping with the stream of ambulances coming from the hospitals. Because of the constant shelling, air raids, and the already congested roads, it was necessary to have complete coordination in order to avoid having a long line of vehicles standing waiting in the town of Anzio,

## **6. Summary - Supply by Water**

The methods used to supply troops in the Anzio Beachhead were considered to be very successful. The importance of the supply problem was emphasized by the fact that unless sufficient supplies could continue to flow into the beachhead, an increase in fighting strength would have been impracticable. During inclement weather, when ship to shore operations were prevented, the balance of supplies was maintained by increasing the truck turnaround of direct supply from Naples. Efficient organization, and close coordination and cooperation between all agencies concerned, mainly the Army and Navy, resulted in the unloading of far greater tonnage than was estimated to be possible at the beginning of the operation.

## **B. DESCRIPTION OF THE PORT AND BEACHES AT ANZIO, ITALY**

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["Map : Porto D'Anzio" is not included at this time.]

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**1. Jetty**

Three Mark III or IV British LCTs or four Mark V American LCTs were the maximum that could berth alongside the wall on the Jetty.

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Cargo was discharged by crane for heavy lifts and manually for light lifts. LCIs could use these berths for the discharge of personnel or cargo.

**2. LST Berths**

A maximum of eight LSTs could berth in the harbor at any one time. Six LSTs could berth along the west wall and two LSTs could berth along the north wall. In the case of necessity, LCIs could berth along either wall (bow in) to discharge personnel. The banks at these berths were too steep for use in discharging cargo from LCTs

**3. North Hard**

A maximum of seven LCTs could berth at the North Hard. Cargo was discharged manually into trucks that were backed into the craft. Only craft with light lifts were beached at this point.

**4. Yellow Beach**

An average of five LCTs were kept off Yellow Beach. The water was too shallow at this point for craft to be beached. Cargo was discharged manually from the craft into DUKWs which came alongside. Only crafts with light lifts were sent to this beach.

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**C. DATA ON SUPPLY BY LANDING CRAFT**

[sub-tabulations of data in the first three cases for Jetty, North Hard, and Yellow Beach have been omitted in this chart rendering.]

1.	<i>American LCTs discharging cargo from Liberty Ships</i>	
	Average time alongside of ship	5 hr 48 min
	Average tons/load	119
	Average time discharging	5 hr 23 min
	Average tons discharged/hour	24.1

2. *British LCTs discharging cargo from Liberty Ships*

Average time alongside of ship	5 hr 48 min
Average tons/load	183
Average time discharging	8 hr 19 min
Average tons discharged/hour	24.1
  
3. *British and American LCMs discharging cargo from Liberty Ships*

Average miles from shore to ship	1.75
Average time from shore to ship	10 min
Average time alongside of ship	57 min
Average tons/load	16.4
Average time discharging	2 hr 2 min
Average tons discharged/hour	9.2
  
4. *DUKWs discharging cargo from Liberty Ships*

Average miles from shore to ship	1.75
Average time from shore to ship	25 min
Average time alongside of ship	10 min
Average tons/load	3
  
5. *DUKWs discharging cargo from LCTs*

Average tons on LCT	154.5
Average number of DUKW loads	55
Average time to load each DUKW	6 min
  
6. *DUKWs discharging cargo from LCIs*

Average tons on LCI	43.2
Average number of DUKW loads	22
Average time to load each DUKW	13 min
  
7. *LCIs discharging cargo from Liberty Ships*

Average miles from shore to ship	1.75
Average time from shore to ship	20 min
Average time alongside of ship	3 hr 20 min
Average tons/load	35.1
Average time discharging	3 hr 32 min
Average tons discharged/hour	9.9
  
8. *LSTs bulk-loaded at Naples*

Average tons/load	266.4
Average time discharging	4 hr 25 min
Average tons discharged/hour	60.3

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The Port received five LSTs bulk-loaded from Naples. All were loaded with rations. Roller conveyors were used initially on all ships to move cargo to trucks parked at the end of the ramp.

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In one case the conveyor was discarded as soon as it became feasible to back three trucks abreast into the ship and right back against the cargo stacks. In another case the use of one line of conveyor in addition to three trucks abreast was attempted. This conveyor fed a truck standing ahead of the three against the stacks. This conveyor however became unwieldy as the length increased, and required a larger number of men to keep the cargo flowing. In addition, the room taken by the conveyor decreased the lateral space for trucks.

Maximum rate of unloading was obtained when the cargo consisted of light weight uniform packages. The most efficient distribution of men and trucks was the use of three trucks abreast and sixty men loading. The use of hand trucks was not practical in this type of unloading. No cargo should be stacked forward of the elevator hatch. Instead, cargo should be stacked higher and at the rear end of the tank deck, thus freeing the forward part of the tank deck and all of the top deck for vehicles, and allowing full room for trucks to maneuver on the flat surface.

Forty trucks per ship were required to make the turn around from ship to dump and back again without loss of time, based on an average turn around of eight miles per truck.

[end of chapter]

[The document as presented here is - within the limits of the my vision, alertness, and stamina - an accurate rendering of the original; but it is not a "true copy". Occasional misspellings and typographic errors in the original have been corrected. Further annotations - primarily abbreviation and acronym expansions - and insertions of clearly dropped words appear in 'square brackets'.

- Patrick Skelly, for milhist.net]

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