

AERIAL

DELIVERY



What do riggers do?



Riggers place both Soldiers and materiel on the battlefield by parachute. Sometimes no other way will work, and the parachute assault or the parachute delivery makes the tactical difference.

Whether packing personnel parachutes or preparing cargo loads riggers live by the code: "I will be sure, always." Each one is airborne qualified. They recognize their heavy responsibility for the safety of US Soldiers, whether delivering cargo or people.



Tactically there will be three situations that require parachute delivery:

The first is to deliver personnel by parachute jump. These operations can range from small special operations insertions to large scale parachute assaults.

The second situation is to resupply a large parachute assault until the ground lines of supply to the airborne forces can open up. Although this has not been the case in recent operations, this capability remains important to airborne doctrine.

Third, we will have times when normal ground lines of supply will not work due to the terrain, enemy activity or other reasons. In these cases aerial delivery becomes necessary.

Additionally at times the military will deliver supplies by air for humanitarian reasons.



Early World War II

The Soviet Union began experimenting with parachute operations in the 1930s. Other European nations followed, but without serious development of this capability.



In May 1940 Germany made some dramatic demonstrations of the potential for airborne operations. In Belgium and the Netherlands, they were able to capture or neutralize key defenses, allowing them to make swift advances into France.

In the Mediterranean, German paratroopers captured the island of Crete (near Greece) despite the British naval superiority.

Airborne had the ability to strike swiftly behind enemy lines and to disrupt their defenses.

In the United States

Looking at the success of German airborne operations, the United States began its own airborne experimentations. Immediately after the German success in Crete, the US Army created a single airborne platoon at Fort Benning, Georgia, in August 1940. These early airborne Soldiers developed the tactics, techniques, and procedures for the forces that followed.

As the U.S. Army expanded before and during World War II, the airborne forces expanded accordingly. By the height of the war, the XVIII Airborne Corps became a key element of the Allied capability.

Smaller levels of airborne forces operated in the Pacific.

During World War II, packing the individual parachute was an infantry function. Some Quartermaster units experimented with ways to deliver supplies by parachute, but most of the work came through the infantry.



Airborne Assaults of World War II

Airborne assaults became a feature of operations during World War II, often in conjunction with amphibious or ground assaults. Some of the larger operations included:



Sicily (Husky) – Unfortunately poor coordination with the Navy resulted in heavy friendly fire casualties while the paratroopers were in flight. The paratroopers managed to disrupt and confuse enemy defenses.

Normandy (Overlord) – Allied paratroopers disrupted and confused the enemy before the attack. They held key road junctions behind the lines.

Lower Rhine (Market Garden) – In September 1944 paratroopers tried to cross three rivers reaching the Rhine. Unfortunately this became a bridge too far. They did not cross the Rhine and the British took extremely heavy casualties.

Lower Rhine (Varsity) In March 1945 airborne forces cleared the way for a British crossing of the Lower Rhine. Ground forces joined the airborne forces in a timely manner.



New Guinea -- Paratroopers from the 503rd Parachute Infantry, in conjunction with Australian airborne forces, seized a key airfield at Nadzab.

Philippines – The United States seized the island fortress of Corregidor, located in Manila Bay by a combined amphibious and airborne assault.

By the end of the war, the American Airborne forces established their value. Despite the difficulties the airborne assault provided a means to deliver combat forces behind enemy lines.

Lessons from Market Garden



Operation Market Garden was the most ambitious airborne operation of World War II, and the most spectacular failure.

The Allies planned to seize multiple bridges in southern Netherlands to cross the Rhine and move directly into the heart of Germany. Unfortunately they did not plan on German Panzers in the area. Airborne units of World War II had a 75mm pack howitzer, but that was

insufficient. Even worse resupply was so inaccurate that most airdrops landed behind German lines, and that included the ammunition.

It is worth noting that better aerial resupply procedures (and a larger drop zone), enabled successful support to the 101st Airborne Division at the critical fight for Bastogne in the Battle of the Bulge.

The failures at Market Garden convinced the senior airborne generals that future operations required an improved ability to air drop crew served weapons, and large quantities of supplies. Aerial resupply would need better precision so that supplies could reach the intended forces. Skill at cargo delivery became equally important with skill at packing the individual parachutes.

Aerial Resupply

Delivery of supplies by air also began during World War II; but with a slightly different history.

At first this capability was intended to support parachute assaults; but Allied logisticians discovered that aerial resupply was often necessary to reach isolated units, both in Europe and in Asia.

The practice developed without real doctrine and Soldiers developed the equipment over time. For example in Burma at first they used containers made from bamboo; but they

later decided that burlap was cheaper.



Accuracy was always a problem without the right techniques and procedures. Supplies might land in no-mans-land or might reach the enemy.

Aerial resupply was largely unsuccessful in Operation Market Garden; but a few months later aerial delivery enabled the 101st Airborne Division to defend the crucial crossroads at Bastogne during the Ardennes Counteroffensive.

In Asia and the Pacific supply by sky reached Chinese Nationalists forces fighting against Japan, and other isolated locations.

Merrill's Marauders

Burma (present Myanmar) was a Southeast Asian nation between India and Thailand. Early in the war the Japanese occupied the nation, and the Allies needed to re-take Burma in order to open a road to China.

Here the United States tried a daring new idea that would be the forerunner of modern Ranger units. They created the 5307th Composite Jungle Penetration Unit, better known as Merrill's Marauders. The unit moved into the jungle and operated behind enemy lines for six months under the most difficult conditions.

They staged critical attacks upon Japanese bases and tied down several Japanese divisions chasing them. Their exploits became legendary.



Because they operated behind enemy lines they depended upon aerial resupply for all food, ammunition, medicine, and other supplies. This job was a delivery of supplies, so the work fell to the Quartermaster units. Supporting Quartermasters organized specialized companies to prepare aerial deliveries. As the Marauders continued to bedevil the Japanese, the support effort grew accordingly. The continued experience allowed them to develop and improve techniques for estimating accurate drops, or to create new means of using containers.

After the War

The airborne community of the American Army justifiably took pride in its storied performance during World War II. The parachute assault was a proven way to reach behind enemy lines and disrupt their defenses.

To build on this success, the airborne community needed to address its weakest point, which was delivery of heavy weapons and supplies.

During the war, the largest weapon that could be air dropped was the 75mm howitzer; but it was broken down into different packages, which had to be reassembled after landing. Frequently the parts were so scattered that the weapon could not be assembled.

After the war the Army experimented with ways to deliver small vehicles, 105mm artillery, 90mm anti-tank guns, and other supplies by parachute in ways that added to the punch of an airborne division.

Introduction of the C-119 aircraft (Flying Boxcars) in 1947 facilitated better cargo delivery by allowing air drops through an opened back door.

Rigger becomes a Quartermaster function



Further changes came as a result of the separation of the Army Air Corps into the US Air Force in 1947. Until this time the Air Corps had responsibility for purchase of all parachutes and associated equipment;. Now the Army had lead responsibility for all rigger and aerial delivery issues. The next question became who had the lead responsibility within the Army?

Until this time packing individual parachutes was an infantry responsibility, with a school at Ft. Benning. Quartermasters had some experience at packing supplies for air drop especially in Asia.

In 1950 an Army board recommended transfer of all rigger and aerial delivery responsibilities to the Quartermaster Corps. They reasoned that if the future success of parachute operations depended upon accurate delivery of supplies and heavy equipment, it was better to allow the Quartermaster Corps to specialize in this line of work.

The Quartermaster General began rigger training at Fort Lee in January 1951, with the first class starting in May. The course at Fort Benning closed. This time the work emphasized both individual parachutes and cargo delivery.

Korean Conflict

Just as the rigger function was being transferred to the Quartermaster Corps a new conflict began on June 25, 1950 when North Korean forces crossed into South Korea hoping to unify the nation under a communist dictatorship. The United States came to defend South Korea under United Nations sponsorship.



The only airborne assault came early in the conflict when the 187th Regimental Combat Team attempted to cut off retreating North Korean forces and hopefully rescue American prisoners before they could be evacuated northward. The operation was partly successful. It captured over 3,800 prisoners, but not the huge numbers expected, nor did the paratroopers rescue American prisoners.

Logistically this operation was noteworthy because this was the first time the Army successfully dropped moderately heavy equipment in a combat assault. The types of equipment included quarter-ton trucks (jeeps), antitank guns, and 105mm howitzers.

Even when not supporting airborne assaults, aerial delivery achieved a new importance for supporting ground forces. Road networks were bad in good weather and impassable in rain or snow. The rapidly changing advances and retreats complicated delivery of supplies by ground. Consequently aerial delivery often became the best means of reaching ground units.

8081st

The actual work of preparing loads for aerial delivery fell to the 8081st Quartermaster Air Supply & Packaging Company, stationed in Japan. They both prepared the material for air drop and accompanied the Air Force in the actual delivery.

With the constant demand for aerial resupply, the 8081st prepared some form of delivery on a daily basis, typically working through the night to get the loads ready.

Aerial delivery techniques were still developing, so the men of the 8081st had the opportunity to make their own improvements for procedures and material. One of the first innovations came from Master Sergeant Michael Gordon who developed a quick release device using a bomb shackle. Previously cargo was released by cutting a rope. A short variance in the time to cut the rope could mean missing a small drop zone. Gordon's work allowed more accuracy. Other Soldiers found ways to avoid breaking petroleum drums or to delivery vehicles.



Units on the ground were expected to return the parachutes, but frequently this did not happen. Even when the parachutes were returned, they required repair from the 8081st. When possible they began using rope as a cheap substitute for containers.

Chosin Reservoir

In late November and December 1950 the Chinese entered the conflict just as the United Nations forces were approaching the border between Korea and China. They quickly drove the Americans and their allies southward.



The 1st Marine Division, along with survivors of nearby Army units found themselves cutoff and in danger of capture. They fought their way out of the trap under extraordinarily difficult circumstances, including sub-zero weather. This retreat has become one of the classic episodes in the history of the Marine Corps.

Close to the end of their retreat they encountered a ravine, with all of the bridges destroyed by the Chinese. Unless they could find a way to cross the ravine the Chinese might overtake the retreat.

Here the 8081st accomplished a new feat. They devised a way to prepare an unassembled Treadway Bridge for air drop. They then reached the Marines with pinpoint accuracy. After assembling the new bridge the Marines completed their evacuation to the sea.

Vietnam



Airborne (ie parachute) operations in Vietnam consisted of one jump from members of the 173rd Airborne Brigade, plus numerous actions from US Army Special Forces units.

Aerial resupply began slowly with one detachment in country. In late spring 1966 the capability expanded with the addition of a parachute rigger company and a parachute maintenance company assigned to the Cam Ranh Bay Depot. They were used for major operations but not with the same level of activity as in Korea. Nevertheless the command in Vietnam wanted this capability in the event that any outposts along the border with North Vietnam should require aerial resupply.

Once again personnel continued to look for means to improve the efficiency of their jobs. One new technique was to create packages of supplies for specific types of units. These could be packaged and prepared in advance to facilitate a quick response to units in need.

In Vietnam the helicopter reached maturity as a means of moving personnel and supplies over short distances when roads were unavailable. The helicopter allowed rapid tactical movements over difficult terrain. The slingload developed as a means of transporting equipment too big to fit inside a helicopter.

Khe Sanh

Fears of an American outpost becoming surrounded were realized in early 1968. The Marine Corps fire base at Khe Sanh was located in the mountainous jungle region and surrounded by North Vietnamese Army units from January to April 1968.

During this time they relied entirely upon aerial delivery of supplies. The 109th Quartermaster Company alone delivered about 8,000 tons of supplies. Members worked around the clock to keep the beleaguered outpost supplied.



LAPES

The Low Altitude Parachute Extraction System (LAPES) was developed in the Vietnam era as a way to deliver very heavy loads.

The aircraft (typically a C-130) flew very close to the ground over the drop zone. After the rear doors opened a parachute deployed to pull the cargo out of the aircraft. The parachute did not slow the

descent, it merely extracted the cargo. The system assumed the cargo would only fall a short distance.



The LAPES was invaluable at Khe Sanh; but it could be dangerous. The low approach made the aircraft vulnerable to ground fire. There was very little room for pilot error. In 1987 a capability demonstration at Fort Bragg ended in a spectacular crash in front of a horrified crowd.

More Parachute Assaults

Events continued to demonstrate that airborne assaults provided an invaluable means of delivering troops quickly into military operations around the globe. Airborne units provided a necessary tool for US military operations.



In 1989 Soldiers from the 82nd Airborne Division made a parachute jump into Panama to remove the dictator Manuel Noriega for what became Operation Just Cause.

The parachute assault allowed large numbers of Soldiers to reach the ground much faster than landing individual aircraft would have allowed. Plus this eliminated the need for control of the airfield.



In 1994 members of the 82nd Airborne Division boarded the aircraft and began their movement for a parachute assault into Haiti for Operation Uphold Democracy.

When the Haitian junta learned that the invasion was underway, they finally capitulated and agreed to a transition to democratic government. Here the threat of the parachute assault was sufficient to carry the day.



In 2003 Soldiers from the 173rd Airborne Brigade seized an airfield in northern Iraq during the opening of Operation Iraqi Freedom, allowing for follow on forces to open the northern front.

In addition, innumerable Special Forces units have made smaller jumps throughout the globe, particularly in the opening phases of the war in Afghanistan.

The advantages of the parachute Soldiers are simple: speed and operational reach. They can reach across the globe within a matter of hours. The ability to seize airfields allows for other forces to come and support the operation.

Special Operations Forces

Being airborne qualified is an inherent part of Special Forces, Rangers or other Special Operations units.

They also have their own small rigger detachments. These personnel are skilled in packing all of the specialized types of parachutes used by Special Forces, including for High Altitude Low Opening jumps.



Humanitarian Airdrops



Aerial delivery not only reached military units, but it also could be used in humanitarian situations.

After the end of the 1991 Gulf War, hundreds of thousands of Kurds fled from Iraq into Turkey. Here they lacked the necessities of food and shelter. The forbidding mountains and political conditions precluded delivery of supplies over land.

Aerial delivery was the only way to prevent a humanitarian disaster.

During the 1993 war in Bosnia, Serbian forces surrounded the city of Sarajevo, cutting off food and other necessities. Twenty one nations delivered relief supplies by air, sometimes landing, but frequently dropping the cargos by parachute.



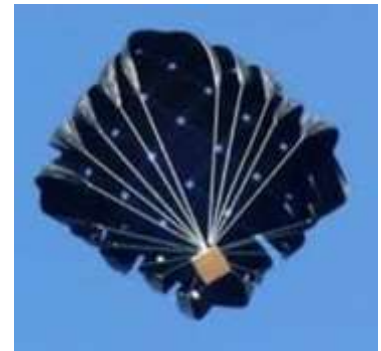
In these cases there was a negligible recovery rate for the rather expensive parachutes and associated equipment.

Low Cost Aerial Delivery Systems



The experience in Operations Provide Comfort and Provide Promise caused many people within the airborne community to re-think the traditional nylon cargo parachute. It functioned very well but it was expensive. In situations such as humanitarian assistance the loss of this equipment cost considerable money.

Beginning around 2002 the Army Natick Soldier Systems Center began development on cheaper cargo parachutes, intended for one-time use. Instead of nylon they used strips of polypropylene, arranged in a cross pattern. Where possible components were glued together instead of expensive stitching. The simplicity of design and construction not only made a cheaper product, it allowed the Army to employ multiple small businesses, which enhanced the capacity for “surge” production.



The system consisted of a cargo container, a high velocity parachute, and a low velocity parachute. Working in cooperation with the rest of the airborne community the engineers at Natick had the systems fielded by 2007.

The timing was fortuitous. By this time the war in Afghanistan was developing a new intensity, and the absence of suitable ground transportation precluded traditional resupply for isolated outposts. The LCADS became the preferred means for reaching isolated outposts.

Joint Precision Aerial Delivery System

Another technological improvement to aerial delivery came within this same time. This is the Joint Precision Aerial Delivery System. Using wind speed information, a Global Positioning System, and a computer to steer the parachute the system allows for precision delivery of a cargo load from a comparatively high altitude.



The principal advantage is that it allows the Air Force to avoid ground fire in contested areas by dropping the cargo from a relatively high altitude. The principal disadvantage is the cost and the necessity for recovery of the guidance system

Afghanistan

The fighting in Afghanistan quickly became dependent upon aerial delivery. The land is mountainous with few roads. Terrain that can be extremely difficult in the summer becomes impassable in the winter. The danger from enemy ambushes further limits the capabilities of ground transportation.



US strategy has been to extend the military into



previously unreachable areas, and this means aerial resupply, most often by using cargo parachutes.

The LCADS has significantly reduced the cost, and the JPADS has allowed supplies to reach contested areas with a diminished danger of ground fire.

The Future



Undoubtedly future wars will still bring the uncertainty and fluid environment that will require an aerial delivery capability.

This applies to both re-supply by air and parachute assaults. We have seen how aerial delivery provides the means to reach isolated places for both military operations and humanitarian assistance.

Parachute assaults proved a wide operational reach that is not possible through other means.

The Quartermaster parachute rigger will be an essential part of these operations.