

# INTEGRATION OF THE T-11 ATPS

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Over the past decade, the Department of Defense (DoD) has experienced the challenge of transitioning from the T-10D legacy personnel parachute to the T-11 Advanced Tactical Parachute System (ATPS). The transition from one personnel parachute to another has been anything but simple. The T-10 culture — a culture derived from decades of experience with the T-10 series of parachutes — has further complicated the transition. During this time of change in the Airborne community, the Airborne and Ranger Training Brigade (ARTB) and the 1st Battalion, 507th Parachute Infantry Regiment (PIR) as the static line parachuting proponent led the effort to synchronize the rest of the Airborne community in the T-11 transition. This article describes the challenges to integration and the changes in doctrine, training, and material implemented to meet these challenges and enable the successful transition to the T-11 ATPS.

## **The T-10 Legacy and Why the Army Abandoned its Historic Parachute**

Based on feedback from the Airborne community, the Maneuver Center of Excellence (MCoE) Requirements Division published the operational requirements document (ORD) for a new Soldier parachute system in July 2003. The ORD cited the increased jumper weight and high descent rate of the T10 main canopy and its associated reserve parachute (the Modified Improved Reserve Parachute Soft Loop Center Pull [MIRPS SLCP]) to be the major cause of



**Paratroopers assigned to the 1st Battalion, 501st Parachute Infantry Regiment, 4th Infantry Brigade Combat Team (Airborne), 25th Infantry Division, U.S. Army Alaska, descend over Malamute Drop Zone during airborne training at Joint Base Elmendorf-Richardson, AK, on 13 April 2017. (U.S. Air Force photo by Alejandro Pena)**

airborne injuries and the driving force behind the new requirement. The high number of jump-related injuries from Operation Just Cause, four percent of jumpers, was the major catalyst cited in the first paragraph of the document as a case in point.<sup>1</sup> The ORD identified the items below as the requirements for the new ATPS:<sup>2</sup>

- \* Jumper weight range (less parachute): 118-332 pounds
- \* T-11 main rate of descent at 332 pounds: 18 feet per second (fps) (compared to 22.5 fps for the T-10D)
- \* T-11 Reserve rate of descent at 332 pounds: 27 fps (32.8 fps for the MIRPS SLCP)
- \* T-11R altitude loss after activation: 250 feet
- \* T-11R force transfer along longitudinal axis of the body (MIRPS SLCP was mounted lower, potentially causing back injuries)
- \* T-11 reliability equal or better than T-10
- \* T-11R reliability 95 percent under partial main/99 percent under total malfunction

Airborne Systems, Inc., the designer of the T-11, began experimentation on a new parachute in 1994. After testing more than 120 prototypes through 700 drops and jumps, Airborne Systems won the contract for the design of the T-11 ATPS. At the time, the assumption throughout the Airborne community was that the T-11 would be a “plug-and-play” replacement for the T-10D with no major modification to doctrine or training apparatuses. Instead, a fatality and the resulting Army-wide stand down that occurred soon after the Army fielded the T-11 to the 82nd Airborne Division in 2011 disrupted any plans for a rapid transition to the T-11 ATPS.

### **The Rocky Road to Transition**

Although not entirely their fault, the Airborne community failed to plan appropriately for the road to transition from one parachute system to another. It was impossible to foresee the risks associated with the new parachute at the time of fielding. With that said, units failed to synchronize T-11 ATPS training integration into operations from Day 1 of the new fielding. In fact, the only commonality across the Army in airborne training was the initial training that new jumpers received at 1-507th’s Basic Airborne Course (BAC). Even the Jumpmaster Schools at Fort Benning, Fort Bragg, the U.S. Army Special Operations Command, and the Air Force Special Operations Command were teaching different material and techniques. Despite this rough start, the community as a whole has, and continues to make, significant headway toward successful transition to date.

The 1-507th PIR fielded the T-11 ATPS in July 2009. During the transition, students trained on both the T-10 and the T-11 systems through ground and tower phases and conducted five jumps using a combination of both parachutes. This method of dual parachute training was very successful until the Airborne School suffered a fatality in October 2013. During this incident, an Airborne student became trapped on top of the center panel of another jumper’s canopy shortly after exiting the aircraft. During his descent, the student, entangled with his deflated parachute, slid off the lower jumper’s canopy at approximately 200 feet above ground level.

Instead of ceasing operations with the new parachute until the investigation was complete, the U.S. Army Infantry School commandant, with input from the 1-507th PIR chain of command, opted to continue modified training. The BAC made two simple but effective changes to training. First, the BAC stopped conducting mass exit jumps with the T-11 ATPS. While this modification resulted in a lower risk of center panel strike or parachute entanglement due to the resulting increased dispersion of jumpers, it did not prepare paratroopers to join the ranks of the conventional Airborne force and conduct the large-scale mass exit jumps common in these units.

Second, the 1-507th PIR implemented the flexed-arm hang (FAH) into the program of instruction to verify that all jumpers were able to pull and hold a slip with the T-11. The T-11, due to its larger size, requires more effort to pull and hold slips when compared to the T-10, and jumpers needed to demonstrate this ability to prevent canopy collisions and entanglements. MCoE approved the FAH when it was included in the MCoE Regulation 350-3 revision in June 2015.

In addition to training modifications, the October 2013 incident spurred the Army to reflect upon the research and development side of the T-11 ATPS. The 1-507th PIR proposed several ideas to mitigate the hazard of a T-11 center panel strike; however, after testing at the Yuma, AZ, test facility, none of the proposed procedures proved to be effective at mitigating this hazard. In response to this shortfall, the 1-507th PIR worked with experts across the Airborne community to develop the current emergency procedures, which were released in August 2015. The new procedures emphasize the danger of being on top of another jumper’s canopy and describe making every effort to get off.



**A paratrooper descends during a combined airborne operation in Italy on 17 October 2016. (Photo by SSG Opal Vaughn)**

In addition to the incidents involving jumpers, the path to transition revealed an increased danger to jumpmasters wearing the T-11 Reserve (T-11R). On 23 June 2014, the Navy Special Operations Static Line Jumpmaster Course experienced a fatality when a student's T-11R inadvertently activated while the student was in the "jumpmaster-relaxed" position, just inside the paratroop door of a C-130. The Navy and Air Force immediately stood down the MC-6 personnel parachute system, which shares the same harness and T-11R reserve parachute, for their personnel. This was not the only incident where an inadvertent activation of the T-11R resulted in the extraction of a jumpmaster from an aircraft. Reporting was inconsistent prior to this incident, but reports indicate that there have been more than a dozen inadvertent activations of the T-11R. This number is small compared to the number of jumps conducted with the T-11R across the force every year, but due to the catastrophic nature of the Navy incident, it was apparent that there was a significant danger to T-11R-equipped jumpmasters. Following this incident, Project Manager Soldier Clothing and Individual Equipment (PM SCIE) developed a variety of interim solutions to mitigate this risk. Experts from the 1-507th PIR provided input to the working group that evaluated the interim solutions, leading to the adoption of T-11R inserts. The T-11R inserts were chosen over other interim fixes because they reduced the likelihood of activation due to exposure to wind without affecting the jumper's ability to activate the reserve and without requiring modification of any systems in the field.

The 1-507th PIR was the leading proponent of this interim solution. In addition to sending subject matter experts (SMEs) to Yuma to observe testing, the 1-507th published the Safety of Use Message (SOUM) detailing who should use the inserts and how the jumpmaster safety should inspect the jumpmaster's T-11R before he or she assumes the door of an aircraft. Moreover, the 1-507th PIR Jumpmaster School authored the procedures for incorporating the inserts into the jumpmaster personnel inspection (JMPI) sequence. This procedure was included in each shipment of T-11R inserts when they were fielded, starting in June 2015. Finally, the 1-507th PIR riggers conducted pull weight testing of stored T-11R reserve parachutes and determined that storing the T-11Rs vertically in cages caused the least amount of deformation to the packed chute and change to the pull force required to activate the parachute. They shared their storage solution with the larger rigger community to help prevent inadvertent activations across the force.

### **Moving Forward with the Complete Transition of the Airborne Community to the T-11 ATPS**

In an effort to move the Airborne community forward in the transition to the T-11 ATPS, the 1-507th PIR published an All Army Activity (ALARACT) message in December 2014 to inform the Army that new paratroopers would no

longer receive training on the T-10D parachute system. This was the precursor to the BAC becoming T-11 pure, and in January 2015, the BAC began training only the T-11 ATPS. Units now only receive new Soldiers trained and certified to jump the T-11. This move was a catalyst for units that had been continuing to operate with T-10 parachutes to complete their transition to the T-11.

Until recently, the culture of most airborne units revolved around the T-10 series of parachutes. The T-10 was the system every paratrooper understood. It was common knowledge that the T-10 was forgiving of even the worst exit from an aircraft; most old paratroopers can tell you about how they simply “fell out” of an aircraft due to being burdened with heavy equipment. In spite of this advantage, the T-10 was also known to be less forgiving on landing, and the parachute landing fall (PLF) was emphasized above all else.

The T-11, however, has its own unique characteristics, which were discovered over the last several years, that counter most of the cultural knowledge developed with the T-10. We know now that the T-11 is less forgiving of a bad exit, and that excessive twists can cause a parachute malfunction. We are also aware that the T-11’s slower rate of descent has reduced lower extremity injury rates among paratroopers. Every paratrooper knew that a T-10 was so rigid in flight that another jumper could run across the top of the canopy. This is not so with the T-11. The T-11 is more like a half-inflated “bouncy house” in flight, and it is difficult for another jumper to get off another jumper’s canopy. In addition, the design of the T-11 static line stow bars combined with the larger pack tray can cause a jumper to have a lot of excess static line hanging from his parachute prior to exiting the aircraft. Furthermore, the T-11 parachute is thicker than the T-10 and extends out farther from the back of the jumper. Thus, the length of static line from the jumper’s hand to the first retainer band on the back of the parachute is longer. Lastly, the T-11 also lacks the inner static line stow bars that were present on the T-10, and without inner static line stow bars, the distance between the static line stow bars is greater than the T-11. These differences create the potential for excess static line to be present on a jumper and have the potential to increase static-line injuries if the static lines are not well controlled. Again, these differences all run contrary to the culture created by 50 years of T-10 service. It is critical that leaders at all levels recognize these differences and enforce new training and procedures in order to prevent injuries in the future.

The Airborne community, led by ARTB and the 1-507th PIR, has finally begun to synchronize and standardize airborne training and operations. The ARTB/1-507th PIR held the first of four Static Line Symposiums over video teleconference from Fort Benning in April 2015. Some significant initiatives tackled by the symposium included



**At the U.S. Army Airborne School, upgrades were made to training apparatuses including the 250-foot jump towers and a C-130 hulk trainer. (Photo by Markeith Horace)**

the rewrite of Training Circular (TC) 3-21.220, *Static Line Parachuting Techniques and Training*; the creation of a common pre-jump and mock door training for all units; emergency procedure implementation; parachute packing modifications; static-line control; and the controlled movement technique for moving inside the aircraft.

On the topic of research and development, in July 2015 the 1-507th PIR held the first of four apparatus upgrade meetings to discuss all of the upgrades needed to train paratroopers using T-11-specific apparatuses and equipment. The upgrades included jump platforms and T-11-style trolleys with risers for the 34-foot mock towers and T-11-size trapezes for the suspended harness pit and the improved swing landing trainer. There were also upgrades to the slip pull simulator (to verify a jumper's ability to pull a slip), upgraded mock doors for Ground Branch and Jump Branch, a C-130 hulk for student training, upgrades to the 250-foot jump towers, and the T-11 ring on the 250-foot towers to hang T-11 and T-11R canopies for a familiarization class. The 1-507th PIR also requested and received additional medium Modular Lightweight Load-carrying Equipment (MOLLE) rucksacks and modular airborne weapons cases (MAWC) for training and combat equipment jumps, fielding of the universal parachutist recovery bags, and 65 Beyond Economical Repair (BER) T-11 canopies for teaching students how to recover their equipment. The 1-507th PIR has made enormous headway with apparatus upgrades through generous funding from PEO Soldier/PM SCIE and MCoE. These upgrades will bring airborne training into the 21st century and in line with the current parachute of record.

Additional support for airborne operations implementing the T-11 is currently under way at the U.S. Army Quartermaster School. During the T-11 transition, there were significant challenges on the parachute rigger side of the equation. Due to the time and effort required to pack the new T-11, an individual rigger may only pack 15 parachutes per day; whereas, they would have been able to pack 25 T-10 parachutes in a single day. This change initially caused a community-wide rigger shortfall, and we are only now starting to see some relief thanks to the Quartermaster School commandant, who has increased rigger recruiting and throughput. The 1-507th PIR rigger SMEs offered a solution to help reduce some occupational injuries while increasing the reliability of the T-11 main parachute. The SMEs recommended a new packing procedure be tested that would offer an increased opportunity for the T-11 main parachute to deploy by doubling the available air channels, while also making the packing procedure less strenuous for the individual rigger and reducing the amount of time that the T-11 takes to deploy. Ultimately, a portion of the recommended changes was accepted after testing funded by PM SCIE.

Finally, in October 2015, two years after the aforementioned fatality caused the BAC to stop jumping mass exit, the mass exit technique was reintroduced in the BAC through a deliberate process of certifying the Black Hat instructors, training the students, and evaluating their performance in the air. Since October 2015, the BAC has conducted at least one mass exit jump per class, ensuring the Airborne community receives the best-trained paratroopers possible. The 1-507th PIR achieved the goal of nighttime mass exit jumps and mass exit jumps with combat equipment in the summer of 2016.

In summary, the T-11 transition has been anything but simple. The T-11 ATPS has changed many things about the way we conduct airborne operations, but the most important change has been the Airborne culture. As we move forward, the XVIIIth Airborne Corps commander was named the Airborne lead, and he has task organized the Airborne community to ensure improved communication flow and common standards throughout units. The 1-507th PIR will remain an active participant on the Airborne Board as airborne and jumpmaster training and doctrine SMEs for the U.S. Army Training and Doctrine Command and the Airborne community. The Airborne community has seen marked improvements in coordination between services and schools, changes in the way that the airborne force conducts pre-jump and mock-door training, and updates to emergency procedures and doctrine from the initial days of fielding the new parachute systems. ARTB and the 1-507th PIR will continue to lead the way and look for ways to improve the safety and synchronization of the T-11 as the Airborne community jumps the T-11 for many years to come.

## Notes

<sup>1</sup> Operational requirements document for ATPS ACAT III, August 2005.

<sup>2</sup> Ibid.

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