



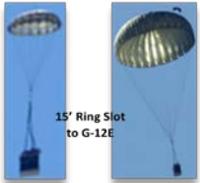
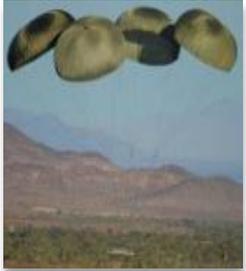
Airdrop and Aerial Delivery Program

Cargo Airdrop Systems: Recently Fielded, Existing PORs, S&T and Some New Concepts
*Recently fielded and in theater, Close to being usable in theater,
 Future capabilities being shelved, no requirements, JMDSE JCTD, New concepts*

System/program name	Responsible/Lead Organization	Requirement/Status	Description/Relevance	Image
Type Classified and Approved for Use				
JPADS 2K	PM FSS	<p>JPADS CDD Standard JPADS MS C and FMR approved Apr 2009; System has completed full rate production and fielding. JPADS Modular AGU FMR approved Apr 2013. US Fleet Mod Standard AGU to MAGU configuration ongoing</p>	<p>JPADS 2K (700-2,200 lb) is certified on C-130 and C-17 aircraft. A self-guided parafoil system primarily for Container Delivery Systems (CDS payloads). Type classified and rapidly fielded during FY09. Used in OEF since Sep 08. Recently fielded improvements to enhance accuracy with terrain avoidance software, a "one-time use" parafoil and modular AGU in response to urgent need. Improved software and one-time use parafoil and modular AGU fielded to theater since FY11. KPPs: up to 25K ft MSL deployments, 150m (T)/50m (O) accuracy.</p>	
LCADS Hi-V	PM FSS	<p>LCADS CDD MC C approved in Jun 05 System is in sustainment production through DLA</p>	<p>The High Velocity Low Cost Aerial Delivery System is a onetime use system for CDS (500-2,200 lbs) with a 70-90 ft/sec impact velocity (only used for small range of resupply). Was used extensively in OEF as a 26 ft Ring Slot system replacement (less than half the cost, pre-packed and disposable). Altitudes of 3,000 ft AGL to 25K ft MSL. Generally limited to CL I and II supplies due to harsh impact conditions.</p>	

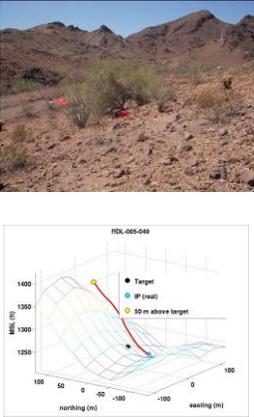
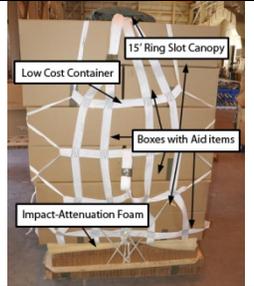
<p>LCADS Low-V</p>	<p>PM FSS</p>	<p>LCADS CDD MC C approved in Dec 06 System is in sustainment production through DLA. Ongoing product improvement for smaller, lighter Low-V parachute</p>	<p>The Low Velocity Low Cost Aerial Delivery System is a one-time use, pre-packed, expendable system for CDS (500-2,200 lbs) with under 30 ft/sec impact velocity. Certified on C-130, C-17, C-23 and V-22 aircraft. Was used extensively in OEF with more than 6000 drops per month in 2011.</p>	
<p>LCLA: Single Cross Double Cross Triple Cross T10 Double T-10 T-10R Double T-10R</p>	<p>PM FSS</p>	<p>LCADS CDD MC C approved Sep 08 System is in sustainment production through DLA</p>	<p>These three Low Cost Low Altitude (LCLA) are fielded systems for 80-1000 lbs. These are pre-packed and expendable They use either out of service T-10s/T-10Rs or Cross Parachutes and are deployed of 150-300 ft AGL with non-breakaway static lines. LCLA was another big player in OEF with systems deployed primarily from CASA, C-23 and M28 aircraft. USAF qualified LCLA with C-130s and was used extensively in OEF.</p>	
<p>JPADS 10K</p>	<p>PM FSS</p>	<p>JPADS CDD MS B Approved Aug 07 MS C approved Aug 12. FMR approved Dec 12. Full rate production and Total Package Fielding ongoing</p>	<p>JPADS 10K (5-10K lbs) fully rigged weight system that entered Developmental testing in FY08. The system is gravity dropped (expendable, 463L or Type V platform) from normal rail system on C-130 or via C-17 logistics rails. KPPs: Up to 25K ft MSL deployments, 250m (T)/50m (O) accuracy.</p>	
<p>Wireless Gate Release System</p>	<p>NSRDEC and USAF</p>	<p>Transitioned from NSRDEC to USAF ~2011. USAF leading effort and awaiting funding for fielding.</p>	<p>The WGRS is a wireless device that is utilized by a loadmaster and/or weapons officer to control the time separation between CDS drops as they exit the aircraft. WGRS was an NSRDEC-managed project until its transition to USAF operational use. The WGRS can be used with any CDS payload or in other restraint/release capacities such as with the Helicopter Sling Load-Rapid Aerial Delivery project. The DoD acquisition and fielding plan for the WGRS has not yet been determined. NSRDEC believes that the WGRS and 2K ICDS + optimization SW in CAT could allow for much tighter coupling of numerous HV or LV CDS drops from high altitudes to include the HALO</p>	

			<i>versions. CAT can also wirelessly link to the WGRS Master Control Station to operate from the cockpit.</i>	
Consolidated Airdrop Tool (CAT)	USAF HBM/AFLCMC NSRDEC	USAF program of record. Version 3.0.3 fielded	CAT is a consolidated software suite consisting of an upgraded JPADS-MP and CAPS PFPS. CAT is used to plan and execute all high altitude (above 900 m AGL) airdrop missions. Version 3.0.3 added improved weather calculations as well as ballistic updates to improve airdrop accuracy. Version 3.2 will significantly simplify the user interface, as well as add the ability to calculate Airdrop Damage Estimates (ADE) for guided and unguided parachute systems.	
Block 4.0 JPADS Mission Planner Mission Support Equipment (JPADS-MP MSE) Last updated Feb12	USAF ESC/HBMJ (Aerospace Mission Planning)	Undergoing Developmental and Operational Testing of new US Air Force JPADS-MP MSE. Planned fielding is Oct 2010 through Aug 2011.	Block 4.0 JPADS-MP MSE kits have redesigned Line Replaceable Units that meet MIL-STD 810 and 704F requirements, a reduction of interface components, revised post-installation test tools, and ruggedized cables and wiring which reduces repair requirements and increases the system lifecycle. The kits are provided in 2 installation configurations; C-17A and C-130 aircraft. The C-130 kit is interoperable among E, H, and J-model aircraft. Block 4 JPADS-MP MSE can be obtained through Foreign Military Sales Country Case by contacting Tina Keefe, 1-781-266-9644, at the USAF Electronics Systems Center's Foreign Military Sales Office.	
Future capabilities being shelved, no requirements				
5-10K HALO ICDS Includes: 10K LCADS HALO, 7.5K LCADS HALO, 5K LCADS HALO, and G-11 HALO	NSRDEC with JIEDDO and USAF AMC	No formal requirement exists at this time. These systems have been approved for use in theater with C-130E/H aircraft. No formal	5-10K ICDS is a family of systems capable of dropping 5,000-10,000lbs. Each system is gravity dropped from an aircraft at altitudes up to 24,500 ft MSL. The system drogue fall under a 28ft Ring Slot and utilize a Wireless Activation Device (WAD) for a transfer from the	

		<i>requirement exists so capability is currently shelved.</i>	<i>drogue parachute to the main parachute. This transfer allows for a rapid descent of the cargo from high altitude with a low speed landing to protect the cargo upon impact with the ground. The system utilizes the Joint Precision Airdrop System Mission Planner (JPADS-MP) to determine the Computed Aerial Release Point (CARP) which allows the system to land within 400 meters (CEP) of the intended target.</i>	
2K HALO <i>Includes: G-12 HALO System, 2K LCADS HALO and 0.5K HALO</i>	NSRDEC with US AFRL and TRANSCOM	<i>No formal requirement exists at this time. Testing with AFRL and TRANSCOM will continue into FY15. Also developing a 0.5K HALO System which includes a cone drogue to a used T-10 or T-10R recovery parachute.</i>	<i>This system is a scaled version of the 5-10K ICDS System (listed above) for 501-2,150 lb CDS payloads delivered via HALO. All components are in the inventory except the iWAD which is a wireless time/trigger device which is COTS. Tests are continuing through FY15 to gather data and refine CARP computations to improve system accuracy and integrate into CAT.</i>	
30K Army Technology Objective (ATO) <i>15-42K lbs guided parafoil</i>	NSRDEC	<i>No requirement Last planned test was PATCAD 09 Technology being shelved Proposed for CSA 2025 Challenge Feb 14</i>	<i>A 15-42K system developed under an NSRDEC lead Army Technology Objective (ATO). The system demonstrated a scalable parafoil design for 15-42K extracted payloads that can be dropped from 25K ft MSL, have a glide ratio of over 3:1 and an anticipated accuracy of less than 300m (demonstrated numerous times).</i>	
BPADS (Ballistic Precision Aerial Delivery System) <i>15-42K lbs HALO ICDS</i>	NSRDEC	<i>No requirement Last planned test is scheduled for Feb 10 Technology will be shelved Proposed for CSA 2025 Challenge Feb 14</i>	<i>BPADS is a 15-42K lb HALO system which “converts” a standard LVADS system to a high altitude HALO system. The BPADS utilizes the maximum amount of standard cargo airdrop components possible (G-11s, Platform and most LVADS equipment) to “convert” an LVADS (generally dropped from 700-1,200 ft AGL) to a HALO capability (up to 25K ft MSL). The system is a complimentary capability to the 30K ATO at a much lower cost, but with less accuracy (expected under 400m CEP from 18K ft MSL) and provides no horizontal offset.</i>	

<p>JMDSE JCTD (1) JPADS Ultra Light Weight (ULW) System</p>	<p>USMC is lead for POR. NSRDEC is lead for Joint Medical Distance Support and Evacuation (JMDSE) Joint Capability Technology Demonstration (JCTD)</p>	<p>JPADS CDD Objective requirement</p> <p>USMC lead for POR Source Selection completed and contract awarded in Mar 11 to Argon. Cancelled in 3QFY12. Focus is on using 2K MAGU with updated SW for ULW parachutes (MC-4/5 etc). Weight (ULW) System</p>	<p>The JMDSE JCTD ULW System is a guided airdrop system capable of dropping 250-500lbs of usable payload weight. The USMC ULW JPADS RFP was released and a contract awarded to Argon in Mar 11. JMDSE supported the USMC POR through maturation of ULW JPADS and integration into additional aircraft (MV-22, CH-47, etc). Accuracies: 150m (T)/50m (O). Parafoils are GFE'ed (out-of-service Military Free Fall [MFF] chutes. JMDSE added a "waterproof" option to AGUs. JCTD residuals (20+ systems) made available in late FY11 and early FY12. MFF jumpers interest in "following" ULW systems and desire more SA during missions than currently planned. USMC now fielding 2K MAGU with MC-5. USASOC interested in fielding capability with MC-4. Possible RA-1 integration in the future.</p>	
<p>JMDSE JCTD (2) JPADS Micro Light Weight (MLW) 10-150 lbs</p>	<p>NSRDEC Part of Joint Medical Distance Support and Evacuation (JMDSE) Joint Capability Technology Demonstration (JCTD)</p>	<p>No formal requirement exists. 20 systems fielded as JCTD residuals to selected users in Jun 11.</p>	<p>The JPADS MLW is a 10-170 lb JPADS self-guided parafoil system. Two prototype versions were competed during the JMDSE JCTD. The MLW system was tested for delivery of medical supplies/equipment and potentially delivery of UGS and/or robots. Accuracies: 50m (T)/10m (O).</p> <p>S&T to demonstrate: System-to-systems communication, SATCOM link, passing of wind estimates from lower to higher altitude systems and GN&C enhancements are being worked concurrently with these systems</p>	
<p>JMDSE JCTD (3) Fixed Wing UAS System</p>	<p>NSRDEC/OSD-JCTD/NAVAIR</p>	<p>No requirement currently exists.</p>	<p>The provider is an 8in tube (Pod) JPADS system for 10-150 lb payloads that contains the same avionics and parachutes as the Mosquito MLW system. The Tigershark UAS is a NAVAIR/OSD asset provided for testing this capability. The "Provider" was part of the JMDSE JCTD and was dropped at a CAPR via the Tigershark UAS ground control operator.</p>	

			<i>The provider deploys a drogue parachute and after a set time, deploys a parafoil for autonomous guidance to a pre-planned ground impact point.</i>	
<i>New Concepts</i>				
<i>Rotary Wing (VTOL) UAS Airdrops</i>	<i>NSRDEC with USSOCOM for early demos. NSRDEC interest for high weight UAS</i>	<i>No requirement Working with DoD Cargo UAS WG on CONOPs that includes airdrop from VTOL UASs Demonstrated during AEWE Spiral G at Ft. Benning with LCLA and ULW JPADS</i>	<i>The KMAX (and other VTOL UASs) have been used to demonstrate the ability to drop airdrop systems (MLW & ULW JPADS, HALO CDS and standard G-12 CDS) from various altitudes/speeds as a proof of concept test/demonstration (3 weeks in total). Interest continues to grow in this area but no formal requirements exist to date. The KMAX was in Afghanistan with USMC for cargo resupply via airland UAS missions.</i>	
<i>Low and Fast Airdrop 250ftAGL-250KIAS FY11 High Speed Container Delivery System (HSCDS) Joint Capability technology demonstration (JCTD)</i>	<i>NSRDEC USTRANSCOM USAF AMC USA PM-FSS USA CASCOM USSOCOM</i>	<i>JCTD Started 18 Jun 11. Extracted High and Low Speed Container Delivery System (EHLSCDS) CDD approved and the Program of Record effort began in FY15.</i>	<i>HSCDS was an FY11 new start Joint Capability Technology Demonstration (JCTD) project with NSRDEC as technical manager. The program started in late June 11 and focused on extracted CDS from C-130J and C-17s with an objective of extracting up to 8 CDS (16K lbs) from 250ft AGL and 250KIAS with a landing accuracy of the targeted bundle of 50M CEP OD1 (threshold capability) took place in Jul12 with a rapid fielding in Mar 13. OD2 and 3 (C-17 and C-130J-30 respectively) were completed in 3+4QFY13 respectively. Residuals were rapidly fielded to the AOR in Mar 14. First drop in theater occurred in Mar 14.</i>	

<p>Precision Airdrop Improvements for JPADS family of systems</p>	<p>NSRDEC, PM FSS, PM-SOF, USMC, USTRANSCOM</p>	<p>P3I for JPADS PORs</p>	<p>Advanced government-owned Guidance Navigation and Control (GN&C) HW and SW is being developed for next generation JPADS that include:</p> <ul style="list-style-type: none"> - Navigation in GPS-denied environments via vision based and vision augmented algorithms - Improved control authority and performance using strategically placed Bleed Air Actuators in the parafoil to modulate airflow over the canopy - GN&C SW that dynamically tunes control gains in reaction to system faults (i.e., broken control line, etc.) - Sensors to capture environmental data (ground based LIDAR wind sensor, etc.) - Passive and active de-confliction algorithms - SW improvements enabling 'into the wind' landings 	
<p>HOPE (Humanitarian Operations Packaged Essentials)</p>	<p>NSRDEC, USTRANSCOM, USAF (AMC, AFRL), others</p>	<p>No formal requirements exist.</p>	<p>CDS sized HALO system capable of dropping food and/or water in "small" packages from 800ftAGL up to 35Kft MSL "directly" onto populations in need with min/zero chance of injury to recipients. Test report finalized 31 July 2015.</p>	
<p>HOPEFUL (Humanitarian Operations Packaged Essentials from Underslung Load)</p>	<p>NSRDEC, USTRANSCOM, OSD</p>	<p>No formal requirements exists. OSD distributing information and attempting to identify a COCOM sponsor for JCTD.</p>	<p>Helicopter underslung cargo net containing food and/or water in "small" packages from ground level up to 13Kft MSL "directly" onto populations in need with min chance of injury to recipients. Flight test completed in June 2015. Test report finalized 31 July 2015.</p>	

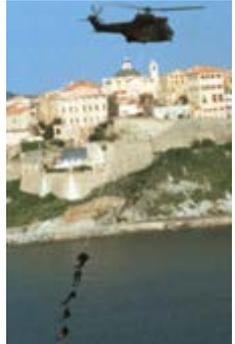
<p>Low Cost Ground Release (LCGR)</p>	<p>NSRDEC</p>	<p><i>Rapidly fielded 1,000 to AOR 1QFY13. May be included in SADE (Sustainment Aerial Delivery Equipment) CDD.</i></p>	<p><i>The Low Cost Ground Release (LCGR) is a developmental parachute disconnect device (Government design) to prevent dragging of cargo payloads and increase the safety and efficiency of Ground Forces during recovery operations at an economical cost. The device may be utilized with cargo payloads between 200 lbs. and 5,000 lbs. and is practical and economical for one time use.</i></p>	
<p>Enhanced Speed Bag System (ESBS)</p>	<p>NSRDEC</p>	<p><i>Development; Rapid Equipment Fielding Requirement established, 200 systems in operational use supported by the Rapid Equipping Force. (REF) Demonstrated at AEWE Spiral I Jan 14. May be included in SADE (Sustainment Aerial Delivery Equipment) CDD.</i></p>	<p><i>The ESBS is a hands-free operated automatic rope brake assembly that controls the rate of descent and orientation of a cargo package comprised of three primary components: linear brake, speed line, and multipurpose cargo bag with loose fill padding and energy dissipation materials. The ESBS has a fleet wide UH-60 Airworthiness Release (AWR) and pending CH-47 AWR upon completion of CH-47 testing. Through REF assessments, ESBS has been identified as a combat multiplier reducing the burden of Soldiers.</i></p>	
<p>Helicopter Sling Load Systems/programs</p>				
<p>HSL Sling Set</p>	<p>ILSC</p>	<p><i>Fielded; USMC transitioning to 25,000 pounds capacity slings set due to requirements of MV-22</i></p>	<p><i>There are four HSL sling sets available for use by the US Department of Defense agencies. The US Army uses 10,000 pound capacity and 25,000 pound capacity sling sets. The US Marine Corp use 15,000 pound and 40,000 pound capacity sling sets. The V-22 is restricted to only use the US Army 25,000 pound capacity sling set. Each of the sling sets is a composite construction of rope or webbing and steel chain. The rope/webbing portion allows for load equalization between the leg, vibration dampening, and electrical isolation between the load and airframe. The chain portion allows for sling leg length adjustment.</i></p>	

<p>HSL Cargo Nets</p>	<p>ILSC</p>	<p>Fielded</p>	<p><i>There are two sizes of HSL cargo nets available for use by the US Department of Defense agencies; a 5,000 pound capacity and a 10,000 pound capacity. Each net is constructed from interwoven nylon cord. Four lifting legs with apex hooks are incorporated into the woven design. A square-shaped loading zone is marked by a yellow cord interlaced with the net mesh. Once loaded, the four hooks are connected to an apex fitting to enclose the cargo.</i></p>	
<p>HSL Low Cost Cargo Nets</p>	<p>NSRDEC</p>	<p><i>Development completed. Small rapid fielding with CUBE. AWR issued safe for flight. Limited quantity available for use.</i></p>	<p><i>Low cost cargo nets are polyester webbing analogous to the standard HSL Cargo Nets. Lifting legs converge to medium airdrop clevis. Cost savings in the materials requires these items be "expendable." The Low Cost 10K HSL Cargo Net is not meant as a replacement to the reusable nets but serves as an augmented capability in scenarios where retrograde of the net is unlikely.</i></p>	
<p>HB2000 Heli-Basket</p>	<p>NG Bureau</p>	<p>Fielded to NG units only</p>	<p><i>The Heli-Basket is a steel cage suspended by a 120 foot long plastic sheath nylon rope. It is designed to carry up to 4,500 of cargo and/or personnel. It is currently only certified for use carrying cargo.</i></p>	

<p>HSL Auto Hookup Device</p>	<p>NSRDEC</p>	<p><i>Two contracts have been awarded with large scale prototypes delivered for testing. Additionally a CRADA has been established and executed with one company for additional testing of COTS products in this area. Sustainment Aerial Delivery Equipment Capability Development Document in world-wide staffing.</i></p>	<p><i>This device will reduce or eliminate the ground personnel required to conduct a cargo hookup beneath a helicopter. The first phase of this project designed and constructed small scale prototypes capable of lifting about 1,500 kg. In CY15, the prototypes were enlarged to handle up to 11,340 kg. Flight testing is scheduled to begin in late CY15.</i></p>	
<p>HSL Rapid Air Delivery Equipment (RADE)</p>	<p>NSRDEC TRANSCOM</p>	<p><i>No formal requirement. May be included in SADE (Sustainment Aerial Delivery Equipment) a new USA CASCOM CDD. Project was funded by USTRANSCOM through summer of CY13. Testing has demonstrated small payloads up to 500lb. each. Should funding become available, large payload testing would be conducted.</i></p>	<p><i>This device allows for the airdrop of multiple payloads from beneath a helicopter. Airdrop payloads are rigged to this system and remotely dropped from altitude on command, deploying their parachutes. The system can handle up to 32 LCLA or small guided bundles (up to 7,258 kg) or, with a future modification, up to 8 CDS bundles (up to 8,500 kg).</i></p>	

Helicopter External Load Systems/programs

<p>K-DUCK Zodiac Harness</p>	<p>NSRDEC</p>	<p>Fielded</p>	<p><i>The K-DUCK Harness is used to carry the Zodiac inflatable boat strapped to the underside of the MH-60 "Night Hawk" Helicopters. The upper section of the harness is designed to interface with the aircraft installed FRIES system and after obtaining a</i></p>	
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			<i>hover height of 1-2 feet above the water, a single cut of the overhead strap will release the Zodiac.</i>	
Fast Rope	ILSC	Fielded	Fast Rope is a large diameter rope use to insert troops into areas where a helicopter cannot land. The system includes specialized anchor points to be installed in the helicopter. Multiple ropes can be suspended from one helicopter.	
SPIES	SOCOM/USASOC/ JSOC	Fielded	SPIES is a large diameter rope system designed to interface with the standard helicopter hook. Several D-rings are installed along the rope to allow riders to hook into. The system is used to deliver and retrieve troops from locations where the helicopter cannot land.	
AirTEP	SOCOM/USASOC/ JSOC	Evaluation for use	AirTEP is a platform and rope system designed to interface with the standard helicopter hook. The platform opens to a flat surface capable of carrying 3600 pounds (up to 10 people). The system is intended to retrieve personnel from locations where the helicopter cannot land.	

Personnel Airdrop Systems/programs

<p>Parachutist Navigation System (PARANAVSYS)</p>	<p>PM-SCIE</p>	<p>USASOC Capability Production Document (CPD) approved Nov 12. MS-C decision expected in 2QFY16</p>	<p>PARANAVSYS is a reliable easy to use navigation system designed for Military Free Fall (MFF) and high altitude standoff operations. PARANAVSYS will allow for enhanced mission planning and improved MFF parachutist infiltration capabilities. PARANAVSYS uses integrated mission planning, jumpmaster and jumper software to increase the effectiveness of standoff operations, reduce exposure of aircraft and crew to enemy fire, and increase the ability to infiltrate units to the battlefield. The system will increase situational awareness by providing the parachutist mission critical navigation information throughout High Altitude High Opening/High Altitude Low Opening missions such as distance, direction and ability to reach primary and alternative drop zone (s), regardless of environmental conditions.</p>	
<p>T-11</p>	<p>PM-SCIE</p>	<p>MS C approved Jun 09. Currently in full rate production and being fielded to the Army units replacing the T-10 parachute system</p>	<p>The T-11 Advanced Tactical Parachute System consists of a Main Canopy, a Reserve Canopy and a Harness with a total system weight of 52 lbs. :</p> <ul style="list-style-type: none"> ▪ Main Canopy: T-11 <ul style="list-style-type: none"> - Rate of Descent (ROD) 19 fps at 7,500 MSL with Total Jumper Weight of 400 lbs - Lower Opening Shock than T-10, less than 10 G's - Minimal Oscillation due to canopy design - Improved Maintenance Concepts & Procedures - Modified Cross Parachute <ul style="list-style-type: none"> ▪ Drogue parachute 	

			<ul style="list-style-type: none"> ▪ Deployment Sleeve ▪ Slider ▪ Reserve Canopy: T-11R <ul style="list-style-type: none"> - Improved structural strength and enhanced deployment techniques - Low opening shock – less than 15 g’s during total malfunction - Deployed using either hand - ROD ~26 FPS with low oscillation - Significant safety and reliability improvement over MIRPS - Supports a TJW of 400 lbs ▪ Harness: T-11 <ul style="list-style-type: none"> - Reserve opening loads exerted along long axis of the body - Fully adjustable over the 5th to 95th percentile female/male range - Improved static line control - Improved fit/comfort 	
MC-6	PM-SCIE	MS C approved Sep 05. Fielding to the Army completed; system in sustainment	<p>The MC-6 parachute system consists of a Main Canopy, a Reserve Canopy and a Harness with a total system weight of 41 lbs</p> <ul style="list-style-type: none"> ▪ Main Canopy: SF-10A <ul style="list-style-type: none"> - Less than 18 fps ROD at 8,000 MSL - Improved turn-and-glide capability over MC1 - Low Opening Shock - Improved Maintenance Concepts & Procedures ▪ Reserve Canopy: T-11R <ul style="list-style-type: none"> - Improved structural strength and enhanced deployment techniques - Deployed using either hand - Significant safety and reliability improvement over MIRPS - Low opening shock – less than 15 g’s during total malfunction - Supports a TJW of 400 lbs 	

			<ul style="list-style-type: none"> - ROD ~26 FPS with low oscillation ▪ Harness: T-11 <ul style="list-style-type: none"> - Reserve opening loads exerted along long axis of the body - Fully adjustable over the 5th to 95th percentile female/male range - Improved static line control - Improved fit/comfort 	
<p>RA-1 Advanced Ram Air Parachute System (ARAPS)</p>	<p>PM-SCIE</p>	<p>MSC Approved Jan 14. Currently in full rate production and fielding replacing the MC-4.</p>	<p>The RA-1 is a high performance ram air parachute system used to infiltrate small teams into denied areas using both HALO and HAHO techniques. The RA-1 will replace the currently used MC-4 parachute system</p> <p>The RA-1 will:</p> <ul style="list-style-type: none"> ▪ Provide enhanced canopy performance to allow for increased standoff and wind penetration ▪ Allow for both MFF over the shoulder ripcord and double back static line methods of deployment ▪ Reduce opening shock at exit altitude ▪ Enable the MFF parachutist to carry increased combat loads and operate at higher altitudes ▪ Increase jumper comfort during HAHO operations 	

Acronyms:

ACTD: Advanced Concept Technology Demonstration
AFSOC: Air Force Special Operations Command
AGU: Airborne Guidance Unit
AOR: Area of Responsibility
ARAPS: Advanced Ram Air Parachute System
ATO: Army Technology Objective
AWR: Airworthiness Release
CARP: Computed Aerial Release Point
US Army CASCOM: Combined Support Command
CDD: Capability Development Document
CDS: Container Delivery System
CEP: Circular Error Probable
COTS: Commercial off the Shelf
CONOPS:
CRADA: Cooperative Research and Development Agreement
DT: Developmental Testing
DV: Design Validation
DZ: Drop Zone
FMR: Full Materiel Release
FPS: Feet per Second
FRW: Fully Rigged Weight
FUE: First Unit Equipped
FY: Fiscal year
ICDS: Improved Container Delivery System
GN&C: Guidance Navigation and Control
HAHO: High Altitude High Opening
HALO: High Altitude Low Opening
HOPE: Humanitarian Operations Packaged Essentials
HOPEFUL: Humanitarian Operations Packaged Essentials
from Underslung Load
HSCDS: High Speed Container Delivery System
HSL: Helicopter Sling Load
HVCDS: High Velocity Container Delivery System
HV-LCADS: High Velocity Low Cost Aerial Delivery System
HV: High Velocity

HW: Hardware
ICD: Initial Capability Document
ICDS: Improved Container Delivery System
ILSC: Integrated Logistics Support Command
JCTD: Joint Capability Technology Demonstration
JIEDDO: Joint Improvised Explosive Device Defeat
Organization
JMDSE: Joint Medical Distributed Support Evacuation
JMPS: Joint Mission Planning System
JPADS: Joint Precision AirDrop System
KPP: Key Performance Parameters
LAR: Launch Acceptability Region
LCADS: Low Cost Aerial Delivery System
LCLA: Low Cost Low Altitude
LV: Low Velocity
MFF: Military Free Fall
MIRPS: Modified Improved Reserve Parachute System
MLW: Micro-Light Weight
MP: Mission Planner
MS-C: Mile Stone C (approval to go into full production)
MSL: Mean Sea Level
NSRDEC: Natick Soldier Research Development and
Engineering Center
OEF: Operation Enduring Freedom
ONS: Operational Need Statement
OT: Operational Testing
PARANAVSYS: Parachutist Navigation System
PATCAD: Precision Airdrop Technology Conference and
Demonstration
PFPS-CAPS: Portable Flight Planning System Combat Airdrop
Planning Software
P3I: Pre Planned Product Improvement
PI: Point of Impact
PM-SCIE: Product Manager Soldier Clothing Individual
Equipment
PM-FSS: Product manager Force Sustainment Systems

POM: Parachutist Oxygen Mask
POR: Program of Record
RCF: Rapid Combat Fielding
ROD: Rate of Descent
SA: Situational Awareness
SADE: Sustainment Aerial Delivery Equipment
SATCOM: Satellite Communication
SW: Software
TACOM: Tank and Automotive Command

TJW: Total Jumper Weight
UAS: Unmanned Aerial System
UGS: Unmanned Ground Systems
ULW: Ultra Light Weight
UMR: Urgent Materiel Release
USASOC: US Army Special Operations Command
USTRANSCOM: US Transportation Command
WGRS: Wireless Gate Release System

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