From: RICHARD STEMBER
Sent: Sunday, December 18, 2022 1:07 PM
To: info@scienceheads.org
Subject: Initial HAB8 Flight Data Analysis

Hello HAB8 Team,

Now that the two box payload boxes have been recovered, I have begun the process of evaluating the data that was collected by the GoPro camera, SPOT Trace (both aboard the experiment payload box), and the APRS transmitter (in the communications box).

We know from the RCOM teams that the two boxes did indeed separate. The cause apparently was a failed ring that connected the leader between the two boxes. The leader itself was retrieved and is intact. The lower ring on the upper box (communications box) was partially distorted. This is surprising because we did not observe high velocities during the ascent portion of the flight. It takes a lot of force to straiten a keyring.

According to the APRS data, the balloon burst around 10:06 am at an altitude of 73,151 feet. The last picture taken by the GoPro showing an intact balloon (attached) has a time stamp of 9:58 am. The SPOT Trace's highest reported altitude occurred at 10:12 am – but this device was only reporting it's position every 10 minutes.

Based upon this data I believe that the two boxes remained connected up to the point or close to the point that the balloon burst. We luckily had the SPOT Trace device in the experiment box to track and facilitate it's recovery. Otherwise the experiments may not have been located and recovered.

The cause of this balloon burst is unknown. The remains of the balloon are fairly intact which is unusual. We typically receive back only the neck and a small portion of the balloon itself. Pictures captured during previous flights show the balloon completely disintegrating - In this case we recovered most of the balloon intact.

Its is highly unlikely that the balloon could have been impacted by a foreign object at 73,151 feet. It's more likely that a sharp object in the payload train popped the balloon. Severe, turbulence, an updraft, or sheer winds may have caused the train to impact the balloon – maybe even the straitened ring itself was the impactor. Note that in the attached picture the bottom of the train (the radar reflector) is higher than the GoPro (in the lower box) and quite possibly getting close to the balloon.

I will upload the above mentioned files, along with notable pictures from the GoPro to the www.ScienceHeads.org/HAB8-Data-Page shortly.

I look forward to your comments.

Thank you,

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