Hawaii – Windward Community College
FRR Comments
Responses

- Can the team explain in a little more detail how the screw works to hold the brake-shoe in place?

  If you refer to the detail diagram of the brake-shoe assembly in our CDR, the angled dashed line represents the brake-shoe. That line should now run between the screw head (the co-axial screw to the tension spring) and the washer at the top of the tension spring. As such, the tension of the spring and the physical head of the deployment screw now hold the brake-shoe in position.
- The drogue parachute may be on the big side, but 61 ft/s is perfectly acceptable.

  We chose this descent rate for a simple reason; should the main chute fail to deploy (something we are trying hard not to have happen), the damage to the rocket would be lessened (we hope). We are between having the rocket come down slowly for safety and ease of repair, and quick enough not to drift away.
- Is the value of the rail exit velocity on the flysheet correct? 61 ft/s sounds much better.

  Not to make a big deal about this, but we have been having problems getting our version of the RocSim results to print out. As such, we have had to write things down, and then we have bad cases of transcription errors. While running simulations for our test flight (using a J315R) we got a rail exit speed of 47.90 ft/s. Using the K560W gives us a rail exit speed of 61.92 ft/s – as you can see, we had a transcription error again!
- How far from the bottom of the rocket is the upper rail button? How fast is the rocket going when the first rail button leaves the rail? At that point, has the rocket reached a stable velocity? We ask because when the forward rail button comes off the rail, the rocket is able to rotate about the rear button if the rocket has not reached a stable velocity.

  The top rail button is 20" from the bottom of the rocket, and the lower rail button is 1.5" from the bottom. Our RocSim simulation gave us a rail exit velocity of 47.9 ft/s (for the J315R), which is greater then the 45 ft/s we believe to be the stable speed of the rocket. The rocket reached this speed at a distance of 131.5 inches (at 0.64s) - which is why we choose a 12' launch rail length for our test flight. Our simulation shows that using a K560W will give us a safe speed at 76.6 inches (at 0.462 s) which is 20 inches below an 8' launch rail length, and about the separation distance between the top and bottom rail buttons. In essence, the top rail button should be doing a safe speed by the time it clears the launch rail at 8 feet.

- Are both altimeters set to fire the charges at the same altitudes?

  That certainly is not our plan for the launch at Marshal. For our test flight at KMCAS, we set both altimeters to fire at apogee, but one had the main chute deploy charge set to 400', while the other was set for 300'. We did this for several reasons: (1) one unit was unable to be set at 400', (2) we were not sure if the rocket was going to get above 400' (despite the RocSim results, we have noticed that the predicted altitudes are somewhat optimistic) and we didn't want to take the chance that a unit might become 'confused' by having apogee occur below main deployment. Also, it became clear to us (especially after the flight, while watching the video) that this was a nice way to check if both flight controllers were working – and you can clearly see on the descent of the rocket, that a second deployment event occurred.
- How is the team planning on handling the motors /BP?

  We have been in contact with Chuck Pierce, and will be sending the rocket and ancillary equipment to his address. Also, we have been in contact with Huff Performance Rocketry (Cary Huff) where we will be purchasing the motor and other pyrotechnics that will be needed.
- The RocSim results and the input data seem to be inconsistent in the report.

  As was already mentioned, we try to catch these *transcription* errors before the teleconferences. We are truly sorry for the confusion.
- What is the team using for a rocket locator? We will be needing the frequencies of those transmitting devices so that we can manage those on the field.

  We are using a GPSFlight transmitter (ST900e -1000mW) unit with a frequency of 900.1 MHz.
- We'll need you guys to send us an updated budget of at least the rocket as it sits on the pad.

  The rocket, as it sits on the pad, is estimated to cost $2,246.34. Cost details are available from our web-site (www.windward.hawaii.edu/usli). The cost mentioned is without the engine or any of the pyrotechnicals because we do not have definitive pricing for those items.
- What are the size dimensions of the smaller payloads?

  The payload will consist of 3 cylinders having a 1.6 inch diameter and a 6 inch length. The cylindrical units are named Peter, Cleveland, and Quagmire, and they fit into our payload carrier, which we are calling (for this flight) Quahog.