

# Cansat Competition Mission Operations Manual 2012

Mission:  
Planetary Atmospheric Entry Vehicle

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## Revision Summary

| <b>Rev</b> | <b>Date</b> | <b>Changes</b>                       | <b>Author</b>         |
|------------|-------------|--------------------------------------|-----------------------|
| 01         | 2011.06.13  | Initial revision.                    | S. Reedy<br>I. Galysh |
| 02         | 2011.07.01  | Adjusted values, added FRR, clean up | i.Galysh              |
|            |             |                                      |                       |
|            |             |                                      |                       |
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|            |             |                                      |                       |

## **Introduction**

The cansat competition is a design-build-fly competition that provides teams with an opportunity to experience the design life-cycle of an aerospace system. The cansat competition is designed to reflect a typical aerospace program on a small scale. The competition includes all aspects of an aerospace program from the preliminary design review to post mission review. The mission and its requirements are designed to reflect various aspects of real world missions including telemetry requirements, communications, and autonomous operations. Each team is scored throughout the competition on real-world deliverables such as schedules, design reviews, and demonstration flights.

## **Ground Station Configuration**

Team insert steps to set up and configure the ground station

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### **Cansat Preparation**

Team insert steps to set up and configure the cansat

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### **Cansat Integration**

Team insert steps to integrate cansat into rocket and verify functionality

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### **Launch Preparation**

1. Take rocket to flight line and get launch pad assignment.
2. Walk out with the pad manager and have rocket installed on rail.
3. Pad manager installs igniter.
4. Pad manager verifies igniter continuity if launcher has continuity tester.
5. Team takes picture next to rocket.
6. Team goes back to flight line and assigned crew positions.

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### **Launch Procedure**

Mission control officer will step through this procedure to launch the cansat. At any time during the launch procedure, any crew member or officer can call out for a hold to stop the launch. It is required to say HOLD three times using a voice radio to stop the launch. If the hold does not require the rocket to be removed from the launch pad, then the procedures are stopped at the current step. if the hold requires the cansat to be removed, the removal procedures must be executed.

1. Request a GO/NO GO from ground station crew
2. Verify recovery crew is in place and ready.
3. Verify launch control officer is ready.
4. Verify flight coordinator is ready. (flight coordinator will query field judges and spotters)
5. Command ground station crew to activate the cansat telemetry
6. Verify with ground station crew that the command was accepted.
7. Verify with ground station crew that telemetry is being received.
8. Request a GO/NO GO from ground station crew.
9. Request a GO/NO GO from recovery crew.
10. Request a GO/NO GO from flight coordinator.
11. Command launch control officer to select \_\_\_\_\_ pad.
12. Verify with launch control officer \_\_\_\_\_ pad is selected.
13. Command launch control officer to arm pad.
14. Command launch control officer to proceed with countdown and launch.
15. Command launch control officer to deselect the pad.

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### **Removal Procedure**

1. Command ground station crew to disable telemetry from cansat.
2. Team waits until all other launches are completed.
3. Command launch control officer to disarm the launch pads.
4. Launch control officer removes the arming key to the launch controller.
5. Pads are declared safe.
6. Team can go with the pad manager and remove the rocket and cansat.