

RAPID DRAGON

RAPID DRAGON DELIVERS PALLETIZED EFFECTS FROM CARGO AIRCRAFT

WHAT IS RAPID DRAGON?

Rapid Dragon is the Air Force Strategic Development Planning & Experimentation (SDPE) office's Palletized Effects campaign that explores the feasibility and operational advantages of airdropping palletized effects from existing airlift aircraft (C-130 and C-17) without requiring modifications to the aircraft.

The experimentation campaign brings together over 30 stakeholders, including Air Force Major Commands, the Test and Evaluation Enterprise, Program Offices, Mission Planners, other Services, Foreign Partners & Allies, and Industry to develop and demonstrate the capability through modeling, simulation, analysis, demonstration, and flight tests. The program was established in Dec. 2019, and achieved its first powered flight/live fire of a palletized cruise missile in Dec. 2021 (Eglin AFB). Rapid Dragon has employed palletized cruise missiles on three separate continents (including the EUCOM and INDOPACOM Theaters).

HOW CAN THE AIR FORCE UTILIZE PALLETIZED EFFECTS?

Rapidly deployable Palletized Effects can saturate the airspace with multiple kinetic and non-kinetic effects, complicate adversary targeting solutions, and help open access for other frontline assets.

Palletized Effects has the potential to assist in multiple scenarios on the spectrum of conflict ranging from humanitarian relief to kinetic effects.



Palletized Effects airdrop. The photos show a cruise missile simulant in the Deployment Box immediately after being airdropped from a C-17A (left) and an MC-130 (right). (Courtesy photo)

WHY PALLETIZED EFFECTS FOR THE AIR FORCE?

- **Tactically:** provides overwhelming mass of both kinetic and non-kinetic effects
- **Operationally:** optimizes fleet utilization, allowing more precise mission employment of theater assets
- **Strategically:** integrates capability of Foreign Partners & Allies (and other US Services) and serves as a strong means of deterrence



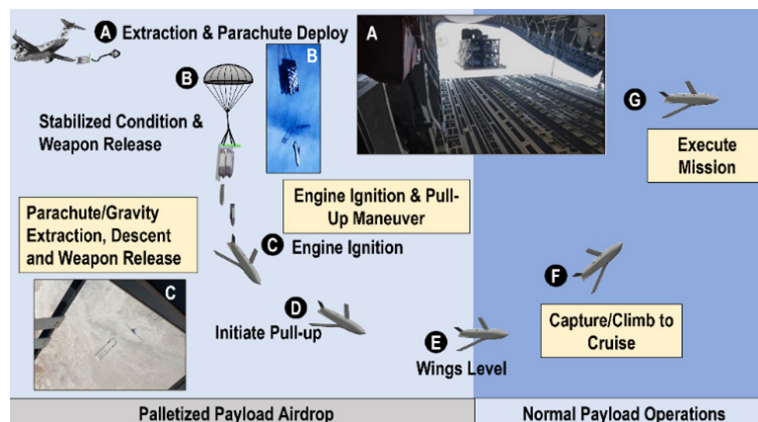
A standard cargo airdrop of the Palletized Effects Deployment System from a C-17A. A 4-pack configuration is used for demonstration purposes. (Courtesy photo)



HOW CAN THE AIR FORCE UTILIZE PALLETIZED EFFECTS?

Palletized Effects are traditional payloads employed unconventionally via airdrop, utilizing a specially designed deployment box loaded on a standard aerial cargo delivery platform. The complete system is roll-on/roll-off, enabling rapid fielding and eliminating the need for aircraft modifications.

Once deployed using standard air drop procedures, and stabilized under the parachute, the payload vehicles are sequentially released. The employment during free fall will depend on the type of effects being delivered. For payloads with a propulsion system, the vehicles ignite, self adjust to wings level, and proceed on their mission planned route. The graphic below illustrates the complete operation.



Representation of Palletized Effects. Rapid Dragon Experimentation focuses the palletized air vehicle airdrop portion. Photos are from the Jettison Test (July 2021), Separation Test (November 2021), and Powered Flight (live fire) Test (December 2021). (Courtesy photos)

WHAT IS THE AF DOING TO FURTHER PALLETIZED EFFECTS?

Through the Rapid Dragon Program, SDPE and its partners (Air Force Futures, Air Mobility Command, Air Force Special Operations Command, and industry) demonstrated powered-flight (live fire) in 24 months using a multi-phased approach.

Current efforts are working to integrate mixed payloads in addition to maximizing C-17 and C-130 loadouts in order to provide increased flexibility to combatant commands.

Rapid Dragon recently executed an overseas Operational Event with U.S. Special Operations Command Europe. Tactics development and training continue as the Air Force operationalizes this capability. Rapid Dragon is also expanding its Palletized Effects with Foreign Partners & Allies, which includes kinetic and non-kinetic effects; intelligence, surveillance, and reconnaissance (ISR) platforms; contested logistics / cargo resupply; etc.



Rapid Dragon Operational Prototype, which was integrated on a USMC KC-130; this was the first time Rapid Dragon was integrated and demonstrated outside the USAF. The photo shows a heterogeneous loadout flight test conducted in a SDPE / USMC partnership. Photo is from a flight demonstration (April 2023). (Courtesy photos)

ABOUT AFRL

The Air Force Research Laboratory (AFRL) is the primary scientific research and development center for the Department of the Air Force. AFRL plays an integral role in leading the discovery, development, and integration of affordable warfighting technologies for our air, space, and cyberspace force. With a workforce of more than 11,500 across nine technology areas and 40 other operations across the globe, AFRL provides a diverse portfolio of science and technology ranging from fundamental to advanced research and technology development. For more information, visit: www.afresearchlab.com.