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TECHNICAL MEMORANDUM ORO-T-267

Allied Supplies for Italian Partisans during World War II

by

D. M. Condit

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SUBJECT: Technical Memorandum ORO-T-269, "Allied Supplies for Italian Partisans During World War II."

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a. Operations Research Office Recommendations 1 - 3 inclusive: these recommendations will be considered for the establishment of appropriate projects in those areas where research is not already underway.

b. Operations Research Office Recommendation No. 4: no action will be taken; this recommendation is recognized in existing concepts as a disadvantage that exists in guerrilla operations.

c. Operations Research Office Recommendation No. 5: This recommendation will be considered for inclusion, as appropriate, in future field exercises and maneuvers.

3. Request that comments, if desired by addressees, be forwarded in quadruplicate within 90 days after receipt of this study to the Chief of Research and Development, Office of the Chief of Staff, Department of the Army, Attn: Operations and Personnel Research Division. Comments as received will be reviewed and evaluated by the Department of the Army and by the Director, Operations Research Office.

FOR THE CHIEF OF RESEARCH AND DEVELOPMENT:

Herbert W. Mansfield

HERBERT W. MANSFIELD
Colonel, GS
Chief, Operations and Personnel
Research Division

1 Incl
ORO-T-269

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The Johns Hopkins University
7100 Connecticut Avenue
Chevy Chase, Md.
Washington 15, D. C.

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Project PARABEL
Technical Memorandum ORO-T-269
Received: 17 March 1954

Allied Supplies for Italian Partisans during World War II

by

D. M. Condit

OPERATIONS RESEARCH OFFICE
The Johns Hopkins University Chevy Chase, Maryland

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7100 Connecticut Avenue
Chevy Chase, Md.
Washington 15, D. C.

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SUMMARY

PROBLEM

To review and analyze various facets of the problem of getting Allied supplies to partisan groups behind the enemy lines in Italy during World War II.

FACTS

During the Allies' military campaign in Italy, which extended from their landings in early September 1943 to the German surrender on 2 May 1945, a partisan resistance movement against the Germans grew up. At first this movement received little help from the Allies, but in the summer of 1944 the Supreme Allied Commander in the Mediterranean acknowledged that Italian partisans had been a substantial aid in the Allied drive. Following this, Allied aid to partisans was increased. In all, approximately 6000 gross long tons of supplies were delivered to Italian partisans behind the German lines, mostly by air drop.

DISCUSSION

It would be of small consequence that partisans existed and fought during World War II and that the Allies sent them supplies unless the possibility existed that this type of situation would again occur. The rationale of this memorandum is therefore based on certain assumptions. In the event of a future war, it is assumed that there will exist behind the enemy lines people who will be against the occupying regime and who will, given any chance, act against that regime in some manner. This action will have a disruptive effect upon the governing authorities and, if severe enough, upon the enemy military situation. Given support and direction, this action by partisan resistance groups could be made more intensive and efficient that it would be otherwise. This memorandum assumes that the United States will decide to utilize some part of these dissenting groups as a behind-the-lines supplement to our military effort. As an adjunct to the military exploitation of such groups, the United States will necessarily send aid to these potential guerrillas.

The manifold problems connected with helping guerrillas include those of supply, generation, organization, leadership, operations, security, and combat of enemy antiguerrilla measures. Although all facets of the problem are important, the first question to be studied is that of supply, using the Allied experience in Italy during World War II as the example.

During World War II the Allies helped the Italian partisans in various ways. They sent men to give direction, aid, and supervision to the resistance; they sent money in the form of lire and gold; and they sent supplies. The aim of this memorandum is to consider only the military task of getting supplies to active guerrilla groups. No account is taken of supplies that partisans might get from other than Allied sources—from the dissolving Fascist army in September 1943, from captured enemy military equipment, or from the civilian population. No matter how important such sources might be to any one partisan group, there was in the last war, and will be in any future war, no way in which a friendly military force can control these sources, either on the giving or withholding side. On the other hand, our own military force proved its ability to send supplies to groups behind the lines, and it is imperative that the techniques they used by remembered and improved.

Given these assumptions and limitations, work on a supply memorandum was undertaken with certain specific questions in mind. The problem as stated above was thus presumed to have the following ramifications with relation to the future:

(a) What were the most important problems connected with supplying the Italian partisans?

(b) What categories of supplies were sent?

(c) What effect, if any, did political considerations have on supplies for partisans?

(d) How closely could the size of a partisan movement be controlled by sending or withholding supplies?

(e) Were the supplies delivered by the Allies to Italian partisans of any value in helping the Allied military effort in Italy?

Because supply was an operation mainly carried out from the Allied side of the lines, Allied files are the most complete and were most heavily relied upon. The investigation proceeded from a rather general ordering of some of the facts concerning the military campaign in Italy to an intensive investigation of the files of the G-3 Special Operations Subsection of Allied Force Headquarters and of 15th Army Group. These file banks contain a number of reports by the special operations groups in Italy—Special Operations Mediterranean, No. 1 Special Force, and 2677th Regiment OSS (Provisional). Although the files of OSS in the custody of Central Intelligence Agency were not made available, it is probably safe to assume that those files would supply details to fill in the general themes outlined in this memorandum rather than to change its major conclusions. In addition, Hoover Library supplied the results of its research on Italian sources under the terms of a subcontract with ORO; however, this provided only fragmentary data.

It became apparent very early that the greatest supply problem was that of transporting supplies from the Allied side across the front line to the partisans behind the enemy. It also became evident that air transportation was the most feasible means, and this method was chosen. Three facts are of paramount importance in assessing air supply dropping operations in Italy during World War II. In the first place the Allies had broken German air superiority in the Mediterranean by the time of the initial Allied landings in Italy in September 1943. In spite of the fact that the Germans could save up their aircraft and air crews and make an occasional large-scale air effort (as in November 1944), the Allies had over-all air superiority in Italy, and in 1945 they achieved air supremacy. Second, the Allies were unable always to deliver supplies in desired quantitites or on call in 1944 despite air superiority. And third, oper-

ational control of aircraft remained separate and distinct from the special operations agencies. Under this system, Special Operations maintained liaison with air force headquarters, but final control over where and when a plane should go rested with the air force.

The importance of the air transportation aspect of supplying Italian partisans gives special significance to this memorandum's value for the future, for air supply is still recognized within the Department of the Army as a problem for Special Forces. The incidental and tangential problems concerning air support in Italy—the problems of organization, packing, alternative means of transportation, reception and recovery of drops, and political implications—were therefore examined.

An attempt was made to assess the value of supply both as a means of controlling partisan strength and in support of harassing operations. The first question was attacked simply by plotting the supplies dropped against the rise and fall of resistance strength. Whereas the supply drops are probably a rather accurate count by tons, the resistance strength figures are not so reliable and should be considered as indicators rather than accurate counts. Assessment of the second point proved more difficult, and only a rough and partial indication of the payoff value of supplies for partisans has been suggested. The cost of an enemy casualty in terms of rounds of ammunition and of dollars has already been ascertained for regular troops in ORO-T-246, "The Cost in Ammunition of Inflicting a Casualty." By comparing the cost of an enemy casualty inflicted by regular troops with the cost for a partisan-inflicted casualty, it was hoped that some indication would be found to suggest the usefulness of supplying partisans.

CONCLUSIONS

1. Sending or withholding supplies to Italian partisans was not a means of closely controlling the size of the Italian resistance movement.

2. Supplying guerrillas with material was not a reliable means of controlling their activity. Some Italian Communist partisans, for example, hoarded arms and ammunition for future party use rather than expending them in current military operations.

3. It was inexpensive to supply partisans, and evidence suggests that they made good use of ammunition. This fact is indicated by the following approximate figures, which are based on a sample period of three months of fighting at Anzio for regular troops and on a sample period of seven months of activity by partisans:

Cost in ammunition of inflicting a casualty

Regular troops	2600 rounds
Partisans	2500 rounds

Ratio of ammunition expenditure (fragmenting-type to small-arms)

Regular troops	1:11
Partisans	1:156

Cost in dollars of inflicting a casualty (WW II costs)

Regular troops	$2100–$6000 (ammunition only)
Partisans	$ 700 (ammunition and air drop delivery)

Cost in dollars of inflicting a casualty (WW II situation at current costs)

Regular troops	$3500—$10,000 (ammunition only)
Partisans	$ 600—$ 1,000 (ammunition and air drop delivery)

4. The limited mass-drop program tried out in Italy in November 1944, using neither air-ground communication nor guide-in equipment, failed.

5. Shorter flying distances, which resulted from moving air bases close to the front, did not substantially improve sortie success rates. However, more sorties could be and were flown, and this was the major factor in solving the air supply problem.

6. Air-ground communication difficulty was a major cause of sortie failure throughout the war. Most difficulty arose from failure to establish any communication rather than from incorrect signals. Once communication was established, the probability of a successful drop was high.

7. The advantage of the Eureka-Rebecca system over visual signals as an air-ground communication aid was not definitely established.

8. Evidence suggests that bad drops, meaning those off the drop zone, were mainly due to air-crew error.

9. When large-scale food drops could not be maintained because of limited air capacity, it was generally preferable to send guerrillas items that could be used for bribes or barter rather than straight rations.

10. Packing was, in general, successful, but some problems deserve attention in the event of future operations. Among these are: need for trained personnel, elimination of waste items from a drop, maximum useful standardization procedures, and the possibility of reducing dependence on parachutes by packing more items for free falls.

11. Although much of the material sent to British- and to American-sponsored partisans was identical, the separation of British and American special operations in Italy included duplicate British and American organizations for administering and handling supplies.

RECOMMENDATIONS

1. The Department of the Army through its special forces organization should coordinate with the United States Air Force on the following undertakings:

(a) A test program to evaluate visual and electronic aids for locating drop zones and for accurately dropping supply bundles under conditions of air superiority, parity, and inferiority, for day and night drops under all weather conditions and at all feasible altitudes.

(b) A program to indoctrinate air crews to ensure that, when making precision supply drops at low altitudes, they make the same careful runs and releases for supply containers as they do for body drops.

(c) An investigation into the conditions under which the use of parachutes could be avoided and packages free dropped. Such factors as packing; the shape, size, material, and portability of containers; and landing areas should be taken into consideration.

(d) An exercise to test guerrillas' ability to receive and use air-dropped, heavy, mobile equipment in the performance of specialized projects.

2. The Army should conduct a survey and test of possible weapons for guerrilla use, including in its considerations the problems of quantities, types, packing, and ammunition supply. Special thought should be given to supplying adapters or US-developed weapons that will employ captured enemy ammunition.

3. Consideration should be given to the feasibility of extensive use of helicopters and convertiplanes for delivery of supplies behind the enemy lines.

4. Cognizance should be taken of the fact that guerrilla groups encouraged and supplied by the United States may use supplies for private and /or anti-United States purposes.

5. Since supply alone was not an adequate means of controlling guerrillas, the capability of US Army Special Force teams to control guerrilla activity should be further tested and evaluated in maneuvers and exercises.

ALLIED SUPPLIES FOR ITALIAN PARTISANS DURING WORLD WAR II

INTRODUCTION

The conditions that will be imposed upon regular military tactics by the atomic bomb, at least as such tactics are now envisaged, may well make guerrilla action a more important offensive and defensive weapon than it has been heretofore. The necessity for dispersion of regular forces, for example, will mean greater reliance upon lines of communication, which are particularly susceptible to guerrilla attack; further, dispersion of regular forces may itself often give irregular forces the chance for local superiority and successful action against regular troops. In the same way, when regular troops must form battle lines quickly for immediate attack, they will be vulnerable to guerrilla activities, if these are carried out with intelligence and daring. At any rate, the conditions that are presently assumed to obtain under nuclear warfare do not preclude guerrilla activity; there is even reason to suppose that regular forces would be more vulnerable to such attack than under the conditions of World War II.

It is only reasonable to assume that the Soviet Union would engage in guerrilla warfare as a supplement to regular warfare under the conditions of atomic attack. Three successful experiments with irregular warfare over a period of a century and a third will hardly make the Soviet Union turn back from guerrilla activity in the event of a future major war.

Although the use of irregular forces under the probable conditions of a future unlimited and nuclear war is potentially great, it is unnecessary to look further than the limited wars waged in Malaya and Indo-China to view the spectacle of essentially guerrilla movements controlled and manipulated to further the strategic and tactical ends of a Communist government. In the war in Korea, the line between regular enemy troops and irregulars was drawn so thin that it was almost indiscernible, the same man attacking in two ways: in uniform as a regular soldier and without uniform as a guerrilla fighter. The prospect of guerrilla or guerrilla-type activity in other trouble spots is probable as long as its payoff remains high.

So long as the enemy is Communist, the United States must expect to cope with irregular forces whatever type the war. Granted this fact, can it be logically assumed that this country will exploit guerrillas offensively under the conditions of either limited or unlimited war? Facing an enemy that had lost a large proportion of its military manpower by mid-1943, the Allies during World War II felt that substantial advantages were yet to be obtained by supporting and using local irregular forces. In the event of a future war, NATO nations face a much larger enemy in terms of manpower and territory; is it

likely that the active help of now quiescent populations will be refused? In addition there was an attempt during the Korean action to exploit friendly Korean guerrillas behind the lines in North Korea. The idea of offensive use of guerrillas is implicit in the very existence of Project PARABEL; the important questions are rather of the nature of how best to generate, support, control, or direct guerrilla forces.

This paper concerns Allied support of Italian guerrillas or partisans during World War II and assumes that the nature of support is such that the lessons of that campaign apply to both present planning and future activities.

Unnecessary as it may seem to review the course of events of the Italian campaign, it should be pointed out that the campaign was long and tedious, difficult and bloody. The Fifth and Eighth Armies made landings at Salerno and in Calabria in September 1943, but Rome was not captured until 5 June of the following year. After the capture of Rome, eleven more months were to pass before General Vietinghoff, on 2 May 1945, signed an unconditional surrender of the disorganized and fleeing German armies. By that time events had proved once again that the defender's advantage is multiplied by favorable terrain conditions, especially when these are fully utilized.

But while terrain favored the defenders in one sense, it held an innate disadvantage in another, for the mountains and hills that hid machine-gun nests and troops were equally good for hiding partisans and other irregular forces. The Allies realized their advantage in time, and by 1945 15th Army Group counted air superiority and the Italian resistance as its two weapons unavailable to the enemy. Without air superiority the Allies could not have supported the Italian resistance movement to the extent that they did. In turn, recognition of the value of the partisans as a military weapon and potential military aid vindicated the policy of support.

PREPARATIONS FOR SUPPLYING PARTISANS

The Allies had not expected to find a large-scale partisan movement when they first landed in southern Italy, and in fact the only partisan activity that did occur in 1943, including that in Naples, was sporadic and ineffectual. Resistance activities grew during the winter of 1943-1944, however, and the Allies began to supply some partisans with small quantities of materiel. Beginning with the fight for Rome in the spring and summer of 1944, the Allies took cognizance of the value of partisan activity and began to step up the rate and quantity of supply delivery.[1]

Organization for Supply

Because there had been no expectation of large-scale help in the form of partisan effort, the special operations groups in Italy had to improvise and work out usable procedures in conjunction with the regular military organization as the war progressed. The task of organization was further complicated by the fact that the Allied effort in Italy was combined: Eighth Army was British and Fifth Army was American. The combined effort continued in the field of special operations: the operating agency of the British Special Operations Executive (SOE) was No. 1 Special Force, that of the American Office of Strategic Services (OSS) was 2677th Headquarters Company Experimental

(Provisional). These two agencies were coordinated during 1943 by one officer in the G-3 Division of Allied Force Headquarters (AFHQ), the highest echelon of Allied control in the Mediterranean Theater.[2]

Becoming more cognizant of the partisan effort, AFHQ in February 1944 set up in its G-3 Division a special section to handle special forces problems. By April, with special forces work growing in Southern France and the Balkans as well as in Italy, AFHQ set up a new office, Headquarters Special Operations Mediterranean (SOM), to coordinate special operations of the American and

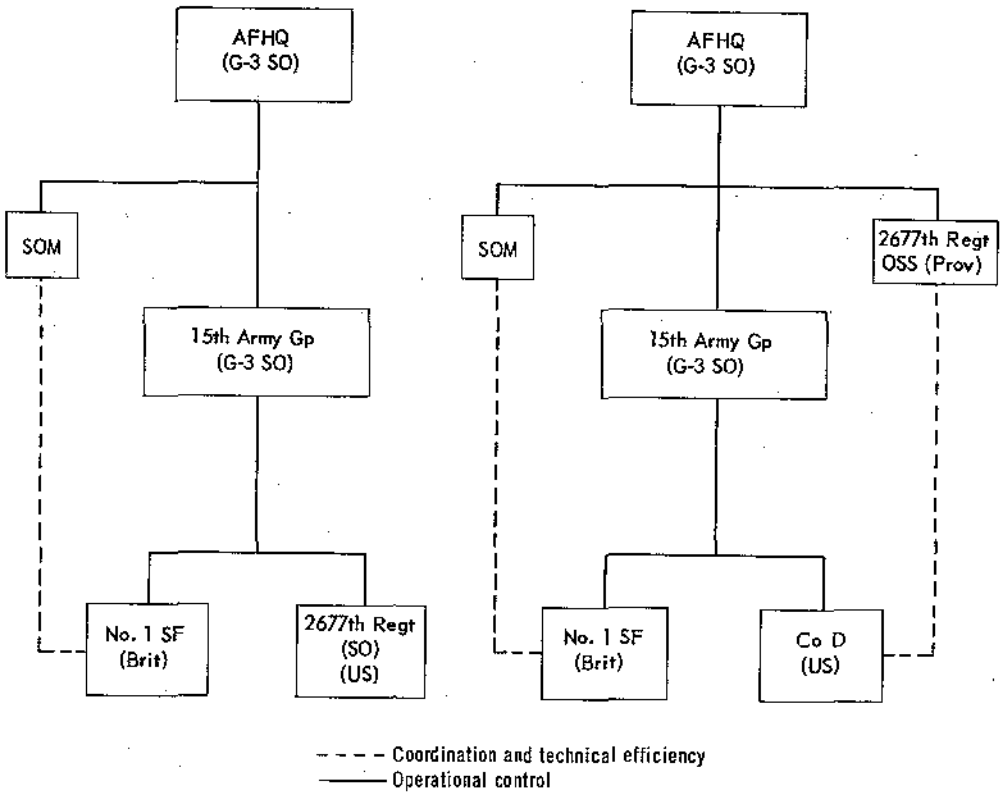

Fig. 1—Organization of Special Operations in Italy, 1945.
Left, AFHQ chart; Right, actual organization

British operating agencies. The SOM did coordinate and supervise the technical efficiency of No. 1 Special Force in Italy, but coordination of OSS-SOE as a joint effort in Italy continued to take place within the higher staff levels of AFHQ.[2,3] Meanwhile the responsibilities of 2677th Headquarters Company had been growing. It eventually was organized as 2677th Regiment OSS (Provisional), with Company D its operating unit in Italy.[4-6] Thus SOM and 2677th Regt were actually parallel administrative agencies for British and American special operations in the Mediterranean Theater, and under them No. 1 Special Force (British) and Company D (American) respectively fulfilled their special operations roles[5,7,8] (Fig. 1).

Supply Procedures

Certain steps had to be taken before it was possible to have supplies to send to Italian guerrillas. Requirements had to be figured, procurement had to be made, and the goods had to be sent to a port of embarkation and shipped overseas. For regular military items, OSS sent its requisitions through regular military channels. After such supplies reached the theater, they were held in a regular theater supply depot, earmarked for special operations and ready for call-up to the special operations supply dumps and packing depots.[7,9–14] When the requirements for special operations were of the same type as for regular troops, all this took place without any unusual effort.

When requirements were for nonstandard items used only by special operations, alternative procedures might be employed. If the desired item was indigenous-type clothing, it might be purchased locally. On the other hand, if the item was a special demolitions kit designed especially to blow up bridges or railroad track, it was usually designed, fabricated, and purchased back in the zone of interior. If 2677th Regt was the requisitioning agent, the requirement was sent directly to OSS in Washington, procurement was specially initiated, and the item was eventually sent to the theater. Special items were then earmarked for special operations and stored in the regular theater depot.[7,9–15] Whether items were those regularly used by the military or procured only for special operations, the supply process, a familiar one to military personnel, was usually handled without undue strain.

Although SOM followed a similar procedure in obtaining supplies from its island base, British special operations did not have so great a wealth of stores to rely upon as did the Americans. Consequently, SOM requisitioned many stores through 2677th Regt on a lend-lease basis.[7] Military records also show that 2677th Regt applied for many British items under reverse lend-lease.[16,17] As a matter of fact, SOM reported that in the final analysis a greater quantity of its stores* had been infiltrated by OSS than by No. 1 Special Force.[18,19] Thus, even though American and British special operations agencies, following a higher-level decision, did operate as separate, distinct, and mutually exclusive entities,[20,21] they at least had a working system of supply exchange.

Whereas supplies for partisans, whether regular military or special items, were handled in much the same manner as those for regular troops up to the point of issue, radical departure from the usual procedure occurred when distribution had to be made. The battalion truck that brought back arms and ammunition for regular troops could not reach the partisan, who was 2, 20, or 200 miles behind the enemy's lines. Additional steps were therefore necessary to get supplies into the hands of paramilitary personnel. Delivery to partisans meant that means of transport had to be decided upon and supplies packed for shipment.

Packing for Transport

Although many problems confronted the people who packed supplies for transport to Italian partisans, these problems were solved, on the whole, without holding up the supply process.

*There appears to be some question as to how many stores supplied by SOM to OSS under reverse lend-lease were originally lend-lease items.[19]

The first problem was always to establish a plant that could take care of the necessary work load. When supplies to Italy were to be air dropped, the packing station had to include facilities not only for storing both bulk and packed supplies and for packing itself, but also for the space-consuming operations of drying, storing, and packing the necessary parachutes.[22] The Allies included such facilities in the packing stations they established near air bases such as Monopoli and Bari-Brindisi. These were operated under SOM control.[23] Here also OSS detachments ran bulk stores depots and packed supplies. The OSS packing teams usually included only army personnel, several officers and a group of enlisted men, but SOM augmented trained British personnel with Italian laborers, either those with a record of previous British employment or those recommended by No. 1 Special Force.[22]

Although OSS did not have its own separate packing station as late as November 1944, this did not mean that they did not want one. Particularly, OSS wanted a packing station closer to the front lines in the north of Italy. This position met opposition from the British, who did not like to move an operating factory. They preferred (and felt it more economical) to continue the use of southern packing stations and to transport packed supplies to more northern bases when the supply planes moved to them.[24] In the end the British agreed to the move north, and, in December 1944, 15th Army Group made it known that it desired Company D to establish a packing station at Cecina near the Rosignano airfield.[25]

Despite the fact that it was eager to establish a packing station, 2677th Regt felt it was unable to do so, because of a shortage of competent personnel.[26] At the same time, SOM was also experiencing a personnel shortage and needed help for packing and maintaining parachutes in the Foggia area.[27] The personnel shortage was overcome for OSS by a detachment of 63 men provided by the Air Supply Base for loading and dispatching service.[28] With this increment, 2677th Regt established the Cecina station within a period of 18 days. Its first operation was performed on 9 January 1945, when 18 planes were loaded.[29]

The opening of the Cecina packing station under OSS administration marked more than a growth in the scope and responsibility of OSS in Italy. In effect, the Cecina station also marked a technological change, for the Cecina plant packed supplies for loading in transport aircraft, while the Brindisi station packed for the heavy bombers.[28] Since either aircraft, however, flew to both OSS-sponsored and to SOE-sponsored partisans, both OSS and SOE stores were loaded. To take care of transports at Cecina, OSS stores in bulk and SOE stores in prepacked containers (together with certain stores in bulk) were sent to the station for packing.[28,30]

By February 1945, operations at Cecina had increased to approximately 440 tons a month, with the station not fully extended.[29] As the Cecina station assumed the greater share of OSS supply packing and loading, 2677th Regt prepared to shut down its supply detachments elsewhere. By the end of February, it had moved 3000 tons of supplies from Monopoli to Cecina,[29] and, although operations were still being flown from Brindisi, the OSS contingent at that packing station was prepared to move out on a 48-hour basis.[31] As Cecina operations increased, however, the inevitable happened, and the great Allied military push of April 1945 found OSS again faced with a need for additional packing plant personnel.[32]

Another major problem faced by packers for resupply sorties in the Mediterranean Theater was the almost constant dearth of parachutes throughout 1944.[33-36] Since only clothes and shoes were regarded as possible free drops,[37] the limit on parachutes put a limit on the number of bundles that presumably could be dropped. Although there was constant anxiety in 1944 about parachutes, there is no available evidence indicating that their scarcity actually held up shipments. Presumably the scarcity of aircraft was an even greater limiting factor. Had more aircraft been available, parachute shortages would have been a major difficulty in getting supplies to the Italian partisans.

Even when parachutes were available, they were a source of trouble to the people depending on air drops and to the people responsible for sending the supplies. The field reported that a large number of supply drops were in fact ruined by the use of faulty or damaged parachutes. One United States pilot, after observing 67 drops in the field in early 1945, noted that approximately 12 percent of all parachutes used were faulty.[38] It is improbable that this percentage was high for the field as a whole, since there were instances when 70 percent of the parachutes failed to open.[39] The failure of parachutes could scarcely be treated as less than a serious situation when it meant that such supplies as the invaluable radio equipment reached partisans in unusable condition.

The complications that could arise to plague packers may be better seen when it is realized that problems arose even when parachutes were available and even when they worked. Complaints about radios, for example, rose to such a high point that OSS packers had a radio technician check all sets received for packing. His work showed that some spare-parts kits contained material that could not be used with the set for which the kit was intended, but this was a prepacking problem. More to the point, he rechecked a number of radio sets that had been jettisoned from unsuccessful sorties. Except for broken tubes in the spare parts kits,* OSS packers reported that the technician found these radios in perfect working order, a fact they considered "fairly definite proof that prior reports of faulty packing were in error."[31] Further prowess on the part of packers is indicated by their success in packing liquid batteries to meet air force specifications and acceptance.[31]

Nonetheless, although OSS packers were able to cope with many difficulties, and did, certain hints of difficulties persisted. There remains a doubt about the quality of the United States containers, since Company D, with its field experience, kept demanding British rigid-type containers, so that "on certain occasions planes going to Rosignano have been loaded with empty containers . . . ."[31]

Packing problems were also bound up in the question of standardization of weapons for partisans. The variety of weapons in use in any one band[40] complicated the whole supply picture and particularly that of packing. Packers might prepack ammunition in slack periods to meet rush-hour needs, but partisan bands were bound to be disappointed if they received ammunition that was useless for the arms they had. One Allied liaison officer expressed his chagrin at previous supply drops by exfiltrating samples of the ammunition his band required. The sending of spare parts became similarly complicated when a variety of weapons was used by partisans in the area of any one drop

*Recommended solution was to use metal tubes.

zone. When the Allies could not prepack, they had to make up each "order" separately in a time-consuming way. The British special operations people met the challenge of standardization for guerrillas by issuing a "mail order" catalogue to field agents by which they might order standard packed containers of various types or individual items of supply.[37] The OSS group seems to have relied more on individual packing of catalogue items, a practice that in turn complicated the personnel picture.

In packing, the smallest details counted. Failure to include instructions in Italian for new weapons dropped to partisans was responsible in several instances for much delay, chagrin, and annoyance.[41] On the other hand, one Allied practice greatly appreciated by partisans and by liaison officers alike was the use of clothing for padding in packages containing supplies of other types. When cottonwool was substituted for shirts-and-socks wadding, disappointment was great and was duly registered in the official mission report.[42] An Allied officer also mourned when Italian rucksacks were no longer used as covers for packages, for "their usefulness is considerable."[42] Possibly some of these advantages were more imaginary than real, but they point up once again the tremendous importance attached to details by the field. Packing practices were undoubtedly an element in field "psychology."

LAND AND SEA TRANSPORT OF PARTISAN SUPPLIES

Although supplies could be packed for shipment without undue difficulty, it was much less easy in Italy for the Allies to find an adequate means of accomplishing delivery. The partisan behind the enemy lines was in an ideal position to create trouble for the enemy, but that very position created difficulties when it came to getting equipment and material to him. Until 1945 transportation was the major problem in supplying the resistance movement, and each of the three possible ways—infiltration along overland routes, maritime operations, and air drops—was tried. Although the last means proved the most successful, under different circumstances the first two might well have been the more advantageous.

Overland Infiltration

Depending upon the fluidity of the front, overland routes provided only a fractional answer to the delivery problem in Italy. Slipping through the front lines was not a sure business, since enemy patrols were fairly extensive; even safe paths usually led over mountain trails where only men or mules could be used for portage. In October 1944, for example, the OSS detachment working with Fifth Army recorded five operations in which supplies were carried by mules, but on 17 October OSS reported "ammunition infiltrated on partisans' backs, approximately 700 lbs."[43,44] While some exceptional bands had their own mule supply-hauling teams, in many cases mules could not pass the front. Often even men could not manage to do so. "On most of the routes," reported an Allied liaison officer in December 1944, ". . . [a man must use] both hands and feet in order to make the journey successfully."[45]

In one special instance the Allies did supply, to a considerable extent and by overland infiltration, partisans in the far northwest of Italy. This operation was the supply of guerrillas in the Alpine region of the Piedmont in the winter and spring of 1944-1945. Of a total of 15,000 to 20,000 partisans in the Piedmont

zone. When the Allies could not prepack, they had to make up each "order" separately in a time-consuming way. The British special operations people met the challenge of standardization for guerrillas by issuing a "mail order" catalogue to field agents by which they might order standard packed containers of various types or individual items of supply.[37] The OSS group seems to have relied more on individual packing of catalogue items, a practice that in turn complicated the personnel picture.

In packing, the smallest details counted. Failure to include instructions in Italian for new weapons dropped to partisans was responsible in several instances for much delay, chagrin, and annoyance.[41] On the other hand, one Allied practice greatly appreciated by partisans and by liaison officers alike was the use of clothing for padding in packages containing supplies of other types. When cottonwool was substituted for shirts-and-socks wadding, disappointment was great and was duly registered in the official mission report.[42] An Allied officer also mourned when Italian rucksacks were no longer used as covers for packages, for "their usefulness is considerable."[42] Possibly some of these advantages were more imaginary than real, but they point up once again the tremendous importance attached to details by the field. Packing practices were undoubtedly an element in field "psychology."

LAND AND SEA TRANSPORT OF PARTISAN SUPPLIES

Although supplies could be packed for shipment without undue difficulty, it was much less easy in Italy for the Allies to find an adequate means of accomplishing delivery. The partisan behind the enemy lines was in an ideal position to create trouble for the enemy, but that very position created difficulties when it came to getting equipment and material to him. Until 1945 transportation was the major problem in supplying the resistance movement, and each of the three possible ways—infiltration along overland routes, maritime operations, and air drops—was tried. Although the last means proved the most successful, under different circumstances the first two might well have been the more advantageous.

Overland Infiltration

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area, OSS expected to be able to supply approximately 4000. Because of extreme difficulty in flying sorties from southern Italy to the Alps under winter weather conditions, these partisans had gone neglected—without food or arms and ammunition, their only clothing summer cottons. Although their plight was desperate, the partisans were helping to contain three German and one Italian SS division on the French-Italian border and away from the 15th Army Group front.[29,46,47] Special Operations at AFHQ felt, in fact, "that the Partisan activity in NW Italy is the equivalent of at least 3 ½ hostile, perhaps not first class, enemy divisions."[13] British and American agencies therefore set out to get supplies to the stranded Piedmontese partisans. Both agencies succeeded. The following story of OSS's participation is especially illuminating[48–51] (Fig. 2).

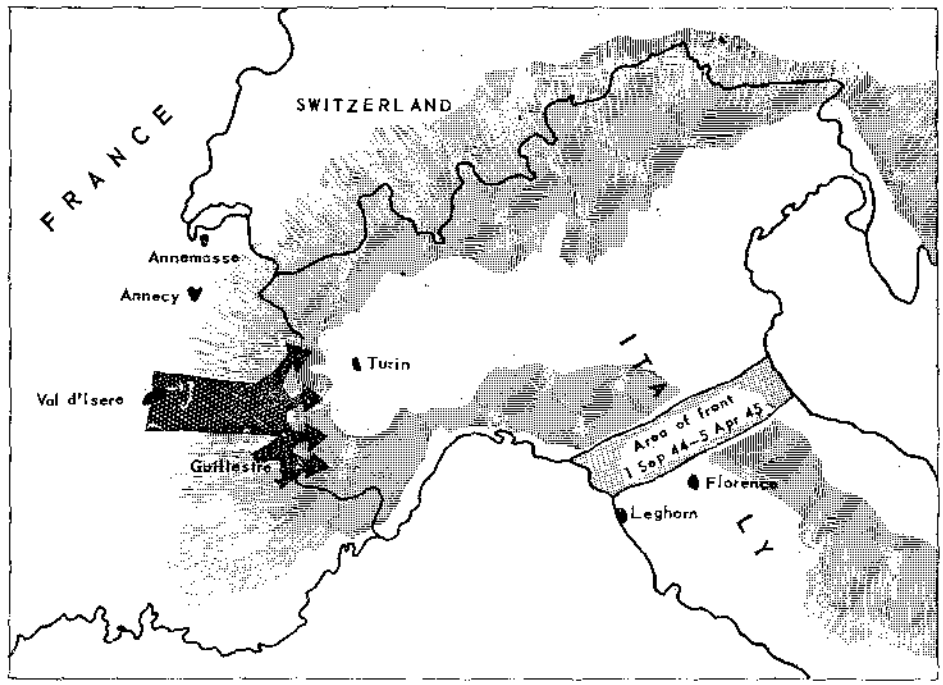

Fig. 2—Routes of Supply Infiltration across Franco-Italian Border to Piedmont-Alpine Partisans

In November 1944, 2677th Regt set up a special "F" Detachment in France, which had its headquarters at Annemasse, a main supply base at Annecy, and supply distribution points at Val d'Isere and at Guillestre (France).[52] With established lines of supply, F Detachment still was faced with the problem of procuring supplies. At first OSS had hoped to get them from the 6th Army Group, but in January 1945 that headquarters bluntly refused, saying that it could supply partisans only at the expense of American soldiers. Following this rebuff, OSS decided to use its own operational aircraft to ferry supplies from Italy to Annecy. Although this use of operational aircraft was deemed

uneconomic, the alternative, sea transport, would have required from four to six weeks. From Annecy supplies were to be routed first to distribution points and then, by overland infiltration, to the partisans.[13,52]

The overland journey was accomplished by Italian porters, who were hindered not only by temperatures of -30° F, avalanches, snowslides, and storms, but also by enemy activity on both sides of the frontier. The hazards of the journey were increased by its lack of security and by French obstructionism. "Presumably," written by a French correspondent, an article describing the whole operation of F Detachment, including details of the exact valleys and passes used by the Italians, appeared in a French newspaper soon after the infiltration began. The result was, of course, an increase in German patrols, and in one instance direct registry of Fascist guns on the only road to Val d'Isere.[32,46,52-62]

Nonetheless, F Detachment was judged to have accomplished its mission in March 1945, by which time it had infiltrated overland and across the Franco-Italian border some 15 tons of food, clothing, arms, and ammunition to the Piedmont partisans.[52] In comparison with the original estimates of 78 tons necessary to feed, clothe, and equip with small arms a total of 1000 partisans, the deliveries actually effected by F Detachment appeared small.[46] Furthermore, they had been accomplished by infiltration across a border, not across the front lines.

Overland infiltration was not a feasible means by which the Allies could deliver material and equipment to sustain the whole partisan movement behind the lines. Unfortunately, the total tonnage sent overland is not known, but AFHQ never expected delivery by such means to exceed 50 tons a month.[63,64] Under the circumstances, even this figure appears overly optimistic.

Maritime Operations

The use of coastal waters (Fig. 3) as a supplement to the dangerous overland routes also provided no satisfactory answer to the question of getting adequate quantities of supplies to partisans. In the first place, resistance strength was usually in mountainous areas; few partisans had access to the coast, which was heavily patrolled by the Germans. Secondly, coastal waters were not really safe for clandestine craft. In addition to enemy shore patrols, which could be and were increased as the Germans were pushed up the Italian peninsula, there were mine fields and free-floating mines. Along the Ligurian coast there was heavy traffic by both enemy and friendly forces. Furthermore, naval craft were in short supply for the Allies.[37,65]

As a matter of fact, the Maritime Unit of 2677th Regt operated only two craft, both of which lacked radar equipment. Until 5 December 1944 these two craft, based at Bari on the Adriatic coast, had done only simple ferrying jobs.[65] In fact, of seven maritime operations completed during December, six were carried out for OSS in British boats.[66]

As a result of Fifth Army's request, plans were drawn up in the fall of 1944 to base the two US craft at Leghorn for use on the Ligurian coast. Unsuccessful attempts were made at this time to get radar equipment. The plans fell through entirely when British and American naval authorities at Leghorn agreed that the mission would be suicidal, partly because the ARB-type naval craft available were "of unnecessarily high silhouette." On 11 January 1945 one craft blew up, and by the end of February 2677th Regt had received orders

from Washington to liquidate the unit. This was done on 1 March 1945. Aside from occasional ferrying jobs, the Maritime Unit had been "of questionable value to operations in the theater." [65]

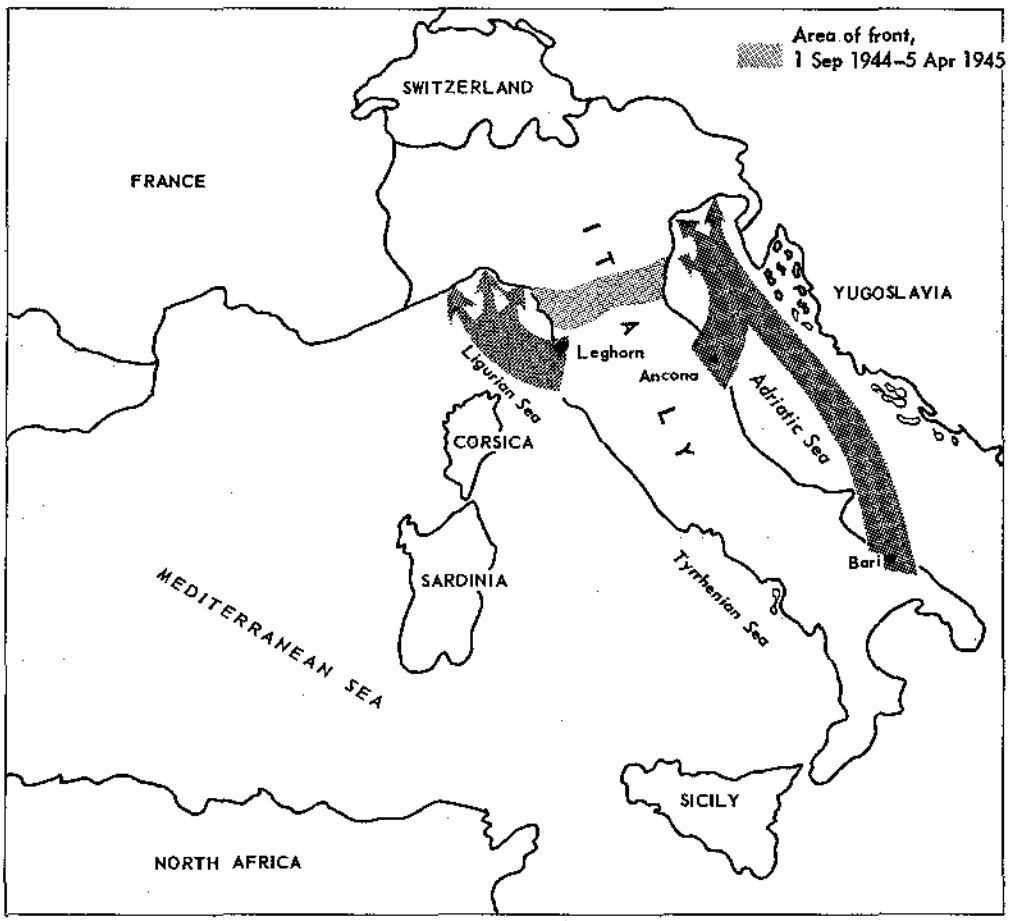

Fig. 3—Maritime Bases for Special Operations

Specifically exempted from this judgment was the OSS San Marco Group, which operated from Ancona, farther north on the Adriatic coast. This group of Italian marine saboteurs had its activities coordinated by Company D of 2677th Regt and did good work in infiltrating supplies and men, although the volume of such work was extremely small. Beating the problem of mine fields by using boats of very shallow draft, the San Marco Group successfully accomplished three infiltrations during September, October, and November of 1944. Between 5 December 1944 and the end of February 1945, the group carried out four successful operations, landing two radio teams, ten agents, and 3 tons of supplies. [65] It continued operations after the liquidation of the Maritime Unit on 1 March 1945. [67] But even though the team was based fairly close to

guerrilla groups, there were difficulties in this type of operation. Conditions had to be "good enough between Ancona and the target for small boats to operate in the open sea, and be completely calm for the landing from rubber boats." [68]

The story of OSS coastal maritime operations in Italy during World War II suggests that only a small effort was expended and that there was only a very small return on the investment. In comparison with approximately 11 tons of supplies infiltrated between 5 December 1944 and 28 February 1945 by maritime operations, over 425 net tons of supplies were supplied to OSS-sponsored partisans during February 1945 by air drop.[65,69]

Although little information has been found on the part that No. 1 Special Force played in maritime delivery of supplies, its attempts were undoubtedly somewhat more successful than those of OSS. Fishing boats were used to put both men and supplies ashore. In February 1945, No. 1 Special Force succeeded in delivering 30 net tons of supplies by maritime operations; on the other hand, it was able to send 208 net tons by air.[70] This example points up the fact that although No. 1 Special Force was more successful than OSS in marine operations of a special character it could not deliver by boat the requisite amount of supplies needed by the Italian partisans. The inadequacy of maritime supply operations was recognized by AFHQ, which did not expect boat deliveries by OSS and No. 1 Special Force combined to exceed 25 tons a month.[37,64]

AIR TRANSPORT OF PARTISAN SUPPLIES

By overwhelming odds the most effective method of getting supplies to the Italian partisans proved to be air drop. From December 1943 through February 1944 only 24 tons of supplies were dropped to partisans (in contrast with 30 tons of supplies dropped to Allied POWs in Italy), but in March 1944 the partisans received 90 tons, and in April approximately 80 tons.[35,71,72] Thereafter supplies in almost continuously increasing amounts were dropped by the Allies in Italy. In the first six months of supplying Italian partisans 337 gross tons were dropped; in the second six months, 1762 gross tons; and in the final six months from December 1944 to May 1945, these deliveries were increased to 3969 gross tons. Approximately two-thirds of the total supplies were thus delivered to the Italian partisans in the last six months of the military campaign[73,74] (Fig. 4).

The achievement of dropping over 6000 gross long tons of supplies to Italian partisans within eighteen months, however, was not accomplished without difficulty. First and foremost was the question of obtaining the aircraft to drop supplies. In the summer of 1944 this problem could be said to have had the following ramifications. In the first place, the total number of airplanes in the Mediterranean Theater was limited, the number available for special operations was still further limited, and of those available many did not have the range necessary for Italian sorties. Second, transport types, C-47's, were at that time regarded as too vulnerable to enemy action to be suitable for supply sorties to Italy; thus, only bombers were used. In the third place, targets in Northern Italy were extremely difficult to reach because of weather conditions.[75-78] In time the Allies were able to cope with all these adverse circumstances.

Allocation of Air Effort

The Allies' first effort to solve the partisan supply problem was to portion the limited number of special duty aircraft available for air drops among the partisans of the various countries of the Mediterranean Theater of Operations. A part of the air effort—at first in terms of sorties but from May 1944 in terms of tonnages—was therefore allotted by AFHQ to partisans in Italy. To make the allotment AFHQ needed to know two things: the total air effort available for special duty operations for the month ahead, and the total requirements of all special operations agencies within the theater.

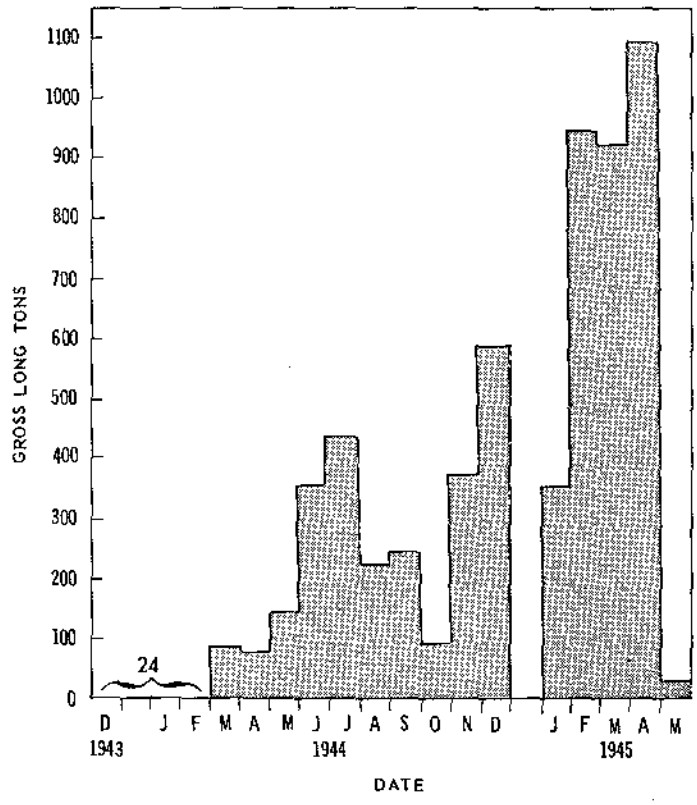

Fig. 4—Allied Drops to Italian Partisans

The available air effort figure was decided by Headquarters Mediterranean Allied Air Force (MAAF) and transmitted on the tenth of the previous month to G-3 Special Operations AFHQ. The requirements figures came at the same time from various agencies. For Italy, both British and American special operations groups decided independently what supplies they would need and submitted this figure to 15th Army Group, which consolidated the needs of all agencies and, if necessary, cut their demands. The final figure for Italian requirements was sent by 15th Army Group to G-3 Special Operations AFHQ.

When reports of the availability of, and the requirements for, air effort were received, AFHQ was ready to make the allocation. This was accomplished when the recommendations of the AFHQ Special Operations Committee, composed of representatives of both special operations and air force groups, were approved by the Chief of Staff AFHQ. The allocation, whether in sortie or in tonnage figures, represented the proportion of requirements that could be met with the air lift available, generally a number considerably lower than the original requirement.[79-87]

As between countries, the Special Operations Committee AFHQ made the allotment during 1944 on the basis of the size and importance of the various resistance groups, orders from higher authority, and the strategy of dispersion of enemy effort. This last was simply the strategy of quantity rather than quality, predicated upon the Allied belief that the greatest number of enemy forces would be held down if partisans were not concentrated in one area or country but scattered in many. Under changed circumstances, this supply policy was later amended in 1945 in favor of one that aimed at a more selective and qualitative build-up* of partisan strength within Italy.[88-90]

TABLE 1

TONNAGE REQUESTED AND ALLOTTED FOR PARTISANS

Date	15th AG requests, gross long tons	AFHQ allotments, gross long tons
1944		
May	232	150
Jun	322 + 100	300 + 100
Jul	520	385
Aug	756	320
Sep	741	350
Oct	956	320
Nov	1000, reduced to 550	550
Dec	550	250, 550, 1000[a]
1945		
Jan	nd	250, 550, 1000
Feb	250, 550, 1000	250, 550, 700
Mar	250, 550, 750	250, 500, 700
Apr	250, 750, 1250	250, 550, 700
May	500, 1000, 1800	1000 (3 priorities discontinued)

[a]The three sets of figures given from Dec 1944 to May 1945 represent priorities 1, 2, and 3, respectively.

With either or both tactical and strategic limitations upon the allocation to Italy, it was not surprising that 15th Army Group's requests for supply tonnage were often reduced by AFHQ, at least in the early months, as Table 1 shows.[91-114] After November 1944, however, the easier situation with regard to aircraft was reflected in higher AFHQ allotments. Between December 1944 and April 1945, a 3-priority system was followed, at air force request, because

*For further discussion of this point, see the later section "Supplies and Political Considerations."

the available air effort varied according to the weather. Priority 1 represented the minimum tonnage considered necessary to maintain Allied personnel in the field safely, priority 2 was an amount sufficient to maintain the existing support for partisans, and priority 3 was the maximum amount that could be usefully absorbed. The air force generally strove to achieve priority 2.[89-115]

Allocation vs Deliveries

Even after allotments had been fought out and made by AFHQ, the air force was not always able to deliver the specified tonnages. Until December 1944 AFHQ consistently cut down 15th Army Group requests for supplies for the Italian partisans, but even the lower allotted tonnages could not always be supplied. Between July and November of 1944, as Table 2 shows, deliveries were always lower than requests, and in five out of seven months lower than the allotments.[111]

TABLE 2

DELIVERIES IN RELATION TO TONNAGE REQUESTED AND ALLOTTED, MAY–NOV 1944

Date	Delivery, gross long tons	% of 15th AG request	% of AFHQ allotment
1944			
May	152	65	100
Jun	361	86	90
Jul	446	86	113
Aug	227	30	71
Sep	252	34	72
Oct	99	10	31
Nov	377	38	69

The plain fact was that there were not sufficient aircraft to take care of all the needs of special operations. In the spring of 1944, 334 Wing, which the British had formed as a headquarters for nearly all special duty aircraft in the Mediterranean, consisted of approximately 115 serviceable planes. Working from a common pool, the object of which was "to place all aircraft at the disposal of all organizations," planes of 334 Wing had to make supply sorties to guerrillas in Southern France, Poland, and the Balkans, as well as in Italy.[73,75,116,117] In June, 334 Wing was placed under the newly formed Balkan Air Force (BAF), but the shortage of aircraft for special operations in the Mediterranean Theater continued. In August there were 80 serviceable planes and in September only 76.[73,118]

With Allied strategy giving higher priority to the needs of French and Yugoslav partisans than to the Italians, the air lift available for Italian sorties was very limited.[73,119] In July 1944, in fact, Headquarters MAAF had called attention to the fact that "total tonnage allotments for Poland, Italy and Central Europe must . . . be within the estimated carrying capacity of 148 Squadron and 1586 Flight."[77] On paper 148 Squadron consisted of twelve Halifax bombers, and 1586 (Polish) Flight of seven, but the average serviceability of these two squadrons in August numbered six each.[73] Furthermore, whenever weather permitted, 148 Squadron was bound to fly Polish sorties in return for the non-

Polish sorties flown by 1586 Flight.[116] In August, 267 Squadron (RAF), with an average of eight serviceable C-47's, was put on the job. Although the transports had to be escorted, 267 Squadron dropped more supplies to Italian partisans that month than both the other squadrons combined.[73,119,120]

Beginning in September 1944, with the liberation of Southern France, and in line with General Donovan's specific request, some of the 885th Heavy Bombardment Squadron's (AAF) thirteen bombers also began to fly Italian supply sorties.[73,121,122] In October, bombers from 205 Group (RAF) and transport planes of the 51st Troop Carrier Wing (AAF) added a few tons to the total supplies dropped to waiting Italians.[73] Nonetheless, while additional planes were available for Italian supply sorties in September and October, deliveries fell below those of the previous summer.

The decline in supply deliveries was regarded seriously at 15th Army Group Headquarters. On 18 September 1944, in fact, General Alexander, Commander of 15th Army Group, had wired General Sir H. Maitland Wilson, Supreme Allied Commander Mediterranean Theater of Operations (SACMED), personally asking whether an improvement in the outlook for Italian partisan supply could be expected. Although he attached "considerable importance to Patriot movement contributing to success of my campaign," General Alexander felt that, if nothing could be done, he wanted to know it, so that he could avoid "exposing myself to discredit among the patriots, who have been encouraged in my name to make all-out effort with implied promises that they would be adequately supplied."[123]

The SACMED replied to Alexander that "importance of the patriot movement is fully realized by all concerned" and that, weather permitting, they would step up stores deliveries over and above the allotment of 350 tons for September.[124] The 252 gross long tons delivered that month, however, did not equal the promise, and deliveries fell even lower in October, when only 99 of 320 allotted tons were dropped.

Coping with the Weather

The experience of October 1944 led the Allies to realize that something would have to be done about the weather itself if supplies were to be got to the Italian partisans. Weather was not only grounding planes but it was frustrating successful deliveries after sorties had started.

The major cause of the weather difficulty was that even after Florence had been captured special duty aircraft flying to supply Italian partisans were still based in the Italian "Heel," so that, to reach targets in North Italy, planes had to fly approximately 500 miles through three distinct weather belts. Pilots might fly through two zones, under favorable weather conditions, only to find it impossible to continue when they reached the third. "In the winter time," reported an officer with 2677th Regt, "it is impossible to have all weather belts favorable and have the correct moon."[73,125] For Brindisi-based planes there had been a total of 13 operational nights in February, 17 in March, and 7 in October of 1944.[119,126,127] Winter weather conditions in Italy made that country the most difficult in the Mediterranean Theater of Operations to supply; in fact, the aircraft effort that delivered 100 tons of supply to Yugoslavia was carrying only 34 tons to Italy[128] (Fig. 5).

In an effort to cope with the weather problem, representatives of BAF, MAAF, SOMTO, 2677th Regt, 15th Army Group, and AFHQ G-3 Opns met during the autumn of 1944 to discuss ways of overcoming their joint problems. The result of these meetings was the so-called "mass-drop program." The

idea was to use high-altitude over-weather four-motor heavy squadrons to drop supplies from high altitudes independently of reception and weather. The possibility of recovery was reckoned by 15th Army Group as a "good chance" if containers fell within 2 ½ miles of the pinpoint, although it was "desirable" to have containers fall within 1 mile.[129]

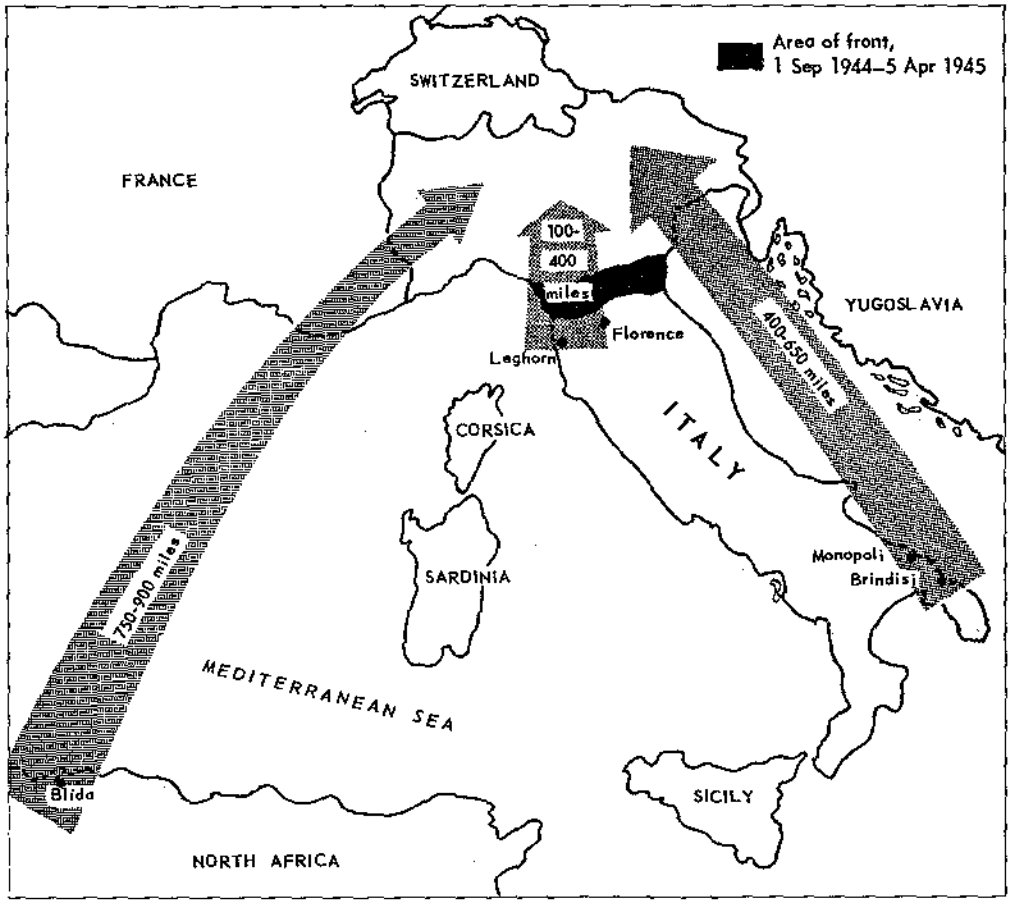

Fig. 5—Bases for Special Operations Aircraft.
Showing approximate distances to partisan drop zones. Aircraft from all bases dropped to all areas behind the lines.

In November 1944, aircraft of the Balkan Air Force dropped 323 gross tons of supplies to North Italian partisans.[125] While 334 Wing continued to use low-level dropping on the pinpoint, 205 Group used the mass-drop technique and delivered approximately half of all the supplies. Operating from Foggia, 205 Group flew in formation and expelled containers at approximately 9000 feet.[73,130]

The field immediately reported difficulties with mass drops. According to No. 1 Special Force, containers were very scattered, and were lost to partisans through pilfering, enemy action, or the inaccessibility of various areas.

Furthermore, reception problems increased enormously, as recognition of visual signals was extremely difficult at such an altitude. Also there was frequent failure of the delayed-action devices on parachutes—"in some cases . . . as high as 80%." [73,130] Some of the chagrin felt by reception committees was communicated back to headquarters. Radio ENDICOTT, for example, noted in a wire to No. 1 Special Force that aircraft had dropped at 10,000 feet and without reducing speed, with the result that only five containers had been put in the valley and that some were found 10 kilometers from the drop zone. [39]

The 2677th Regt reinforced the conclusion of No. 1 Special Force that mass drops were more wasteful of supplies than the pinpoint method of delivery. [130] According to 2677th Regt only 97 tons were recovered by the field in usable condition, an operating ratio of 30 percent; in comparison, 112 tons (35 percent) were definitely lost, "either because of faulty navigation, failure of the delayed-opening device, high winds, or for some other reason"; and the remaining 114 tons were unaccounted for. [125] Headquarters MAAF was inclined to agree with the special operations groups' conclusion that the November mass drops were ill-advised. [40]

Mass-drop techniques might have been improved with time and practice, but the field reported a disturbing reaction from the enemy. The Germans, evidently alerted by the scattered drops, and motivated by the thought that what was worth supply by the Allies must be worth destruction by them, intensified their efforts to eliminate the partisans in the area of the drops. The final reaction expressed by the Chief of Operations, 2677th Regt seems worth remembering: "It is past history now, but the results were disappointing." [125]

At the same time that Balkan Air Force was making point drops from high-altitude bombers, Mediterranean Allied Tactical Air Force (MATAF), using C-47 transports, was making a few experimental small-scale daytime drops from low heights. These drops were so successfully pinpointed that supplies fell within 150 yards of the target, and the field sent in glowing accounts. [125] The C-47's, used extensively for the first time in December 1944, dropped in daylight sorties more than twice as much tonnage to Italian partisans as did bombers. [73,131]

In January 1945, MATAF was made responsible for meeting all special operations air requirements within the area of responsibility of the 15th Army Group in Italy. The commanding general of MATAF, in fact, became responsible for following the progress and adequacy of effort, and for arranging receptions for all missions to North Italian targets, whether or not these missions were to be run by MATAF units. To accomplish the task, some C-47's of the 51st Troop Carrier Wing were available. The 15th Bomb Group (Special), at first under Mediterranean Allied Strategic Air Force (MASAF), but in March redesignated the 2641st Special Group and moved to the jurisdiction of MATAF, contributed greatly to the supply effort. Its 885th Squadron continued to fly first-priority sorties, and the 859th Squadron second-priority sorties, to Italy until the end of the war. In addition to these American elements, the commanding general of MATAF could call upon the Air Officer Commanding, Balkan Air Force, under whom 334 Wing and 301 Polish Squadron operated. Although planes of these units flew missions to Italy only after meeting the needs of Balkan partisans, they occasionally supplied North Italy. [28,73,119,132]

The changeover to MATAF, following the mass-drop program, hailed the end of the controversy over the use of C-47 transports for supply missions in Italy. Previously bombers had been preferred because of their speed, range, armor, and armament. Bombers included mainly the British Halifax, Stirling,

and Wellington, and the American B-17 and B-24. The Halifax was a useful plane, able to carry about 3 tons to a radius of 650 miles, or approximately 2 tons to a 750-mile radius. The B-17 had a radius of 1000 miles but had room for only five containers if it also carried ten men to be dropped. The B-24 had some of the disadvantages of the B-17, being so restricted in forward take-off space that only five men could be taken. The normal pay load of the heavy-motor bombers was approximately 2 tons per sortie. For parachute-dropping the bombers were especially efficient machines, their loads being mechanically expelled.[37,73,133,134]

TABLE 3

COMPARISON OF BOMBER AND TRANSPORT LOADS

Date	Load carried by bombers, net long tons		Load carried by transports, net long tons	
1944				
Aug	70.91		87.60	
Sep	168.08		31.77	
Oct	70.25		3.12	
Nov	241.58		24.07	
Dec	140.38		300.12	
1945				
Jan	86.33	1327.25	175.62	1593.22
Feb	426.72		291.73	
Mar	203.78		485.33	
Apr	470.04		340.42	

Lacking the speed, range, armor, and armament of the bombers, and flying over North Italian targets in daylight, the C-47 transport was vulnerable to enemy action and at first required fighter escort. After air supremacy had been obtained, the C-47 became a valuable adjunct to the bombers in flying resupply sorties. It normally carried 3000 to 4500 pounds, somewhat less than the bombers, and its loads had to be manhandled when drops were made. On the other hand, its "clean" interior made the C-47 an easy plane to load, and it was a good instrument-weather aircraft. Furthermore, several separate drops could be made, so that more than one group of partisans could be supplied during one sortie.[37,117,125]

From December 1944 on, C-47's equalled or bettered the record of bombers in total tonnage dropped to Italian partisans. Between August and November 1944, C-47's carried slightly over 21 percent of the tonnage dropped to Italian partisans; between December 1944 and April 1945, they dropped over 54 percent of all supplies[73] (Table 3).

With the increasing use of C-47's for special operations, the question of weather became less important. The C-47, mechanically simpler than the bombers and requiring less in the way of maintenance facilities, could be stationed at MATAF bases farther north in the Florence-Leghorn area, thus cutting out the 500-mile three-weather-zone trip. By 4 December 1944, one squadron of C-47's was permanently based at Tarquinia in the north; by 10 January 1945, there were four squadrons of C-47's at Rosignano, one at

Malignano, and two at Tarquinia. Thus, of 51st Troop Carrier Wing, three squadrons of the 62d Troop Carrier Group and all four squadrons of the 64th Troop Carrier Group were in the Florence-Leghorn area by the middle of January 1945.[73] This factor made a substantial difference in the ratios of weather-caused sortie failures to total sortie failures. The C-47's, delivering 67 percent of all supplies in January 1945, had 87 sortie failures, of which 10 percent were caused by weather difficulty. By comparison, bombers experienced 143 sortie failures, of which 90, or 63 percent, were due to weather trouble. In February and March 1945, planes operating out of Rosignano had weather-caused sortie failures at the rate of 36 and 44 percent of all sortie failures, whereas planes based at Brindisi experienced ratios of 59 and 63 percent for the same periods.[73,135 - 137]

This evidence was sufficient. On 20 March 1945 both 885th and 859th Bomb Squadrons, which had staged at Rosignano for certain special operations during February, followed the transports and moved permanently north from Brindisi to Rosignano.[73]

With the use of transport planes and of bases closer to the front line, it became far more possible to answer quickly the many urgent calls for supply that were received from the field, and to drop supplies in as great quantity as the AFHQ allotment permitted.[65,125] "Air lift," wrote the commanding officer of 2677th Regt in February 1945, "has improved to the point where it can safely [be] said it no longer constitutes a problem as the tonnage supplied to the Italian resistance is adequate to meet the AFHQ directive. . . ."[65]

The improvement was borne out by statistics. Table 4 shows that after January 1945 the AFHQ priority 2 allotment, and sometimes even its priority 3 allotment (the maximum amount that could be usefully absorbed), was met. In March 1945, Italian partisans were dropped supplies in even greater quantity than 15th Army Group thought necessary.

TABLE 4

DELIVERIES IN RELATION TO TONNAGE REQUESTED AND ALLOTTED, DEC 1944–APR 1945[a]

Date	Load dropped, gross long tons	% of 15th AG request	% of AFHQ allotment (priority 2)	% of AFHQ allotment (priority 3)
1944				
Dec	594	108	108	59
1945				
Jan	364	nd	66	36
Feb	951	95	173	136
Mar	925	123	185	132
Apr	1099	88	198	157

[a]Cf. Table 2, deliveries for May–Nov 1944.

Reasons for Success

In the last months of the war in Italy the Allies were able to deliver supplies to the partisans in whatever quantities they desired. In place of air superiority, the Allies by 1945 had achieved air supremacy. Also, to improve

their air drop program, the Allies had both flown more sorties and bettered their sortie success rate.

To fly more sorties, the Allies eventually used more planes, but that alone did not mean more supplies delivered. The experience of the 885th Bomb Squadron, for example, would lead one to doubt that an increase in the number of planes would necessarily result in a proportionate increase in supply deliveries. The interesting thing about the record of 885th Squadron,[73] which flew first-priority missions to Italy, is that with only 8 serviceable aircraft it dropped over 200 net long tons of supplies in March 1945, whereas with 12

TABLE 5

AIR DROP RECORD OF 885th BOMB SQUADRON, OCT 1944–MAR 1945

Date	Avg no. aircraft		Net long tons dropped
	Available	Serviceable	
1944			
Oct	14	12	52.98
Nov	15	13	34.51
Dec	14	12	72.36
1945			
Jan	15	10	42.55
Feb	16	14	235.61
Mar	16	8	200.47

planes it dropped 53 tons in October and 72 in December. With 13 planes serviceable, 885th Squadron delivered only 35 tons in November, but with 14 planes it delivered 236 tons in February. Since the tonnages delivered in February and in March, with 8 and 14 serviceable planes, respectively, are nearly the same, there is obviously no simple solution to the problem, such as "more planes, more supplies." It would be a mistake to suppose that putting additional aircraft on special-duty operations did not help. The important factor, however, was not the number of aircraft available, but the number of sorties flown that ended in a successful supply drop. After the move to northern bases, it was possible to improve this latter figure (Table 5).

During the last six months of the Italian campaign, the number of supply sorties attempted to partisans in North Italy rose immensely, spiralling from 183 in August 1944 to an average of 547 per month in 1945. As Table 6 shows, over 150 percent more sorties were attempted in the first four months of 1945 than it had been possible to fly in the last four months of 1944. The actual number of sorties rated successful by the air force—those that ended in ejection of supply containers from the plane—was 118 percent greater in the first four months of 1945 than in the last four of 1944.[73]

But although the number both of attempted and of successful sorties rose extraordinarily in 1945, the ratio of successful to attempted sorties was only slightly improved (see Table 6). Whereas sortie success was slightly less

than 57 percent of all sorties flown in 1944, it was slightly under 66 percent in 1945, an improvement of only 9 percent. In March and April, with both transport and bomber aircraft based in the north, the success ratio rose to the 70's. For a total of 4268 sorties attempted to Italy for partisan supply during World War II, the Air Force rated 2646, or 62 percent, successful.[119]

TABLE 6

SPECIAL OPERATIONS AIR SORTIES TO ITALY

Date	Number attempted[a]	Number successful[a]	Percentage successful
1944			
Aug	183	92	50
Sep	186	110	59
Oct	131	44½	34
Nov	327	225	69
Dec	501	284	57[a]
1945			
Jan	320	163	51[a]
Feb	676	403½	60[a]
Mar	537	409	76[a]
Apr	656	468½	71

[a]For Dec 1944 through March 1945 these Air Force figures do not entirely agree with those given in the 15th Army Group reports, but are close: compare table percentage of 57 with 15th AG percentage of 64 for Dec 1944; 51 with 52 for Jan 1945; 60 with 57.5 for Feb 1945; 76 with 76 for Mar 1945.[138-141]

To sum up, since the sortie success ratio remained relatively stable, the most important element in increasing the supply tonnages dropped to Italian partisans was the great jump in number of sorties attempted in 1945. In major part, this increase in total number of sorties attempted was attributable to, and in turn justified, the use of bases closer to the target.

Reception and Recovery of Drops

The unsolved problem in Italian supply-dropping operations during World War II was that of reception. While sortie failures resulting from weather were growing fewer in 1945, those from reception difficulties were increasing. Whereas weather-caused sortie failures decreased from 66 percent in December 1944 to 43, 47, and 48 percent in the following months, those arising from reception difficulties rose from 26 percent in December to 37, 40, and 39 percent in succeeding months.[138-41] The increase in reception trouble tended to offset the decline in failures owing to bad weather, with the result already noted—despite the use of bases closer to the target area, sortie success in the first four months of 1945 was only 9 percent better than in the last five months of 1944.

Reception difficulty was of two kinds. The most frequently listed cause for sortie failure was "no reception," but in a few cases air force pilots listed incorrect reception as the difficulty. When incorrect reception was caused by

the signalling efforts of unsponsored partisans or of the enemy to fool the air crew into dropping supplies, little could be done except to change signals frequently.[142] The small number of cases of incorrect reception, however, seems to indicate that once air-ground communication was established a drop was usually made. To increase the sortie success rate, it would thus appear that reception difficulties stemming from "no reception" would be more profitable to attack.

One reason for no reception could have been confusion in communication or delays during the preliminary procedures of notifying partisan groups that a supply operation was being laid on, although such would not appear to be the case. Work on a supply sortie began when a wireless message was received from a partisan leader or from an Allied liaison officer requesting a drop. This request for supplies came in to the headquarters of either Company D or No. 1 Special Force, where it was screened. If approved, a portion of their supply allocation was earmarked for this particular partisan band. Among the many requests for supplies that came in during any one month, the special operations agencies (Company D or No. 1 Special Force) gave priority to the bands they considered most useful, weighing tactical and strategic considerations of geographic location, former and potential usefulness, and reliability. When Company D or No. 1 Special Force had approved the request and earmarked a portion of their supply allotment, the first step had been taken toward a supply drop.[37]

Standing operating procedure in the winter of 1944-1945 was for the special operations agencies to submit their lists to G-3 (Air), 15th Army Group, but final priorities for drops for both British and American agencies were determined by G-3 Special Operations. The consolidated list was then submitted to air force headquarters, at first BAF but after 20 January 1945 MATAF. Air headquarters then directed certain flying formations to fly specific missions. In their turn, these flying formations drew up a "list of intentions" as to which missions they would fly first, but at the target conference held to determine the "list of intentions," both No. 1 Special Force and Company D were represented by liaison officers who could urge upon the flying formations the most necessary sorties. The special operations liaison officers kept their own headquarters informed of impending operations so that the partisans could be alerted. Meanwhile SOM and 2677th Regt were also informed so that the correct loads could be assembled.[28,30]

In February 1945, an officer of 2677th Regt investigated to find out "how well the requests of OSS are being observed by the Air Operations Offices at 15th Army Group, MATAF and the Rosignano base itself." Upon completion of his survey, the examining officer reported that OSS had adequate representation at the offices where sortie priorities were determined.[143]

As soon as Company D or No. 1 Special Force knew that the air force would lay on the operation, they notified partisan headquarters by wireless of the time and location of the expected drop. The guerrillas had to confirm this message. Unless this was done, the sortie was usually not flown to that target; instead, an alternative drop zone was alerted.[144]

By 1945 it appeared that the special operations groups were able to influence the air force's selection of targets, so that the partisan groups that were supplied represented the most reliable and useful forces. It may be assumed

that they were anxious to make contact with the aircraft bearing supplies and that they were deemed capable of arranging adequate receptions. In addition, by requiring the partisans to make last-minute confirmation of the message announcing the sortie, the Allies obviated the chance that a reception failure could be caused by lack of information. The Allies seem to have worked out good procedures both for selection of targets and for notification of the field of scheduled sorties. Nonetheless, a large number of sorties continued to fail in 1945 for the official reason "no reception."

In some cases "no reception" was just that. An enemy rastrellamento (antiguerrilla operation) might well scatter the entire band and make reception impossible, even after the sortie had been confirmed. If enemy patrols discovered the drop zone, the partisans could not stay to meet the incoming plane. Aside from choosing drop zones in such safe areas as were available, there was little that could be done about such contingencies.

On the other hand, there were those sortie failures listed as owing to no reception, of which the field later complained to Company D or to No. 1 Special Force that they had waited in vain for the aircraft to arrive, or that the plane had arrived but that they had been unable to make contact. Cases of the first type were possibly due to the inability of the plane to locate the drop zone, but cases of the second type indicated failure of air-to-ground communications.

Standard practice by the summer of 1944 was for the pilot, on reaching the target area, to flash a signal. In turn, the partisans would reply by some sort of prearranged visual signal—for example, in a night sortie, by an "L" or "Y" from flashlight, flare, or ground fire.[37] Among the reasons for air crew failure to find receptions were heavy ground fog or low-lying clouds, which sometimes obscured the visual signals.[145]

The need for better reception techniques was thoroughly recognized by Allied personnel involved in supplying the Italian partisans. At conferences held early in November 1944 to discuss the mass-drop project, representatives of both air force and special operations headquarters also considered what could be done to improve reception. Agreement was reached on certain steps.

First, there was to be a reduction in the number of drop zones. At that time there were approximately 300, and these were to be reduced for mass drops to 12 main areas agreed upon by both No. 1 Special Force and Company D. Arrangements were to be made for later ground distribution of supplies within each zone. Second, the Balkan Air Force (at this time, before the changeover to MATAF, still responsible for special duty air operations in Italy) agreed to drop 12 Eureka sets to the proposed main dropping zones. Eurekas were the ground counterpart of the plane's Rebecca, equipment by which aircraft could be electronically guided to a specific target. At the moment, the general dearth of radar equipment during World War II was reflected in the fact that in November 1944, Italian partisans had access to only two Eurekas. In addition, BAF was to furnish the partisans with more conventional reception signal equipment, colored smoke and parachute flares. The general view of air force personnel was that although any visible signals were suitable for day drops they should be made at least ten times longer than the field considered necessary, and that night signals should be intensified.[146,147]

Although 12 zones had been agreed upon for the mass drops, the failure of that program ended in reversion to the use of a large number of reception areas, and a continued dependence on visual signals.[148] The two Eurekas in Italy in November 1944 had been increased to only seven by April 1945.[10] They were successful enough in use, however, that at least one Allied liaison officer felt they would "possibly become more and more important for supply dropping operations."[38]

Lack of reception continued to be a thorny problem in Italy during the remainder of the war, although records are not available showing the percentages of it caused by partisan, air force, or communications failure. The Italian experience points to the fact that accurate techniques of reception were vitally important to sortie success rates, but unfortunately it does not show how reception difficulties could be successfully countered.

So far, this discussion has concerned reception difficulties that resulted in the air force's refusal to drop supplies and the listing of such incidents as sortie failures. In many cases, however, drops were made and sorties counted as successful by the air force, whereas from a partisan viewpoint the drops were less than satisfactory. Undeniably, partisans and special operations people waiting on the ground for life-giving supplies were annoyed when these were dropped so far from the target area that hours had to be spent in dangerous search. Stating that ". . . poor drops by far outnumber the good ones," one Allied liaison officer spelled out the basis for his judgment: "and in classifying these drops as good or bad, it is entirely in relation to the point of recovery from the DZ [drop zone] area."[38]

Undeniably also, partisans and special operations people often blamed poor drops upon the air forces.[24,149,150] The commander of No. 1 Special Force, for example, wrote a memorandum on 9 December 1944 that "implied criticism of the technical efficiency of air formations and air crews concerned" and indeed drew blood. In rebuttal the wing commander attached to G-3 Special Operations AFHQ wrote, "this is not the first time that I have received the impression that No. 1 Special Force have developed rather the wrong attitude to the air side--a viewpoint that they are not 'doing their stuff' through inefficiency or insufficient enthusiasm for these operations." The wing commander defended the air effort, stating that the air forces were putting as much into their jobs as the missions in the field were into theirs "and incidentally, I believe it is true to say, incurring greater casualties in the process." He requested that the commander of No. 1 Special Force, should be put "gently on the right lines as regards his general attitude to the air side, and in any case to tell him plainly and once and for all that criticism of the conduct of purely air aspects of these operations is outside his province . . . ." The impressive point of the rebuttal, however, is that it lacked any defense of air techniques outside of the statement that the air forces were trying hard and that "it is outside the competence of No. 1 Special Force to criticize air aspects of these operations and an error of both taste and tactics to try to do so."[151]

While the commander's "taste and tactics" may have been questionable, his implications were evidently on the right track. Separate corroboration of his opinion that the technical efficiency of the air forces was somewhat less

than excellent actually came from a member of the air forces. On 10 October 1944 a United States pilot in the 12th Air Force bailed out of his bomber after it was disabled by flak. Subsequently he operated in northeast Italy for several months as an Allied liaison officer, doing, according to superior headquarters, "an absolutely first class job." His final report, written immediately after his return from behind the lines and before his return to his unit, was an airman's ground view of the technical problems of supply dropping. So far as can be determined, the officer was an impartial and uniquely qualified observer, a pilot himself but belonging neither to an air unit doing special operations jobs nor to a special operations agency. He certainly had no cognizance of the controversial memorandum from No. 1 Special Force. His report has additional weight because it was written so close to the experience. After four months of observing some 67 sorties, he concluded that "the major factor governing bad drops can definitely be classified as pilot or crew error." [38]

As this pilot-liaison officer viewed the problem, drops could be divided into two separate groups, free falls and restricted (parachute) falls, each of which required a distinct and different dropping procedure. The main difficulty about free falls was that they were not placed accurately on the target. Containers were scattered so far, in fact, that it was a common belief that air crews were more concerned with getting rid of the kit bags than with dropping them accurately. For this problem, he suggested a multiple solution: "the aircraft must either make as many runs as necessary to ensure dropping the material on the target, or some improved method must be devised for the simultaneous release of free drops. When the aircraft makes its run for free drops, the accuracy of the drop depends upon the despatcher, since the material is carried in the fuselage and not in the bomb bay. Some knowledge of bombing practice is essential to ensure greater accuracy on the part of the despatcher." [38]

Restricted (parachute) falls were even more difficult than free drops. The major points involved in making such drops, according to the same air force observer, were "course over target, release point, altitude, and, more or less governing the first three, wind." But the wind, he noted, was not usually the reason for a bad drop: "Not more than 20% of our drops ever had a major threat as far as wind was concerned, and usually the wind factor was of no importance. In such cases a course over the target and a good release would have ensured a good drop." Again, the observer was inclined to feel that the pilot could improve the restricted drop by executing what was taught about the three major factors involved. On the other hand, he suggested that ground crews could aid by planning and setting up signals and fires so that the wind and other factors concerning the area of the drop could be taken into account by the pilot. "Suggestions from a DZ operator that would be helpful at times to a crew would be those of magnetic course over targets, again having set and definite signals for wind directions." [38]

One reason that the observer was inclined to take a dim view of the air crew performance in supply dropping operations was that he noticed the same crews did so very much better in making body drops. "This shows," was his not illogical conclusion, "that the crews are capable of making good stores drops if they consider the stores important enough." [38] There were thus two points: experienced air crews should make supply drops, and experienced crews should be motivated to take the trouble to make good supply drops.

SUPPLIES: TYPES AND QUANTITIES

Though the most difficult aspect of supplying partisans in Italy during World War II was undoubtedly transportation, the problems of what and how much should be sent were also important. The effectiveness of the partisan was after all largely dependent on the suitability of supplies for maintaining his strength and for use against the enemy. If it is axiomatic that human needs are determined by how one lives and what one does, in the case of Italian partisans needs were predicated upon the facts that the majority of active partisans lived in bands of varying size in the hills and mountains and that they acted mainly as guerrillas and saboteurs. Under these circumstances the Allies concluded—and conclusions were reinforced by specific requests—that the partisan needed supplies of all types: clothing, food, and medical items to maintain his strength; demolition material and arms and ammunition to use against the enemy.[37] The kind and amount of supplies dropped are listed in Table 7.

Quartermaster and Medical Items

By weight, clothing formed only a small proportion of the total tonnage dropped, varying from approximately 10 to 20 percent. In February 1945, for example, articles of clothing comprised 12.7 percent of the total tonnage.[152-56] Since clothing weighed so much less than arms and ammunition, however, a considerable quantity was actually supplied the Italian partisans.

As in all matters relating to partisan supply, attention to detail was of the utmost importance. Since partisans tended to be grateful rather than critical, the written reports and criticisms of supply are almost entirely those of Allied officers. The following comments, for example, were made by officers of the 2d Special Air Service (SAS) Regt after Operation GALIA, during which British soldiers performed partisan-type jobs. The foremost complaint about kit was in regard to boots. Finnish pattern or ski boots were found to be useless for mountain work. Mountain boots, said one officer, should be 3 inches higher than marching boots, and should be studded with mountain nails. The British party also found, however, that under mountain weather conditions surprise could not be maintained when heavily nailed shoes continually slipped on rocks and caused "a loud screeching noise and occasional sparks." Sometimes there were sheets of ice on the mountain tracks and "the men were continually falling and making a considerable amount of noise." To combat these problems, the men wanted rubber overshoes or overshoes with rope soles for moving silently at night.[149]

The lack of snow suits on Operation GALIA was another complaint, since it made camouflage impossible. Seemingly, this criticism should have been avoidable. One officer found that he preferred "loose-fitting motor cyclist breeches" to battle-dress slacks because the former were windproof and not so easily torn. There was a further suggestion that mountain pullovers might be "better were they made to a double-fronted cardigan pattern that can be unfastened at will." Outside clothing would also have been better had it been waterproofed.[150] The whole tenor of remarks from the participants in operation GALIA indicates that there was need for special attention to clothing detail, particularly in regard to the requirement for sturdy and silent boots for mountain work. If this requirement existed for the SAS Regt, it was an imperative for partisans.

Because it was necessary for partisans to remain undistinguishable from the general population, special operations purchased Italian-made clothing from sources behind the Allied lines and sent it to partisans. On the other hand, when bands like the San Marco or Garibaldi Battalions had reached sufficient strength to come out "into the open," OSS supplied them with United States uniforms dyed a non-Army color.[10]

Food, like clothing, usually comprised by weight approximately 10 to 20 percent monthly of all supplies sent to the Italian partisans.[152-56] Whether it was useful for the Allies to drop any food to partisans was a debatable point; among special operations people there were adherents on each side of the argument. On the one hand, absolute necessity proved the case. On the other, there was the argument that food dropping was essentially useless, since needs could not be met adequately for more than a short time. "It has always been considered by me as useless," wrote the leader of the TURDUS Mission, "to ask for food supplies, which could only be dropped at very irregular intervals and in quantities insufficient to maintain the Division [not equivalent to a regular army division] for more than a short period."[157] Sometimes, however, a short period meant the difference between life and death, as was true in the case of the partisans in the Piedmont Alps.

Actually the partisans in Italy did not receive enough food from Allied drops to support large numbers of people for a considerable time. Assuming that 20 percent of the 6000+ tons dropped had been food (and this would be an upper figure), a total of 2,640,000 pounds of food would then have been sent the partisans. The Army figures that a combat soldier's food requirements, based on a rough division slice, amount to 7+ pounds per man per day in the combat zone of the continental land mass.[158] Assuming that 3 pounds, an amount that would be equal to somewhat over half the packed weight of an Operational Type B ration,*[159] would suffice for a partisan, 880,000 partisans could have been fed for one day, or 20,000 partisans for 44 days. But the Allied campaign in Italy lasted from 9 September 1943 to 2 May 1945, approximately 600 days, and it is estimated that the number of participants in the resistance movement after May 1944 never fell below, and was often considerably above 60,000, although these were not all active guerrillas needing support. Nonetheless it is obvious that the Allies did not generally supply the partisans with their daily food needs, although this requirement was met in some specific cases for certain periods of time.[160]

In general, when the Allies sent food, they supplied regular field rations, OSS sending B, C, D, K, X, and 10-in-1 types. In two cases in which the Allies heavily supported specific bands, C, D, K, and X rations were supplied on a weekly basis from 5 November 1944 through 11 February 1945. These rations were supplemented by occasional deliveries of flour, beans, rice, dehydrated cabbage and eggs, apricots, cocoa, cheese, corned beef, apple nuggets, stew, and canned meat. To these particular partisans went also shaving cream, combs, and toothbrushes. Salt, coffee, and sometimes flour were much desired for barter as well as for personal used by almost all bands.[149,154,161] Allied officers on partisan or similar operations, in discussing the adequacy of supply rations, usually stressed the need for more dried fruit and vegetables and for variety in the diet.[150]

*This weighs 5.3 pounds packed; Type A, the basic field ration, weighs 6.0 pounds packed.

While food might be a debatable item of supply except in cases of real need, there was essential agreement among Allied liaison officers that some articles commonly termed luxuries—cigarettes and tobacco—were really es-

TABLE 7

SUPPLIES DROPPED TO NORTHERN ITALIAN PARTISANS, AUG 1944–FEB 1945[162]

Items	Supply agency		No. 1 SF & OSS, total
	No. 1 SF, amt.	OSS, amt.	
Piat,[a] or launcher, grenade, rocket	111	215	326
Mortars	106	108	214
MMGs	90	170	260
LMGs	1,161	2,518	3,679
SMGs	5,330	12,976	18,306
Rifles	6,781	8,784	15,565
AT rifles	70	0	70
Pistols, incl. Sig	926	118	1,044
AT Ammo	390	0	390
Mortar bombs	5,297	11,322	16,619
Piat bombs or rockets, AT 2.36"	5,318	5,411	10,729
SA Ammo	8,943,644	16,174,493	25,118,137
AT AP Ammo	10,720	6,384	17,104
Grenades	49,980	64,828	114,808
Mines	4,400	4,606	9,006
Explosives and accessories	241,490	255,792	497,282
WT sets	20	43	63
Batteries	33	101	134
Generators	21	44	65
Receivers	0	44	44
Ration packs	568	478	1,046
Bulk food (lb)	69,096	114,791	183,887
Battledress or trousers & jacket	6,850	6,808	13,658
Greatcoats	3,494	2,776	6,270
Capes, G/sheets or raincoats	501	398	899
Pullovers or sweaters	8,696	3,315	12,011
Shirts	8,334	16,140	24,474
Underwear	3,732	6,459	10,191
Socks	11,844	20,052	31,896
Boots or shoes	11,013	8,497	19,510
Blankets	3,063	2,112	5,175
Medical	2,385	7,775	10,160

[a]Projector, infantry, antitank.

sentials. SERMON II mission, for example, suggested that a greater percentage of cigarettes should be dropped to the field. Not only were these genuine comforts but, according to Allied liaison officers, they were also useful for barter and diplomatic negotiations.[42]

Besides being a morale booster, medical supplies were a necessity for the Italian partisans, who could not normally expect the conveniences of medical corpsmen, doctors, infirmaries, and hospitalization. Hope for a sick or wounded partisan lay principally in his own recuperative powers and in what medication could be applied by fellow members of his band. Among the medical supplies sent to partisans in Italy during World War II were first-aid and medical (Type B) kits, dressings, vaccines, morphine, antibiotics, and vitamins. Medical supplies were valuable out of all proportion to their weight, which in February 1945 amounted to less than half of one percent of the total tonnage.[153,161]

Ordnance and Ordnance Stores

Although food, clothing, and medical supplies were day-to-day necessities, these did not supply the partisans with the means of hurting the enemy. To meet this need, demolition material for sabotage was supplied to the Italian partisans, often forming as much as 20 to 25 percent of the total weight of all drops.* [152-56]

But the chief wants of the Italian partisans were arms and ammunition. The 15th Army Group headquarters reported that the partisans' first request was always for arms and ammunition, even when cold and hunger were most severe.[110] Some arms the guerrillas had, of course, owing to the fact that the cadres of the Italian army that had escaped to the hills rather than surrender to the Germans had been armed. But these supplies were only initial, and additional sources for resupply were a necessity. One partisan group controlled a factory that produced arms, but this situation was unusual. German reserves that could be captured or stolen constituted another source of arms. To capture weapons, however, one often needed arms. Also, the very nature of guerrilla fighting—strike and retreat—did not facilitate the collection of arms after a clash.[163-67]

With limited access to arms and ammunition, the Italian partisans had to look to the Allies for supplies. And, conversely, if the Allies wanted partisan help, they had perforce to arm them.

In arming the Italian partisans, the Allies adhered to the theory that guerrilla weapons should be light and portable. Between 1 January and 21 April 1944, for example, No. 1 Special Force delivered 21 light machine guns, 2031 submachine guns, and 44 rifles to Italian partisans.[168] Nonetheless, some of the earliest requests were for antitank weapons of "virtually any type."[169] Between August 1944 and February 1945, inclusive, No. 1 Special Force delivered 70 antitank rifles, while OSS sent none. Mortars, Piats (projectors, infantry, antitank), and medium machine guns were also dropped to partisans by both British and United States special operations groups. Light machine guns, submachine guns, and rifles, however, remained the most numerous warmaking items sent to the partisans by either 2677th Regt or No. 1 Special Force. (See Table 7.)[162]

The quantities of arms and ammunition delivered to the partisans were small in comparison with the quantities used by regular forces. During the seven months listed in Table 7, for example, the Allies sent Italian partisans 25,118,137 rounds of small-arms ammunition and 168,656 rounds of fragmenta-

*The subject of demolitions material is extremely important but is so technical that it will be handled in a separate memorandum.

tion-type ammunition. By comparison, the Allies issued 26,002,364 rounds of small-arms ammunition and 1,966,654 rounds of fragmentation-type ammunition to their regular forces at Anzio in the single month of February 1944.[170]

By Allied calculations, in October 1944 2 tons of arms and ammunition initially armed 100 guerrillas.* After an action it was necessary, by planners' estimates, to replenish lost arms and ammunition at the same ratio of 2 tons for each 100 men. Roughly, it was considered "the normal rule" that one out of every five loads sent to the field was for resupply.[134] Later, of course, as more bands were supplied initially, more and more sorties were for resupply operations. The percentage of arms and ammunition sent to the field varied greatly, from approximately 36 to 60 percent to a high of 85 percent in January 1945.[152-56] If the estimate of 2 tons to arm 100 men held, and assuming that 60 percent of all supplies sent consisted of arms and ammunition, it follows that the Allies sent only sufficient quantities of arms and ammunition to equip 180,000 men through one series of actions or 20,000 men through nine series of actions.

Not only were relatively few munitions sent to the partisans but, in 1944 at least, there was a good chance they could not be supplied at the time they were requested. In this connection it is interesting to note that according to at least one Allied liaison officer, one of the chief lessons as to partisan activity was "the need for a sure supply of arms and ammunitions."[171]

Need for a New Look at Partisan Weapons

In general, during World War II the Allies supplied partisans with arms and ammunition on the basis that light, portable weapons should be sent to partisans unable to maintain strongholds, whereas heavier equipment should go to partisans controlling large areas of land. In addition, the weapons that were sent were of the type used by regular troops. Two pertinent questions arise from these circumstances. First, is the concept of portability still adequate, or is there need of a new theory of weapons for partisan warfare in the future? Second, were the regular TO&E weapons that were sent the ones that would enable the partisan to function most effectively?

In relation to the first question, some indication of the value of portable weapons might be reached from a study giving the rate of partisan-inflicted casualties due to small-arms fire. The feasibility of such a study, uncalculated as yet, should certainly be investigated.

Quite apart from the question of portability is the question of special weapons for partisan use. The possibility of producing cheaply and in large quantities a good noiseless rifle might also be reviewed, especially in view of the comment of one Allied liaison officer: "Since June 1942 I have been con-

*Or 20 tons per 1000 men. When support rather than armament was required, the special operations agencies considered that far fewer arms and less ammunition would suffice. Planning to support distitute partisans in the Piedmont area in the winter of 1944-45, OSS figured that it would take 78 tons for 1000 men each month, as follows:[46]

Arms (1000 SMG, 9-mm, M3 W/2 mag ea)	4 tons
Ammunition (62,000 rd, 9-mm, ball)	1 ton
Food (30,000 K rations)	60 tons
Clothing (1000 blankets, trousers, shirts, overcoats, caps, undershirts, drawers, socks, shoes, jackets)	13 tons
	78 tons

tinually trying to find a satisfactory silent submachine gun without success; in the absence of any such equipment the possible use of bows and arrows should be seriously considered." [172,173]

Consideration should also be given to the possible value of mobile weapons for partisan use. What type of weapons should be sent and under what conditions? Under certain conditions the dropping of large numbers of very small tanks to partisans located in or near plains might increase their ability to travel fast and enable them to perform jobs they would be unable to handle otherwise. If partisans are given the job of reaching and destroying objectives that cannot be neutralized by the air force, some thinking should be addressed to the subject of the heavy weapons that it will be necessary to send, even on a one-use basis, to enable partisans to crash through protective barriers or to create a diversion so that they can reach the target.

One possible requirement that adds to the difficulty of the subject is that partisan weapons may necessarily have to employ standard ammunition in order to keep the supply problem within bounds. This factor, in fact, has often made guerrillas prefer enemy-type weapons because ammunition resupply is then not dependent solely on air drop delivery. The feasibility and desirability of providing partisans with US-produced weapons using standard enemy-type ammunition should be considered, however, with reference to US production ability in case of war. In any event, attention might well be given to standardizing the individual arms used by partisans within each operational area.

The difficulties in determining the proper type of weapons to send guerrillas emphasize the fact that the subject of weapons for partisan use needs review in relation to the importance of unconventional effort and to the specific tasks that will be assigned guerrilla fighters under various conditions.

SUPPLIES AND POLITICAL CONSIDERATIONS

As already noted, of all supplies sent to the Italian partisans the most desired were arms and ammunition. And seemingly these, along with demolitions material, were the supplies that had the payoff value for the Allies. Yet the situation in Italy by the winter of 1944-1945 was clear enough to the Allies to allow them to see signs of Communist aggrandizement from within the partisan movement itself. In addition there were signs of possible future difficulties between the Italians and the French in the northwest, as well as between the Italians and Yugoslavs in the northeast. It was therefore just at the time that the airlift problem was easing that the wisdom of sending arms to the Italian partisans was questioned. In the ensuing review of the question that took place in AFHQ, the entire Allied special operations supply policy in Italy was critically reexamined.

The basis for the review was laid by reports sent in by Allied liaison officers, who confirmed in many cases the complaints of non-Communist partisan leaders that Communist partisans were hoarding arms sent them by the Allies for a postwar coup.[174] An appreciation of the situation by the G-3 Division of AFHQ in January 1945 noted that, although there was little firm evidence of hoarding at the moment, it was "quite clear that intentions on these lines are in the minds of certain Communist leaders." The G-3 appraisal also noted that expansion of Italian partisans into the Tagliamento area of northeast Italy would bring them into conflict with Yugoslav partisans. Another negative feature of the situation, according to G-3, was that the Italian partisan control organiza-

tion, CLNAI, was decentralized, disunited, and ineffective.[64] The whole question of supply was thus involved in the much larger problems of possible postwar complications and politics.

The G-3 appreciation gave the background of a situation that could be and was viewed in two entirely divergent ways. Political thinking was addressed in 1945 to the possible consequences of arming the Italian partisans and to the specific possibilities that in the postwar period partisans would degenerate into bandits and resistance to the enemy into resistance to law and order. Italy's political position was still dubious—until September 1943 she had been an enemy; in some Allied circles there was no desire for Italian partisans to make a good show or to achieve the prestige of having helped to liberate themselves. On the basis that the war would soon be over and that there was in 1945 no need for partisan help, some Allied officers supported the position that the movement should be held static, if not dropped completely.[175,176] This meant, from a supply viewpoint, that equipment and material to be sent to the partisans would be held to the minimum necessary to ensure the safety of Allied officers or, at the most, to an existence level in food and clothing for already organized bands.

A supply policy designed, in effect, to vitiate partisan strength did not satisfy 15th Army Group. It desired the maximum support possible for the Italian partisans, whom it regarded as a potentially effective weapon in the final fight. Throughout the controversy that followed, 15th Army Group maintained that cutting supplies to partisans was in effect denying the army group a weapon, and that this was not in accordance with the over-all directive to destroy the enemy with all resources available.[177]

Considering both these points of view, G-3 AFHQ recommended, and the Supreme Allied Commander, at that time General Sir Harold R. Alexander, accepted, a compromise solution to the problem. The Italian resistance movement was to be held to its January 1945 level, which was reckoned at approximately 65,000, with "only modest expansion for specific tasks." Partisans were to be limited to sabotage and antiscorch operations. The air supply effort to maintain this course was calculated to be 550 tons monthly, of which 300 tons were to be for nonwarlike stores. Warlike stores were to be strictly controlled and held to 250 tons monthly—an amount that 15th Army Group had previously estimated as sufficient to provide 100,000 partisans with 15 cartridges (or 65,000 partisans with 23 cartridges) per man per month—and sufficient explosives and mines to continue sabotage on a reduced scale.[64,178,179]

In practice the 550-ton limit was not strictly adhered to. The G-3 AFHQ allowed "windfall" sorties to bring the total tonnage up to 700 gross tons per month, provided that only 250 tons were warlike supplies. All told, 951 tons, two-thirds of which were warlike supplies, were actually delivered in February. By the middle of March, tonnage delivered again promised to pass the agreed limits, and 15th Army Group's request for April allocation was also considered very high by AFHQ.[110] Because of this discrepancy between direction and compliance, 15th Army Group was accused of bypassing the new AFHQ policy. The issue was discussed at a meeting (between AFHQ, 15th Army Group, and the special operations agencies) that ended in an invitation to 15th Army Group to justify its bid for 250, 750, and 1250 gross British tons for April on priorities 1, 2, and 3, respectively.[177]

Taking advantage of the offer, 15th Army Group made a strong case for its supply figures. In a letter to AFHQ on 24 March 1945 it pointed out that Allied superiority in Italy depended on two weapons denied to the Germans—airpower and partisan resistance—and 15th Army Group did not want to lose

partisan resistance before it had reached maximum effectiveness. The 15th Army Group felt that the end of the winter and future Allied victories would cause both old, trusted hands and new recruits to join the partisans in large numbers, so that it would be difficult or impossible to hold the resistance down to 65,000 members merely by withholding supplies. Pointing out that it was not obligatory for the Allies to arm partisans who joined late, 15th Army Group made its case for arming them on the following points:

(a) Drastic reductions in supply, especially of arms, would cause the partisans to lose faith in the Allies.

(b) Any partisans who meant to make trouble after liberation would make it, regardless of whether arms were withheld.

(c) There was little doubt that would-be troublemakers could obtain all the arms and ammunition they would need if and when the enemy army began to disintegrate.

(d) The allies had promised "the utmost assistance" to members of the CLNAI who were opposing the enemy in occupied territory. A major change in Allied policy therefore formed a unilateral amendment to the agreement between the Supreme Allied Commander and the CLNAI.

(e) The new AFHQ policy stressing antiscorch could not be carried out in many cases unless the partisans were armed, because many targets were heavily guarded.

Despite its position in this argument, 15th Army Group did not want indiscriminate arming of all partisans. It pointed out that special operations agencies were scrutinizing every request with care, the real burden resting with the Allied missions in the field. Since these missions were constantly being augmented, the proper use of arms was more assured. Finally, in defense of the criticized February deliveries to partisans, 15th Army Group stated that while arms and ammunition had comprised two-thirds of the whole by weight, "warlike stores, particularly ammunition, weigh much heavier item for item than clothing and boots." This was particularly true of shells for mortars. Arms furthermore had not gone exclusively to partisans, but also to Allied personnel behind the enemy lines. [110]

Support for 15th Army Group's position came from all groups operating with the Italian partisans. The OSS could not overlook the messages it constantly received from American officers in the field. Typical of these communications was that cited by Company D of 2677th Regt from Radio PEEDEE on 29 March 1945: "Going to hit us hard . . . . We have enough ammo for one hour fight . . . . If we cannot get ammo and not be able to do our work when time comes, will be shame . . . ," or the message of 30 March from Radio ROANOKE: "Have talked with Eduardo and Americano. Division [of partisans] composed of 1500 men. Work looks good once they are supplied. Have arms but not ammunition . . . ." [180] The newly constituted Company A of 2671st Regt also got into the act. It requested that its US operational groups and the Italian partisan bands that they supervised should be entirely excluded from the allocation system set up by AFHQ. [181] Headquarters of SOMTO spoke for British liaison officers of No. 1 Special Force. In a telegram to AFHQ, SOMTO urged that the field situation had drastically changed since the new AFHQ policy had been instituted on 4 February 1945: there was more than adequate airlift available and the partisans were on active operations and needed replenishment. [182]

The deluge of arguments seemed cogent to the Chief of AFHQ G-3 Special Operations. Although he refused to exclude operational groups from the allocation system, he was willing to admit to his staff that the limitation measures

might be too stringent. He asked his staff to reexamine the argument for a more liberal supply policy; at the same time, he tested the adequacy of February deliveries of warlike supplies by asking the Logistics Plans Section of AFHQ to comment.[183],[184] In general, the deliveries seemed high to Logistics Plans, [185] and since their information served neither to buttress nor refute 15th Army Group's stand, G-3 AFHQ turned the whole question over to the Mediterranean Joint Planning Staff (MJPS) for its recommendations.[179]

The final decision, following the recommendations of MJPS, reaffirmed the policy of 4 February 1945, but its implementation was to be somewhat changed. On 17 April 1945, therefore, AFHQ directed 15th Army Group that there was to be no restriction on supplies of any sort for partisans in the Apennine battle zone or for the exclusive use of British or US personnel operating behind the lines. For all other partisans except those under Slovene command in northeast Italy (Venezia Giulia and Udine), there was to be no restriction on nonwarlike stores; but warlike stores could be supplied only up to 250 tons and only on the basis of replacement, with no over-all increase in armament.[112],[186],[187] If the planning factor used by AFHQ in October 1944 is applied—2 tons to supply or resupply 100 men with arms and ammunition—250 tons would take care of the initial or resupply needs of a total of 12,500 partisans.

While 15th Army Group, SOMTO, and 2677th Regt were fighting for an increased tonnage allocation from AFHQ, both Company D and No. 1 Special Force were cutting down on warlike stores for Italian partisans. In January 1945, AFHQ had noted that by weight 85 percent of the tonnage being supplied to Italian partisans was comprised of arms and ammunition,[188] but in February these items formed 67 percent of the drops.[182] In March OSS was scheduling supply drops on the basis of 40 percent arms and ammunition;[154],[155] they formed 46 percent of the total in April.[189] Similarly, No. 1 Special Force cut down on the supply of arms and ammunition. Its tactical headquarters with Fifth Army reported on 17 March 1945 that even though greatly increased stores could now be supplied, "these supplies are only dropped at the direct request of our missions, and the distribution of arms and ammunition is made only to those formations who are, or shortly will be, engaging the enemy."[190] The policy that finally emerged in action was thus tailored to two needs: to deny arms to partisans who planned to use them in the postwar days for a political coup, and to supply arms to partisans who were actively engaging the enemy and cooperating with the Allied armies in Italy. But the policy hardly had time to be tested—by the time it was implemented, the war was almost over.

In any case, the situation had clearly illustrated a major point. When arms and ammunition were withheld from partisans who had no other sources of supply, they could not fight. On the other hand, sending arms and ammunition to guerrilla bands did not alone, by any means, ensure control over their activities.

SUPPLIES AND STRENGTH OF PARTISAN GROUPS

The argument between special operations groups and higher headquarters turned in part upon the assumption that the size of the partisan movement in Italy could be controlled by sending or withholding supplies. As already noted, however, the Allies never supplied food adequate to sustain all the partisans for more than a few days, or a total of 20,000 men for about 44 days. Not only

that, but the Allies were unable to make supply drops at regular intervals and in approximately equal quantities. Again, assuming the low figure of only 20,000 partisans, the Allied supply effort varied in 1944 from an average of 1 pound per man in January to 12 pounds in May, 50 in July, 11 in October, and 66 in December. In 1944, at least, partisans never knew whether there would be a dearth or plethora of supply in the following month. Presumably, men who could not depend on the Allies for their daily needs would not be wholly controllable by Allied manipulation of supply drops, but was this the case?

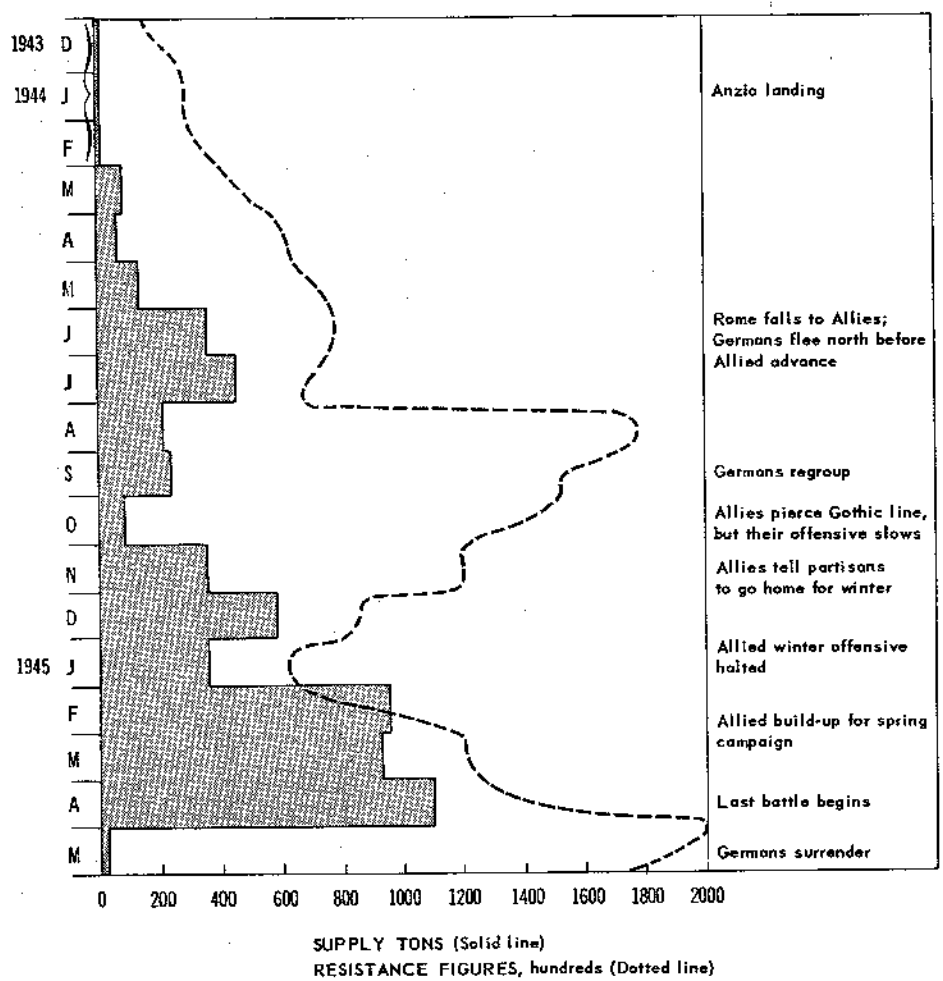

Fig. 6—Supplies and Strength of the Resistance

In Fig. 6 the tons of supplies dropped monthly have been plotted against the size of the Italian resistance. The supply figures are firm, but unfortunately the personnel figures represent only estimates of the resistance population (including both guerrillas and less-active resisters) made by special operations groups and Italian sources. The assumption is made that when the

resistance population is large, the number of active partisans is proportionately large. In other words, the personnel figures denote trends but should not be viewed in any sense as an accurate count of partisan heads.

Ignoring any other factors, there does appear to be some correlation (allowing for time lags) between the sending or withholding of supplies and the growth or decline of the Italian resistance movement—and therefore of the partisan population. The figure becomes more meaningful, however, if it is considered in conjunction with the general military situation. The first peak in the personnel curve appears immediately after the occurrence of a successful Allied push that resulted in the taking of Rome; the second, during a build-up for the overthrow of German forces in North Italy and at a time when Allied arms were generally successful throughout Europe. The unpopular labor conscriptions are a factor not taken into consideration as a cause for build-up of guerrilla strength. The fact that proportionately more partisans were generated after the initial increase in supply drops in the summer of 1944 than after the tremendous build-up in February, March, and April of 1945 indicates that at least for Italy there was no direct ratio by which one could count on dropping x tons of supply and generating y numbers of partisans within t time.

Viewing the chart from the negative side, the falling-off in resistance personnel in the fall and winter of 1944-1945—which was desired by the Allies—may have been due to the drop in supply deliveries, may have reflected a psychological reaction to the decline in Allied military fortunes in Italy, and may also have been affected by such things as increased enemy antiguerrilla drives or political amnesties. Interestingly enough, once the decline in personnel began, it does not appear to have been immediately stopped by the renewed sending of supplies.

Accepting the premise that the chart does show some correlation between supply tons and partisan numbers, the ratio was not constant. Furthermore, the relationship did not make itself felt for a considerable amount of time, and the time lag itself was a variable. For the Italian experience, it seems fair to conclude that manipulation of supplies was at best only a rough means of reducing or increasing the size of the partisan movement.

SUPPLIES AND PAYOFF

In the last analysis the decision to support a future guerrilla movement may depend wholly on the evaluation of its chance of success. For partisans as for regular soldiers, success means reduction of the enemy's ability to resist. And success must also be evaluated in terms of its cost in national resources, in comparison with the value of those resources put to other uses. One of the deterrents to a cost-effectiveness study for the Italian partisans, however, inheres in the fact that well over half of all supplies were dropped to them in the last five months of the military campaign, i.e., December 1944 through April 1945. Presumably these supplies would have sustained partisan activity well beyond the date on which German forces surrendered. In relation to supply timing, the unevenness of Allied supply drops throughout the war and the Allied inability in 1944, even with air superiority, to deliver supplies consistently on call are factors that must be taken into account when reckoning the return necessary to have made Allied support worth while.

On the other hand, how did partisan performance profit the Allies, without taking into consideration any of these extenuating circumstances? Italian partisans were, of course, useful in various sabotage operations, but this kind of activity is difficult to assess. The best way to approximate their worth is undoubtedly to compare some aspect of their performance with that of regular troops.

In a previous memorandum, ORO-T-246, the conclusion was reached that during the period of heavy fighting at Anzio, in February and March 1944, regular troops used 11,000 to 16,000 rounds of small-arms fire or 200 rounds of fragmenting-type ammunition to inflict one casualty. During a period of static defense at Anzio, in April 1944, regular troops required 48,000 rounds of small-arms fire or 530 fragmenting-type rounds to inflict one casualty.

Although conclusive evidence is lacking, it is possible to denote roughly at least the use the partisans made of ammunition sent them. Because there are no available data breaking down the percentage of enemy casualties inflicted by partisan small-arms ammunition and that by fragmenting-type ammunition, the figures used in ORO-T-246 have been reassembled to give the number of rounds of all types of ammunition needed to inflict one casualty by regular forces. The same information has been assembled for partisan forces. In the case of regular forces, the information is based on three months of fighting at Anzio, part of this time being one of heavy German offensive action and part a period of static defense on both sides. The partisan sample is based entirely on Allied ammunition deliveries to partisans from August 1944 to February 1945 inclusive, and German casualties* inflicted by partisans from September 1944 to March 1945 inclusive. The latter period includes some of the partisans' bleakest months, when the Germans had time to organize many actions against them. Significantly, it does not include the periods of partisans' greatest fortune, the summer of 1944 and April of 1945 (Table 8).

TABLE 8

ROUNDS OF AMMUNITION VS ENEMY CASUALTIES

Forces	Rounds issued or delivered			Enemy casualties, total	No. rounds Ammo per Cas
	Small-arms Ammo	Frag-type Ammo	Ammo, total		
Regular	52,800,000	4,600,000	57,400,000	22,000	2600 ±
Partisan	25,100,000	170,000	25,300,000	10,000	2500 ±[a]

[a]This figure would be somewhat larger if ammunition from other than Allied sources were included. It is estimated that these sources contributed only a very small percentage of the total during this period (see earlier sections "Ordnance and Ordnance Stores" and "Supplies and Political Considerations).

It is interesting to note that in this comparison the partisan forces appear to have a slight edge, their rate of fire per casualty being a little lower than that for regular forces, although not significantly so. This statement assumes,

*The 15th Army Group, which compiled monthly the partisan-inflicted enemy casualty figures, stated that "they have been carefully screened, derive mostly from Allied personnel, and entirely omit the very numerous cases when enemy casualties could not be assessed and were reported as 'several', 'heavy' etc. It is believed that this total is conservative."

in both cases, that all ammunition delivered was used. Regardless of whether or not it was, in the case of partisans the Allies had "spent" the ammunition at the moment of drop.

In another way, the comparison indicates that partisans enjoy an advantage over regular forces. Whereas regular forces achieved their casualty rate using 11+ rounds of small-arms ammunition to 1 round of fragmenting-type ammunition, the partisan ratio was 156+ : 1. Partisan small-arms ammunition expenditure was thus at a much higher rate than that for regular forces, and conversely, since small-arms ammunition was far cheaper than the fragmenting type, the total ammunition dollar cost was much lower for the partisans.

In ORO-T-246 the dollar cost of inflicting a casualty at Anzio in terms of ammunition alone at 1952 prices was also determined. Comparison of sample 1952 and 1944 ammunition costs showed that 1944 costs for ammunition were approximately 60 percent of those for 1952. The cost of inflicting an enemy casualty at Anzio by regular forces in 1944 can therefore be established at $2100 to $2700 during periods of active fighting, and at approximately $6000 during a period of static defense. In terms of 1944 ammunition costs alone, Italian partisans inflicted casualties at a cost of $164, somewhere between 3 to 8 percent of the cost in ammunition for regular troops. (See App A.)

The reason for the guerrilla economy was quite simple. Since the number of rounds used per casualty was, in either case, nearly the same, the lesser expense on the part of guerrillas was due to the fact that they consumed large quantities of inexpensive small-arms ammunition and very little high-cost fragmenting-type ammunition.

The point might well be raised that this comparison of ammunition costs alone does not take into account the extra costs of "issuing" the ammunition to partisans by air drop. The cost of transportation from zone of interior factory to theater depot is constant for ammunition regardless of its ultimate user, is not of major concern here, and will be completely disregarded. Further, the costs of moving ammunition from theater depot to the front lines for regular troops or from theater depot to air base for packing and loading on special operations aircraft for partisan delivery are considered approximately equal and have been disregarded. The pertinent question is whether the extra air delivery cost in the case of partisans changes the relation between the cost for partisan-inflicted and for regular-force-inflicted enemy casualties. In other words, when the cost of air drop delivery is added, are partisan-inflicted casualties still "cheap"?

Cost of a Partisan-Inflicted Enemy Casualty in a WW II Situation

At WW II Costs. In order to get a relative answer to this question, the cost of air drop delivery has been approximated as closely as possible for operations in 1944-1945 and considered in connection with the ammunition cost. To obtain an adequate idea of the cost of air supply operations in Italy during World War II, three factors have been considered:

Operating cost	$1,770,810
Operational attrition	6,293,680
Nonoperational attrition	1,824,615
Total air drop delivery cost	$9,889,105 (see App B)

Since approximately 50 percent of the pay load for each sortie was ammunition (probably high), one-half the above cost must be added to the ammunition cost. Then:

Air delivery of ammunition	$4,944,553
Cost of ammunition	1,640,373 (see App A)
Total cost of ammunition	$6,584,926
Number of casualties	10,000
Cost per casualty	$ 700 (approx)

The figure of $700 for a partisan-inflicted casualty includes the cost of ammunition and its air drop delivery and compares most favorably with the figures of $2100 to $6000, the cost of ammunition only for an enemy casualty inflicted by regular troops.

At Current Costs. For speculative purposes, it is interesting to project the conditions of World War II into the present and to impose upon them the costs that would now be current, using contemporary aircraft. Under these circumstances, would partisan-inflicted casualties still be cheaper than those imposed upon the enemy by regular troops?

For regular troops, ORO-T-246 has already determined that under conditions of heavy fighting at Anzio the current cost in ammunition per casualty would be $3500 to $4500; under conditions of static defense, it would be $10,000. There is no question that in terms of the cost of ammunition alone the partisans would more than equal this record; with a total ammunition cost of about $3,000,000 (see App A), the cost of each of their 10,000 casualties would presently be approximately $300.

Air delivery, however, is the major expense of supplying partisans with ammunition. Under current conditions, it is assumed that the B-29 or possibly the C-119 would be the aircraft for resupply sorties.

Using B-29. The current cost of using the B-29, under the conditions of August 1944 to February 1945, has been figured as shown below:

Operating cost	$ 1,281,075
Operational attrition	9,816,230
Nonoperational attrition	4,012,904
Total air drop delivery cost	$15,110,209 (see App C)

One-half the total air drop delivery cost should be added to the 1952 ammunition cost:

Air delivery of ammunition	$7,555,105
Cost of ammunition	3,130,962 (see App A)
Total cost of ammunition	$10,686,067
Number of casualties	10,000
Cost per casualty	$ 1,000 (approx)

Using C-119. The estimated current cost of using the C-119, under the conditions of August 1944 to February 1945, would be somewhat less:

Operating cost	$ 598,430
Operational attrition	3,770,000
Nonoperational attrition	1,596,000
Total air drop delivery cost	$5,964,430 (see App C)

Again, one-half the total air delivery cost may be attributed to the ammunition cost:

Air delivery of ammunition	$2,982,215
Cost of ammunition	3,130,962 (see App A)
Total cost of ammunition	$6,113,177
Number of casualties	10,000
Cost per casualty	$ 600 (approx)

Table 9 will clarify the relations that have been established. It shows that the partisan-inflicted casualty was and is cheaper than that inflicted by regular troops. Furthermore, this difference in cost remains proportionately stable, the greater initial and operating costs of the B-29 and C-119 aircraft being offset by their larger pay loads.

TABLE 9

COST OF INFLICTING AN ENEMY CASUALTY

Situation	For partisans (Ammo plus air delivery, dollars)	For regular forces (Ammo only, dollars)
World War II	700	2,100–6,000
Current	600–1000	3,500–10,000

Actually, the comparison that has been made in Table 9 is unfair to the guerrillas. Whereas ammunition cost was and is one of the lowest single costs in the use of regular troops, the cost of ammunition and its delivery was and will be a major cost in Allied support of guerrillas. Regular troops have to be procured, trained, outfitted, and supported on a scale that is unthought of for irregulars. A more complete study of the cost of an enemy casualty inflicted by regular troops compared with a casualty inflicted by guerrillas would undoubtedly reveal that the cost relationship between the regular and irregular forces is far more disparate than has been denoted by the above calculations.

Nonetheless, in this study, wherein costs have been compared on a basis skewed to favor regular troops, it is sufficient to show that the relation of the two forces is favorable to partisans. This study makes no claims for partisan performance over that of regular troops; it does suggest that the Italian guerrillas were cheap to exploit and that, given comparable conditions, other guerrillas would be a good investment.

Appendices

CONTENTS

Appendix A

DOLLAR COST OF AMMUNITION ONLY PER PARTISAN-INFLICTED CASUALTY, AUGUST 1944 TO FEBRUARY 1945

Item	Description (assumed)	Rounds, no.[162]		At 1944 cost, dollars/1000 rds[a]	Total 1944 cost, dollars	At 1952 cost, dollars/1000 rds[b]	Total 1952 cost, dollars
AT Ammo	Boyce cal.55, .50-cal US	390		167	65.13	343	133.77
Mortar bombs	60-mm HE	16,619		2,960	49,492.24	6,250	103,868.75
Piat, 2.36"	Bazooka	10,729		3,720	39,911.88	9,090	97,526.61
SAA	.30-cal US	25,118,137		54	1,356,379.40	102	2,562,049.97
AT AP Ammo	37-mm	17,104		2,990	51,140.96	4,550	77,823.20
Grenades	Hand	114,808		600	68,884.80	980	112,511.84
Mines	25% AP	2,252	9,006	2,880– 5,630	9,592.26	5,140	11,575.28
	75% AT	6,754		6,850–12,370	64,905.94	24,500	165,473.00
Total	—	25,286,793		—	1,640,372.61	—	3,130,962.42
Number of casualties					10,000		10,000
Cost per casualty					$164		$313

[a]Based solely on contract prices as given in Army Supply Program (ASP).[191]
[b]Based solely on contract prices as given in current ASP and used in ORO-T-246.

SECRET

Appendix B

ESTIMATED 1944-45 COST OF AIR DROP DELIVERY TO PARTISANS

Three factors in the cost of air supply operations are discussed: operating cost, operational attrition and nonoperational attrition.

OPERATING COST

Operating cost was considered to be the cost of all supply sorties attempted during the period under consideration (August 1944 to February 1945). As Table 6 shows, the number attempted was 2324. Of this number, approximately 60 per cent were by bombers and 40 percent by transports.[73]

60% of 2324 = 1394 bomber sorties
40% of 2324 = 930 transport sorties

The average sortie was considered to be approximately 750 miles. Operating cost was then derived as the cost of fuel and oil, labor and material consumed in base and depot maintenance, and pay of crew, per flying hour, multiplied by 750 miles and divided by the cruising speed of the aircraft. The figures for sortie cost for the B-17 bomber and for the C-47 transport provided by HQ USAF[192] for this study were current costs and have been adjusted to 1944 costs according to the Wholesale Price Index for All Commodities:*

Cost of bomber sorties	= 1394 · $840 =	$1,170,960
Cost of transport sorties	= 930 · $645 =	599,850
Total operating cost		$1,770,810

OPERATIONAL ATTRITION

Operational attrition was considered to be the cost of the planes and crews lost during attempted sorties because of enemy aircraft action, enemy ground defenses at the target, or other operational causes.[194] Wartime Planning Factors put this rate at 1 percent of all sorties for the medium bomber and at 0.6

*The assumption being made that the index of wholesale prices for 1947-49 equals 100, prices in 1943-45 are figured to be 62 percent of those in July 1953.[193]

percent for transport aircraft during aerial resupply missions.[194] Sample figures for partisan supply sorties in the MTO show that the rate of 1 percent is high for such sorties. Out of 12,305 attempted sorties to Yugoslavia, 25 aircraft were lost; out of 1714 attempted sorties to Southern France, 9 aircraft were reported missing.[117,119] The 15th Army Group reported only 5 planes lost out of 2208 attempted sorties to Northern Italy between December 1944 and March 1945.[138-141] Furthermore, for all planes lost, not all crews were entirely lost—many men were able to parachute to safety and turned up in time. Nonetheless this study accepts the 1 percent factor and assumes all crews lost.

Out of 2324 sorties to Northern Italy during August 1944 to February 1945, 23 planes and crews are thus presumed lost. With 60 percent bombers and 40 percent transports, the operational attrition cost will be the fly-away cost of 14 bombers and their crews plus the fly-away cost of 9 transports and their crews:

Fly-away cost, bombers (B-17 and B-24 averaged, 1944)	= $193,500[192]	· 14 =	$2,709,000
Fly-away cost, C-47 (1945)	= $81,000[192]	· 9 =	729,000
Total			$3,438,000

The cost of a lost air crew is something else again. No attempt will be made to assess the value of a man's life, either in its future economic or its future military sense. In the most prosaic terms it is assumed here that in losing an air crew the loss is in the tangible factors—the cost of training and the cost of insurance. The Air Force, in figuring the training cost of a crew, included the cost of "conducting all formal Air Force courses required to qualify the individual crew members for required specialties, starting with basic military training. . . . The training costs include student pay, instructor pay, operating cost of aircraft and other training equipment, the per student cost of the operation, maintenance, and overhead costs of the bases where courses are offered."[192] The Air Force costs, which are current, have been adjusted according to the Wholesale Price Index for All Commodities to give an approximate 1943 - 1945 cost:

Cost of training a bomber crew (1943-45)	= $78,120[192]	· 14 =	$1,093,680
Cost of training a transport crew (1943-45)	= $68,000[192]	· 9 =	612,000
Total			$1,705,680

Figuring an average of 5 crew members for each air supply sortie, 115 men are assumed lost, and the insurance cost to the government would thus be $1,150,000.

The total figure for operational attrition would then be:

Fly-away costs	$3,438,000
Training costs	1,705,680
Insurance costs	1,150,000
Total operational attrition	$6,293,680

NONOPERATIONAL ATTRITION

Nonoperational attrition, as given in Wartime Planning Factors for the MTO, amounted to 4 percent per month of all aircraft.[194] During August 1944 to February 1945 there was an average of 231 available aircraft for all special operations in the MTO,[73] i.e., an attrition rate of 9.24 aircraft per month. For seven months this would be a nonoperational attrition of 65 aircraft for all special operations in the Mediterranean theater.

What percentage of this nonoperational attrition can be assigned to Italy alone? By tons, Italy received 6000/32,000 or somewhat under 19 percent of special operations supply effort; by successful sorties Italy consumed 2750/15,300 or 18 percent of special operations supply effort. Under these conditions, it seems fair to assign to the Italian guerrillas 19 percent of the nonoperational attrition cost. Thus, of 65 aircraft lost by nonoperational attrition for the whole MTO, Italy's share would be 12.29 aircraft. Again assuming the ratio of 60 percent bomber effort to 40 percent transport effort:

Fly-away cost, bombers (B-17 and B-24 averaged)	= $193,500[152]	· 7.37 =	$1,426,095
Fly-away cost, transports	= $ 81,000[152]	· 4.92 =	398,520
Total nonoperational attrition			$1,824,615

Appendix C

ESTIMATED CURRENT COST OF AIR DROP DELIVERY TO PARTISANS

The question is what it might cost at present prices to use the B-29 or C-119 to deliver supplies to partisans, provided that conditions were the same as those in World War II.

Using the B-29

Operating Cost. Using an aircraft with a pay load of approximately 2 tons, the Allies needed 2324 attempted sorties (see App B, "Operating Cost") to deliver 2884 tons of supply. It is assumed that the converted B-29, carrying approximately 5 to 10 tons of supplies, could deliver this tonnage in one-third the number of sorties, i.e., 775. Then:

775 sorties · $1,653 (sortie cost, 750 miles)[192] = $1,281,075

Operational Attrition. If operational attrition amounts to 1 percent of the number of sorties (see App B, "Operational Attrition") and if 775 sorties will be flown, then 7.8 aircraft, with their crews, must be assumed lost:

7.8 aircraft @ $1,003,226*	=	$7,981,163
7.8 crews @ training cost of $185,265[192]	=	1,445,067
39 men @ $10,000 insurance	=	390,000
Total		$9,816,230

Nonoperational Attrition. Since the B-29's pay load is more than triple that of the aircraft used in World War II, it is assumed that only one-third as many aircraft will be needed as before. The nonoperational attrition, at a monthly rate of 4 percent of the total number of aircraft, will then be one-third the aircraft assumed lost for this reason during World War II, or four (see App B, "Nonoperational Attrition").

4 aircraft @ $1,003,226 = $4,012,904

*The last procurement date for this plane was FY 1945. That price, for the purpose of this study, has been adjusted upward to a 1952 level.[192]

The figure for the total cost of air delivery, using the converted B-29, would then be:

Operating cost	$ 1,281,075
Operational attrition	9,816,230
Nonoperational attrition	4,012,904
Total air delivery cost using the converted B-29	$15,110,209

Using the C-119

Operating Cost. Although 2324 sorties were necessary to deliver 2864 tons of supply using the old B-17, B-24, and C-47 aircraft (see App B), only one-fourth as many, or 581 sorties, presumably will be necessary to carry the same pay load when using the C-119, an aircraft carrying approximately 17,600 pounds. The C-119 theoretically would use even fewer sorties to deliver the World War II pay load, but it has been assumed that ground missions could not usefully absorb the maximum amounts that the C-119 could deliver at one time.

581 sorties @ $1,030 (sortie cost, 750 miles)[192] = $598,430

Operational Attrition. This is considered to be 1 percent of all sorties (see App B). If 581 sorties will be flown, 5.8 planes and crews are to be assumed lost:

5.8 planes @ $532,000 each[192]	=	$3,085,600
5.8 crews @ $68,000 training cost[192]	=	394,400
29 men @ $10,000 insurance	=	290,000
Total		$3,770,000

Nonoperational Attrition. If only one-fourth as many aircraft will be needed, using the C-119, the nonoperational attrition, 4 percent of the total number of aircraft per month, will become one-fourth the number of aircraft assumed lost for this reason during World War II in Italy (see App B), or three:

3 planes @ $532,000 = $1,596,000

The figure for the total cost of air delivery, using the C-119, would then be:

Operating cost	$ 598,430
Operational attrition	3,770,000
Nonoperational attrition	1,596,000
Total air delivery cost using the C-119	$5,964,430

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