

29 October 1944

AIR SUPPLY AND RESUPPLY OF AIRCRAFT OF 2D BOMBARDMENT DIVISION
AUGUST - SEPTEMBER 1944

I. AIR SUPPLY OPERATIONS

1. B-24 aircraft of the 2d Bombardment Division carried on supply operations during the period 29 August to 30 September 1944, flying from various bases in the U.K. to terminals at A-50C, A-71, A-64, A-78 and B-51. Initially rations, medical supplies, and Jerry cans were loaded at Aldermaston, Membury, Ramsbury, Welford, Greenham Common, and later at Beaulieu and transported to A-500 and later to A-71. During this phase of operation, aircraft were equipped with bomb bay platforms. This phase was definitely accomplished the hard way, because maintenance, servicing, messing, housing, briefing, weather, communications, etc., at Beaulieu were a duplication of established facilities available at 2d Bombardment Division bases. Loading personnel were few and at times, unavailable. On numerous occasions aircraft were dispatched from home bases to Beaulieu by order of Eighth Air Force, only to find that there were no supplies to be loaded. A second phase of supply operations was carried out from 2d Bombardment Division bases direct to terminals in France, using B-24 aircraft equipped to carry bulk gasoline. A small control and maintenance detachment from this Division was placed at each terminal and this phase ran more smoothly. Terminals in use were congested and all had operational fighter aircraft based on the strip.

2. Organization.

a. General. During the initial phase of supply operation liaison was not set up and it was impossible for this Headquarters to get any detailed information on the project other than daily commitments from Eighth Air Force. During the second phase of operations, liaison was established with Headquarters, 9th Air Force, Advanced, Communications Zone and 12th Army Group. The importance of the early establishment of direct liaison between the hauling units concerned with receiving supplies cannot be over-emphasized. It is felt that, had the liaison between this Headquarters and the organizations mentioned above been accomplished at an early date, the whole operation would have been handled more efficiently and with better satisfaction to all concerned.

b. Base.

(1) Packaged Freight. The problem which arose in the handling of packaged freight revolved entirely around the organization at the advance base. It was the responsibility of Communication Zone Headquarters to provide personnel for the loading of aircraft at USAAF Stations Ramsbury and Welford, and R.A.F. Station Beaulieu. These bases were also supposed to have been set up to take care of the necessary housing and messing for the aircrews of the 2d Bombardment Division. At no time was there personnel available to load more than ten (10) planes per hour. It was necessary for this Division to send its own operational and maintenance detachment to the advance bases and to actually set up messing and provide living accommodations at Beaulieu. Had proper liaison been established, directly between this Headquarters and the responsible section of Communication Zone, it is felt that many of the inconsistencies could have been quickly ironed out and responsibility established. The difficulties of liaison, together with the contributory inadequacies of communications leads this Headquarters to recommend strongly that any similar operation should be carried out with the delivery of cargoes directly to the home bases, eliminating the need of advance bases.

(2) Bulk Gasoline. Petroleum Board was charged with the responsibility of providing 70,000 imperial gallons of 80 octane fuel per day to each of the three stations of this Division and 120,000 imperial gallons per day to USAAF Station Harrington. Responsibility for delivery to the base rested with Petroleum Board. Our experience indicated that the one important organizational

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factor at the home base was the proper establishment of an organization to supervise the receipt, the storage, and the delivery of the 80 octane fuel, providing thereby a means of constant control of the flow into the station based upon hour to hour usage.

c. Terminal Stations.

(1) It was necessary for units of this Division to provide personnel at Terminal Stations to carry out the operational, communications and house-keeping details.

- a. Operational personnel consisted of Flying Control (including airdrome controllers), and an Operational Section of two officers and two clerks.
- b. Communication personnel consisted of one officer and three enlisted men.
- c. Housekeeping personnel consisted of approximately two officers and ten men, including cooks and orderlys.

(2) It was necessary also to furnish and transport tentage, cooking equipment, cots, blankets, water storage facilities, fire fighting equipment, and transportation (2 Jeeps) from the home bases.

3. Operational Control.

a. Division Headquarters maintained operational control only insofar as detailing units to handle the project. Briefing (weather and control) and dispatching were exercised by the Wing designated. Movements, clearance and the establishment of corridors were handled by this Headquarters.

4. Equipment.

a. Aircraft.

(1) Shipment of Packaged Freight.

- a. The B-24 airplane proved itself adaptable as a transport of freight; however, the problem of exceeding gross weight and C.G. limitation arises, and it was deemed necessary to remove equipment from the airplane to allow an increased payload.
- b. The equipment necessary for the conversion to a cargo transport was the simple installation of four removable floors in the bomb bays which could be installed and removed in a matter of minutes. No additional brackets or modification was necessary.
- c. Although the actual installation of the floors is very simple, the procurement of supplies and the actual manufacture may present a problem dependent of the exigencies of the situation; therefore, it is felt that if such an installation is desired, units within a command should be supplied with removable floors as a part of the spare airplane equipment.
- d. It is recommended that side panels be installed as a part of the installation to prevent the possible interference of the cargo with flight control cables, and that great care be exercised when installing the floors.
- e. The installation of bomb bay floors presents a problem of crew safety in that no means are provided whereby the crew members in the flight deck have a ready means of exit. In some types of loads it is necessary for C.G. considerations, to place part of the cargo around the nose wheel well, thereby eliminating this means of egress. It is recommended that, depending upon bulk and weight factors of the cargo, either one bomb bay platform be left out or an escape door arrangement be fitted into one platform.
- f. Airplane washing should be placed in each aircraft.
(Approximately 100 ft, 2 in. rope)

(2) Shipment of bulk gasoline.

a. The B-24 airplane did not present any difficult problem in the transportation of bulk gasoline. The conversion adopted was dictated by the equipment available in the U.K.; however, a more desirable loading could have been formulated with more bomb bay tanks available.

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b. Carpetbagger Aircraft. Previous to the installation of additional bomb bay tanks it was necessary to reduce the gross weight of the airplane to provide for the maximum amount of gasoline to be carried and not exceed the gross weight limitation for a safe landing. To accomplish the reduction in weight, it was necessary to remove the ball turret, bombsight and bombsight stabilizer, armor plate, ammunition cans, ammunition, waist guns and loose equipment throughout the airplane. Total weight on landing varied from 57,000 to 59,000 lbs. In addition to the reduction in gross weight, a more favorable C.G. location was obtained.

(2) Carpetbagger Aircraft. These aircraft were better suited for cargo work by virtue of having had combat equipment (turrets, guns, etc.) removed.

c. Three types of loadings were used, depending on the availability of bomb bay tanks.

1.	2 wing tip tanks which are standard airplane equipment	450 U.S. Gal.
	1 front bomb bay tank	390 U.S. Gal.
	1 P-47 fighter belly tank in the front bomb bay	108 U.S. Gal.
	4 P-47 fighter belly tanks in the rear bomb bay	432 U.S. Gal.
	1 P-38 fighter belly tank at the waist windows	165 U.S. Gal.
	Total	1545 U.S. Gal.
2.	2 wing tip tanks which are standard equipment	450 U.S. Gal.
	2 front bomb bay tanks	780 U.S. Gal.
	4 P-47 fighter belly tanks in the rear bomb bays	432 U.S. Gal.
	Total	1662 U.S. Gal.
3.	2 wing tip tanks which are standard airplane equipment	450 U.S. Gal.
	3 bomb bay tanks	1170 U.S. Gal.
	2 P-47 fighter belly tanks in rear bomb bay	216 U.S. Gal.
	Total	1836 U.S. Gal.

d. Fifty per cent of the aircraft used loading scheme (1), 25% used loading scheme (2) and 25% (carpetbagger aircraft) used loading scheme (3).

e. Metal fighter belly tanks were used throughout.

f. A more desirable loading would be to use four bomb bay tanks, eliminating the use of fighter belly tanks. This would provide a total capacity of 2010 gallons (wing tip tanks included).

g. In any event, the maximum number of bomb bay tanks should be used. The use of multiple fighter belly tanks presented a pumping problem in that the suction hose had to be changed too frequently. Air locks in the lines and pipe line system resulted. If fewer tanks with greater individual capacity had been used, the problem of air locks would have been greatly reduced.

h. There was no problem involved in the actual installation of either bomb bay tanks or the belly tanks. The fighter belly tanks adapted themselves very well to the modification for mounting on the bomb racks and could very easily be removed from the airplane when once installed.

i. It may be advisable to connect the bomb bay tanks to the

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cat-walk transfer pump in the event adequate unloading facilities are not available.

b. Base.

(1) Transport of packaged freight.

a. The hauling of dry freight from bases did not involve any special equipment problem. Any problems which would arise in this connection would be brought about by peculiarities

(2) Transportation of bulk gasoline.

a. Major problems at the bases were largely concerned with the temporary storage of 80 octane motor fuel. 100 octane underground storage facilities could not be used because of the bottleneck which would be created by limited unloadings and loading facilities into and out of the underground storage and because of the continued requirement of this capacity for aircraft fuel.

b. To remedy the storage and handling difficulties on the stations, it was necessary to furnish each station within the Eighth Air Force.

c. With the use of multiple fighter belly tanks, the loading crews were confronted with the problem of changing hose frequently. It is felt that the loading could be greatly accelerated if fewer tanks with a greater capacity were used as recommended in 4a(2)g. above.

c. Terminal.

(1) Shipment of packaged freight.

a. The terminal base for freight was located at A-50-C. The perimeter had been used by C-47's, but was unfit for B-24's use due to bomb damage. The one and only runway was 7500 feet long, but due to bomb damage only 4600 feet was usable for landings and take-off. The remainder was suitable for taxi-ing and parking aircraft while being unloaded. Due to the short runway only 6000 lbs. of freight was carried per aircraft.

b. The runway used for the parking of aircraft presented frequent problems in that aircraft would break through bomb damaged sections. Adequate heavy towing equipment was not on hand for the use of the advanced base unit. This usually caused delay in the marshalling of aircraft.

c. The unloading of aircraft was handled by a quartermaster unit with the aid of French civilian workers. At no time was there a bottleneck due to unloading procedure.

d. Maintenance difficulties were minor. The important item to consider was the frequent changes of main landing gear tires, due to the poor condition of the runway. A small number of spare parts were on hand to facilitate minor repairs and a daily courier airplane was used to deliver any special parts or equipment needed.

e. In any planning involving the use of B-24 aircraft, it must be borne in mind that they require a longer and more serviceable runway than required for cargo types. (Minimum 5000 feet)

(2) Shipment of bulk gasoline.

a. Due to the exigencies of the situation the immediate supply problem was critical. Sufficient airplanes could be dispatched from the home base to make good the commitment; however, adequate unloading facilities for handling the gasoline were not available at the terminal stations. Eventually, conditions were improved and unloading was being carried out satisfactorily.

b. At A-73 and A-64. At these terminals, the first installations consisted of three unloading pumps, each fitted

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with three or four unloading suction lines. These pumps were separated so as to unload one aircraft each at a time. Subsequently, these facilities were rearranged so that by manifolding all pumps together, more aircraft could be handled at one time and greater flexibility was obtained.

Under both of these arrangements, the unloading pumps were pumped into a large storage tank, from which cans were used independent of the aircraft unloading operation.

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c. B-51. At this time a combination of small portable power pumps and hand pumps were used. Also, the gasoline was pumped directly into 5-gallon cans. The above pumping equipment was transported in trucks to the aircraft wherever it may have been parked. This system proved most unsatisfactory and inefficient.

5. Communications Aspects.

a. The primary requirements for communications on air supply operations are as follows:

- (1) Advanced bases.
 - a. Airfield control facilities (HF and VHF)
 - b. Navigational aids (radio beacons, etc.)
 - c. Radio link with home base or Headquarters.
 - d. Local telephone facilities.
- (2) Home bases or Headquarters.
 - a. Airfield control facilities (HF and VHF)
 - b. Navigational aids (radio beacons and/or HF or VHF homing stations).
 - c. Net control station for air-ground liaison and control radio net.
 - d. Net control station for point-to-point radio link with advanced bases.
 - e. Normal telephone and teletype facilities.
- (3) Aircraft equipment.
 - a. HF W/T liaison facilities.
 - b. HF R/T control and command facilities.
 - c. VHF R/T control and command facilities.
 - d. Navigational aids - radio compass and/or radar facilities such as GEE or Loran.

b. The requirements of paragraph 5a(2) and 5a(3) above are or can be fulfilled by the use of normal station, group and squadron equipment as authorized for heavy bomber stations and units in the United Kingdom. The requirements of paragraph 5a(1) can be fulfilled by using group and squadron equipment, but the essential consideration is to use items which are air transportable. Field telephone and radio equipment has proven entirely adequate. Such items as command set SCH 274N and VHF set SCR 522 are well suited for airfield control purposes when provided with suitable power supplies. SCR 188 sets are entirely satisfactory for radio beacons (with tuning units modified according to frequency) and for point-to-point purposes up to 300-500 miles range. Net control stations at home bases or Headquarters will normally be SCR 299/399 sets.

c. The essential elements of advanced planning and preparation for these projects are as follows:

- (1) Allocation of suitable radio frequencies, call signs and cryptographic systems for air-to-ground and point-to-point radio communication.
- (2) Earmarking and preparation of advanced base equipment and operating and maintenance personnel on each stations.
- (3) Preparation of signal operation instructions and standard operation procedures which can be issued as required.

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UNCLASSIFIED

-5-

d. Training of communications personnel for operation under field conditions is of vital importance. Each individual officer and man must be well trained in the capabilities and limitations, operating and maintenance procedures, and emergency repairs of field communications equipment. Group and squadron training programs should stress this phase and in so doing will insure adequate preparation not only for special projects such as air supply operations, but for any field based operations.

e. Finally, the communications aspects of this problem are based upon the use of a minimum of equipment and personnel at advanced bases, all of which must be completely and instantly air transportable, and highly self-sufficient. Careful planning will insure that group and squadron personnel and normal T/E communications equipment will be used rationally.

UNCLASSIFIED

6. Recommendations.

a. In addition to the recommendations that appear throughout the text above, it is felt that the following points should bear emphasis.

(1) At the outset, it is imperative that direct liaison between the hauling units and consumer be established, eliminating as much as possible detailed work by higher headquarters. Responsibilities must be definitely established from the beginning.

(2) Wherever at all possible, operations should be performed from the home bases of the units and use of advance bases avoided.

(3) As soon as there is a prospect of use of bomber aircraft for hauling freight, immediate steps should be taken to round up all supplies and equipment which will be necessary to convert the aircraft. In the case of the bulk hauling of gasoline, every bomb bay tank available should be used.

(4) It must be realized that heavy bomber aircraft cannot be operated into terminals with unsuitable runways and taxi ways. Five thousand feet of well constructed runway is essential and maintenance personnel should be continuously available.

(5) Adequate unloading personnel and equipment must be provided.

II. AIRBORNE RE-SUPPLY

1. History of Re-supply Operations of the 2d Bombardment Division.

a. On the 18th of September 1944, 2d Bombardment Division dispatched 252 aircraft on re-supply operations in Holland. 251 aircraft dropped supplies in assigned zones. 7 aircraft were lost and 4 aircraft crash-landed at base on return.

2. Organization.

a. Organization was normal, with the exception of SOS troops who were made available at each bomber station to supervise loading and dropping of supplies. One SOS man flew with each air crew and was of great assistance.

3. Operations.

a. The route flown at 1500 feet and essentially as planned by squadrons of 9 aircraft flying in a V of V's. A 360° turn was executed over the Channel to avoid over-running a formation of C-47's. As a result, the drop was made twenty-five minutes late. At the initial point a let-down to 300 feet was made and an indicated airspeed of 150 miles per hour was held over the dropping zone. Dropping tea, smoke markers and buncher beacons were not seen by all formations at the drop zone. Some units reported seeing markers being laid out as they passed over the target, and results were reported from "5 miles short" to "excellent". The route was flown by some units on the deck and by others on a continuous climb, which carried them to about 6000 feet. Units at zero feet sustained less battle damage and loss. Flak was reported from moderate to intense and accurate. No enemy fighters were reported.

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4. Equipment.

a. Operational B-24-H and J type aircraft with ball turrets removed and turret wells left uncovered were used for the operations.

b. Radio beacons, smoke markers and dropping tees were to have been placed in each drop zone. However, crews were briefed that these aids might be available, but that they could not be depended upon. Consequently, the failure of these aids did not hinder the success of the operation.

5. Recommendations.

a. It is recommended that a minimum alert of 72-hours be given bombardment units for re-supply operation. This will permit leaders to study the route and target area and will make possible a low level practice formation flight by the air crews that will fly on the operation. This is of primary importance because aircrews of heavy bombardment units in this theater seldom practice any but high altitude work. Accurate navigation and target identification from 300 feet is very necessary for the success of a re-supply operation. Also this advance warning will permit the removal of ball turrets.

b. Intelligence information should be transmitted through normal channels and should be as detailed as the situation permits. On the mission of the 18th of September, it was not known that gliders had landed in the area. Lead crews reported that it would have been of definite aid, had they expected to see gliders on the ground in certain areas. The map that was sent to this Headquarters was of a type and scale not commonly used by heavy bombardment units of this Division. Consequently, it had to be photographed and distributed a few hours before Briefing for this operation.

c. Representatives of the Operations and Intelligence Sections from the Division concerned with bomber re-supply operations should be represented at airborne headquarters during the planning of re-supply operations.

d. Supplies must be loaded and aircraft dispatched from bomber stations to insure a smooth operation. It is not advisable under present circumstances in this theater to dispatch aircraft to loading points and then again from there to the drop zone.

e. Operational planning should include the shortest possible route over enemy-held territory. A route in to the drop zone should be flown at an altitude of 1500 to the initial point, where a let-down to the deck should be accomplished. This will insure more accurate navigation. The initial point should be placed approximately 25 to 35 miles from the drop zone. On approach to the release point, aircraft should pull up to 300 or 400 feet in order to reduce indicated airspeed to 150 miles per hour. The route out to friendly-held territory should be as direct as possible and flown at zero feet altitude.

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