

**2025 SAE Aero Design**

**Advanced Class**

**Mission Segment**

**Geographic Boundaries**

**Ryan Reynolds**  
**Rules Committee**  
**2024-12-13**

# Mission Segment Definition (2025.0 Section 8.4)

**Conventional Takeoff** is defined as transitioning from zero velocity on the runway to stable, horizontal flight consistent with Section 3.8.

**Payload Release** is defined as retaining onboard payload from conventional takeoff until intentional payload separation from the vehicle while the vehicle is airborne OR in motion.

**Payload Delivery** is defined as retaining onboard payload from conventional takeoff until intentional payload separation while the vehicle is stopped and resting on the DLZ.

**Payload Capture** is defined as picking up and retaining a previously Released or Delivered payload, as well as the aircraft and payload successfully returning to horizontal flight.

**Return To Base** is defined as a conventional landing back on the runway according to Section 3.9. Payload will only be weighed for this segment if Capture segment was successfully completed.

# Conventional Takeoff Geographic Boundary

## Legend

- On ground within Segment
- In Air within Segment
- In Air outside Segment



## Conventional Takeoff Mission Segment

START Aircraft at rest on runway at 0 ft line

END Aircraft crosses 400 ft red line while airborne and flying horizontally

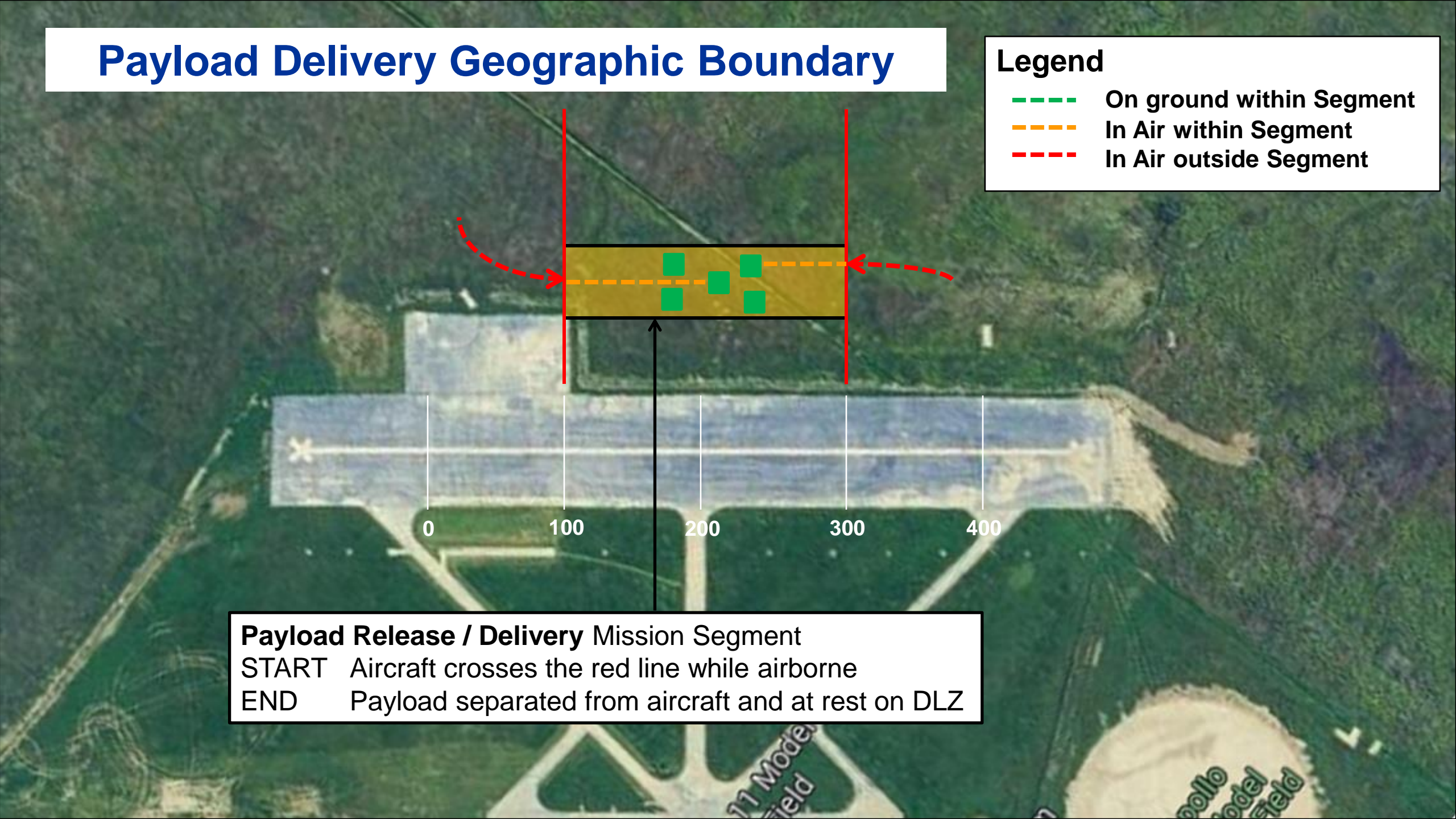


# Payload Delivery Geographic Boundary

## Legend

- On ground within Segment
- In Air within Segment
- In Air outside Segment

**Payload Release / Delivery Mission Segment**  
START Aircraft crosses the red line while airborne  
END Payload separated from aircraft and at rest on DLZ





# Payload Capture Geographic Boundary

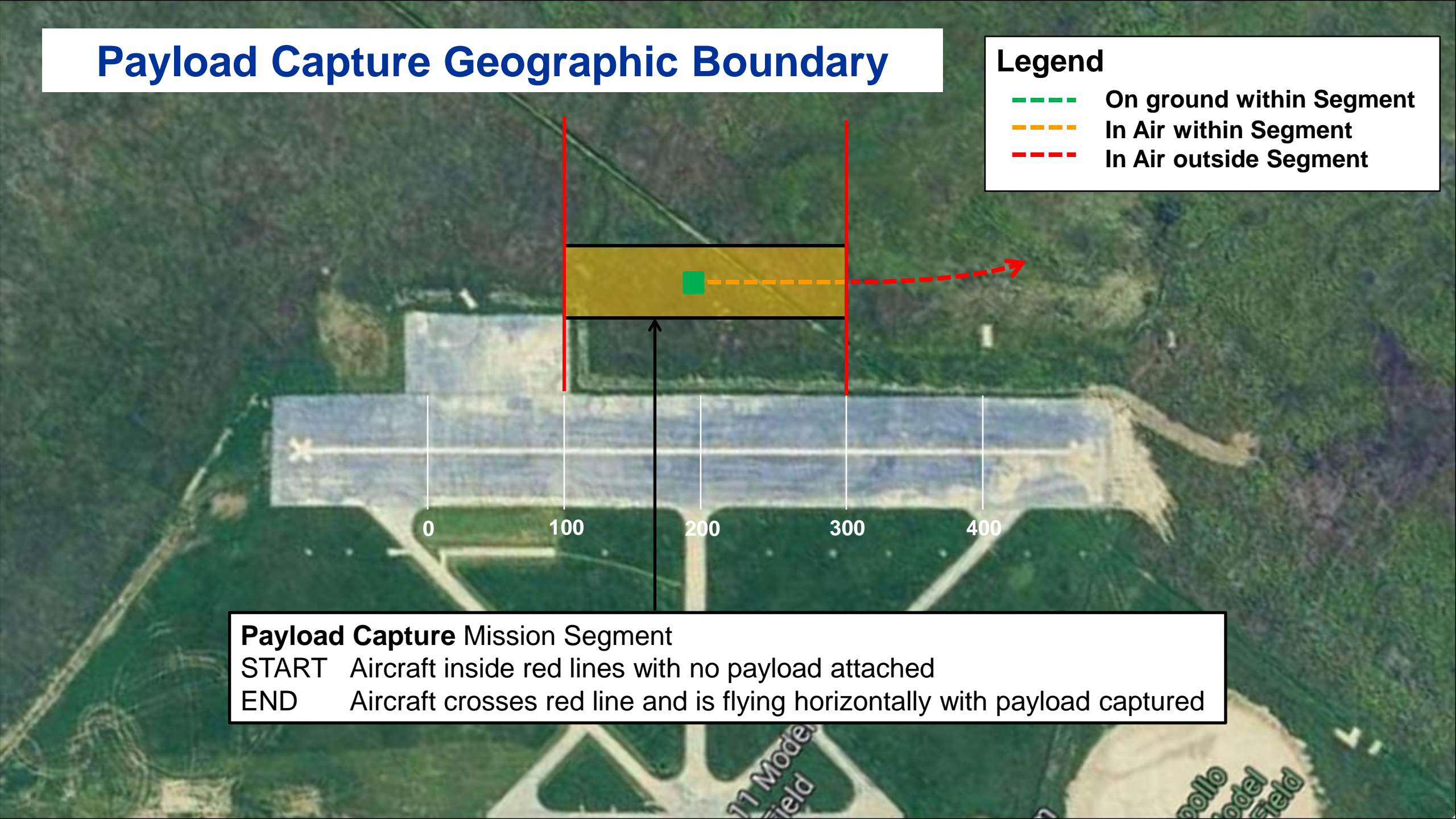
## Legend

- On ground within Segment
- In Air within Segment
- In Air outside Segment

## Payload Capture Mission Segment

START Aircraft inside red lines with no payload attached

END Aircraft crosses red line and is flying horizontally with payload captured

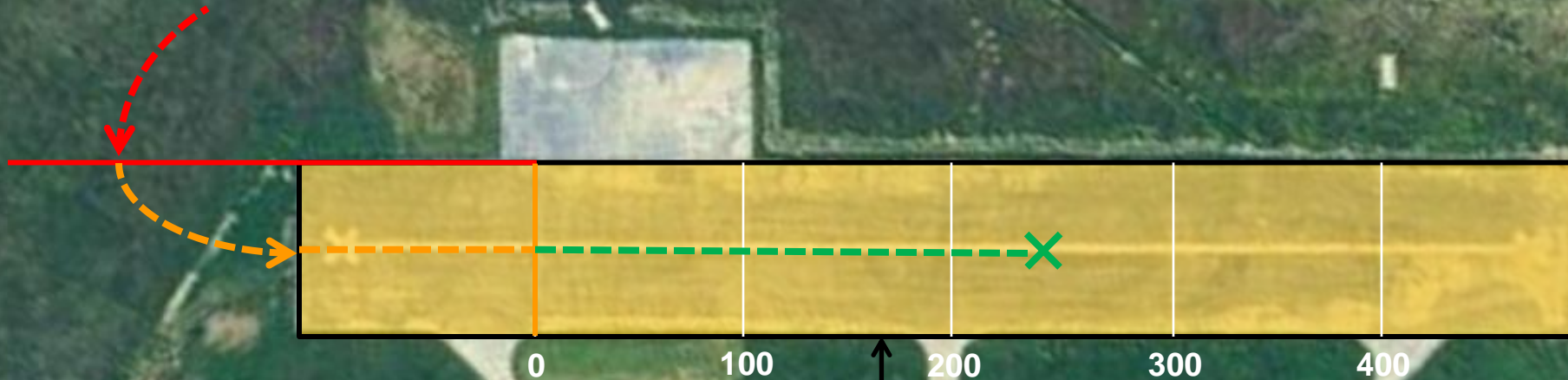




# Return to Base Geographic Boundary

## Legend

- On ground within Segment
- In Air within Segment
- In Air outside Segment



## Return to Base Mission Segment

- START Aircraft crosses red line while airborne and flying horizontally  
Aircraft flies past 0 ft line (orange line) before touchdown
- END Aircraft at rest on the runway beyond 0 ft line