Vertical Flight Society

2026-2027 Design-Build-Vertical Flight Competition

FAQ

Version 1

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Last Updated: 11/09/2026

1. **Can teams use Li-Ion batteries on their aircraft?**

   Yes, Li-Ion batteries will be permitted during this year's competition, so long as such batteries follow the constraints outlined in the RFP. Teams are encouraged to consider and validate the health, current/power draw limitations, and overall performance of their battery selections.

2. **Are there any restrictions involving electrical components in the payload themselves? For example, could we put a small servo and battery in each payload to assist with pickup and dropping?**

   Electrical components are permitted within the payload. DBVF encourages teams considering electronic components to carefully consider their battery placement for such components. Payloads may not, however, utilize electronic components that allow them to reposition or move themselves.

   (updated in RFP v2)

3. **Although the 3lbs of water are not included in the total aircraft weight used for the Payload Fraction Multiplier, if we want to carry more than 3lbs of water, will the additional water weight count against the aircraft weight? For example, if we want to carry 3.25lbs of water, will the extra 0.25lbs of water be included in the aircraft weight itself?**

   Additional weight from the contained water surpassing the 3 lbs minimum will NOT impact your payload fraction, as calculated in "R" of the RFP's scoring section. However, your aircraft weight and total payload weight, including water, must not exceed the stated maximum total weights for the competition.

4. **What color are the circles of waypoints A, B, and C on the competition field?**

   This information will become available closer to the Fly-Off event. Teams should be prepared for any color that is visibly distinguishable from the ground.

5. **May payloads move under their own power, and at what point during Flight Mission 2 (FM-2) is payload scoring determined?**
    a. **If payloads may move under their own power, may they move out of the drop waypoint after being scored (after FM-2 has been completed)?**
    b. **To retain autonomy points, must the payloads operate fully autonomously?**

    Payloads will not be permitted to contain electronic components that allow them to reposition or move themselves. Scoring for payload positioning in FM-2 will be based on final position during judge inspection between FM-2 and FM-3. Please refer to the RFP for additional details.

    (updated in RFP v2)

6. **May parts of the payload remain in Zone D, provided the water is returned during FM-3?**

    Any payloads that break into more than one piece count as a “shatter”, as outlined in the scoring section. This will also count within zone D.

    Regarding FM-3, there are no penalties in the RFP for leaving payloads behind in zone D.

7. **How is landing defined for picking up a payload in FM-3? Does any part of the vehicle touching the ground constitute a landing?**

    The aircraft itself (not the payload) must make contact with the ground during the FM-3 retrieval and drop-off process. This aligns with the spirit of the scenario, which is rescuing and returning people.

    (updated in RFP v2)

8. **Does a payload count as "contained" if only a portion of it is touching the ground inside the circle or on the line of the waypoint, while the rest of the payload is outside the circle? Are the requirements of a "contained" payload for the purposes of moving to FM-3 the same as the requirements for a payload to be scored in FM-2?**

A “contained” payload must make contact with the ground inside or on the edge of the circle for both FM-2 and FM-3, as outlined in the RFP. In a scenario where the payload touches the ground both within and outside of the waypoint, this payload would be contained.

9. **Is the payload permitted to have a sharp bottom surface?**

   No, the payload will not be permitted to puncture the ground, as a sharp bottom surface would.

   (updated in RFP v2)

10. **FM-3 retrieval and ground contact (p. 28). The RFP says "The aircraft must make contact with the ground when retrieving a payload" and "While the aircraft and the payload are in contact with each other, the aircraft is considered to be in contact with the ground." If the aircraft hovers low and lowers a gripper on a tether until the gripper latches onto the payload resting on the ground, does that count as ground contact for the retrieval? Or must the aircraft itself touch down?**

    The aircraft itself (not the payload) must make contact with the ground during the FM-3 retrieval and drop-off process. This aligns with the spirit of the scenario, which is rescuing and returning people. This will be reflected in the second version of the RFP.

    (updated in RFP v2)

11. **Following question 10: FM-3 release in zone L (pp. 28-29). Similarly, may the aircraft lower the payload on its tether until the payload rests on the ground inside L, then release it while hovering? Or must the aircraft itself be landed in L at the moment of release?**

    See question 10. The aircraft itself (not the payload) must make contact with the ground during the FM-3 retrieval and drop-off process. This aligns with the spirit of the scenario, which is rescuing and returning people. This will be reflected in the second version of the RFP.

(updated in RFP v2)

12. **FM-2 lowering mechanism (pp. 27 and 34). Please confirm that a payload lowered on a line until it rests on the ground, then released, with the aircraft holding at or above 30 ft AGL the whole time, counts as "drop the payload from at least 30ft AGL" and does not trigger the BP = 0 rule for release below 30 ft.**

    A drop where the aircraft itself maintains a 30ft AGL altitude while dropping the payload, lowered-line or not, will not count as a drop below 30ft. This aligns with the spirit of the scenario, which is dropping off survival kits in environments with no landing zone available.

13. **Fiducial markers on our own payloads (pp. 19 and 25). May we print fiducial markers, such as ArUco or AprilTag patterns, on our own payload containers so an onboard camera can locate them? We understand that markers may not be placed on the course outside zone S.**

    Payloads may be modified with visual markers, so long as the payloads follow the rules outlined in the RFP.

14. **RTK base station (p. 19). May a GNSS base station stay set up at our team work area, away from the field and flight line, for the whole event? Or must it be removed between flight windows?**

    Teams are permitted to keep their materials within the respective team's work area throughout the Fly-Off. If a GNSS base station is left inside that work area, it is permitted.

    Teams are encouraged to monitor their equipment throughout the event, and DBVF and the Host will not be liable for any materials brought to the Fly-Off. There will be no staff members monitoring the DBVF work tent, especially overnight, so please be aware that leaving behind materials is done so at your own risk.

15. **Remote kill switch (p. 18). The command "must not allow for a re-arming of the propulsion system." Would a flight-controller script that latches an emergency stop until the flight controller is rebooted satisfy this? Or do you expect a hardware cut of propulsion power?**

    Any software, hardware, or electronic mechanisms that accomplish the remote kill switch requirements will be permitted.

16. **Battery chemistry (p. 17). Are commercially available Li-ion packs (for example, 21700-cell packs) permitted, or LiPo only?**

    See question 1. Yes, Li-Ion batteries will be permitted during this year's competition, so long as such batteries follow the constraints outlined in the RFP.

17. **Are there any specific limitations regarding the aircraft's design, such as a mandatory requirement for wings to generate lift? Additionally, are we allowed to participate using a customized standard quadcopter shaped drone?**

    Teams are encouraged to build aircraft that are well-reasoned and intentionally designed for the flight missions and flight mission scenarios. Any aircraft capable of meeting the constraints of the RFP are permitted.

18. **My team is wondering if a drone with a 30ft rope that picks up a payload but never retracts the rope, it just flies at 30ft AGL with an extended rope with the payload at the bottom of it is allowed for the competition?**

    A full, permanently extended rope at 30ft would not be permitted, as it violates the maximum aircraft size requirements of 8ft x 8ft x 8ft. All aircraft components, attachments, and the attached payload must fit within those size constraints at the start of the mission, but may extend beyond that size as the mission progresses.

19. **Since we are allowed to have multiple batteries**
    does this mean that if we make a smart payload that is controllable and

technically has a brain it is considered a separate "UAS" and therefore is not allowed?

Teams are only permitted to compete with one singular flight-capable aircraft. Payloads will not be permitted to contain electronic components that allow them to reposition or move themselves.

(updated in RFP v2)

20. **Is impacting the ground at the exact target location with a relatively sharp object (so as to prevent bouncing out of the target area) is that allowed?**

    See question 9. No, the payload will not be permitted to puncture the ground.

    (updated in RFP v2)

21. **Are different versions of payloads allowed for FM2 vs FM3, since 1 has to be dropped and the others gently picked/dropped?**

    The same payloads will be used for FM-2 and FM-3, which will be performed sequentially within the same attempt.

22. **What will happen at the Fly-Off if there is bad weather?**

    Teams are encouraged to prepare for limited weather events, such as high wind speeds and rain. If weather conditions become poor, DBVF and the Host will reserve the right to shut down the flight field out of concern for safety, and will work to ensure the maximum flight window possible during the Fly-Off.

23. **Will there be any point deductions for late submissions?**

    Yes, there are point deductions associated with every submission deadline outlined in the RFP, including LOI submissions, the Team Fly-Off Participant List, and the Team Fly-Off Participant Confirmation or Withdrawal Deadline, as outlined in the RFP.

(updated in RFP v2)

24. Are RTK (Real-Time Kinematic) GPS module setups allowed?

Neither are currently restricted by the RFP. However, please note the RFP's constraints around setting up materials near the flight field outside of your team's designated flight attempt, which is not permitted.

25. Is this year's competition not requiring provided mounting and power capabilities for a given sensor module?

There is no provided payload in the current RFP, beyond the water that will be placed in your water container.

26. Are semi-solid-state LiPo batteries permitted?

Please see question 1. Yes, a variety of battery types are permitted, so long as they follow the constraints of the RFP.

27. Are high-voltage LiPo batteries permitted if they are charged only to the voltage limits specified in the competition rules?

The prior RFP version (v1) states "Batteries with chemistry that allow charging up to 4.35V per cell may be used but will not be permitted to be charged above 4.2V per cell at any point during the Fly-Off event."

This language will be adjusted to allow for batteries capable of cell voltages above 4.35V per cell, which will still be required to be charged to 4.2V per cell.

(updated in RFP v2)

28. Are lithium-ion batteries permitted?

Please see question 1. Yes, Li-Ion batteries will be permitted during this year's competition, so long as such batteries follow the constraints outlined in the RFP.

29. What color spray paint will be used to mark the landing zones?

See question 4. This information will become available closer to the Fly-Off event. Teams should be prepared for any color that is visibly distinguishable from the ground.

30. If a payload is released and misses the designated target zone but remains attached to the payload delivery mechanism, would dragging it into the scoring zone be permitted?

If you are referring to an extendable cable that is used while the aircraft remains at 30ft+, and the payload is dropped and then dragged or partially re-lifted into a waypoint using that cable while the aircraft remains at 30ft+, then yes. Payloads are scored by their final position, and all deductions outlined in the scoring section of the RFP still apply. Please note that payloads that make contact with the ground outside of their designated zones will result in point deductions, as outlined in RFP v2.

(updated in RFP v2)

31. Would we be permitted to use a separate loop attached to the payload pickup end?

All payloads and attachments to aircraft are free for design by each team. No payload will be provided, besides the water that will be used to fill your own water container (containers provided by team).