Flight Information

April 6, 2025, at 2050 UTC (1350 PDT) the balloon came down within the Yuma Test Range, Arizona (Grid Square DM22WV) after a very short flight. ALP40-H 's track is recorded **HERE** .

April 6, 2025, at 1750 UTC (1050 PDT) the balloon reached a float altitude of almost 38,000', before the balloon failed, and it began a slow decent.

April 6, 2025, at 1440 UTC (0740 PDT) the balloon was launched from the Boulder City Dry Lakebed by the TALARC launch team consisting of Shane, KG7QWH, Linda, KJ7OWF and Tom, KB7HTA.

April 3, 2025: There is a launch **planned for Sunday April 6, 2025,** from the Boulder City Dry Lakebed at 1530 UTC (0730 Local PDT) of TALARC ALP40-H Pico-Balloon. There are several new things that will be tested for this flight: The flight will test, a silvered Chinese balloon stretched to 116" +/- in circumference, a new solar charging circuit for the Lithium battery, an IR sensor pointed toward the Earth, a Beta version of the U4B firmware to transmit extended telemetry, and new BASIC flight code. With all the untested additions to the standard balloon battery design (ALP40-D, ALP40-G), my hope is to have it stay airborne for at least 24 hours to provide the necessary telemetry to accurately evaluate the new flight hardware and software.

Analysis

I didn't get the 24 hours of data I had hoped for, but the 6 hours of flight did provide enough data for proof of concept. First the IR sensor did surprisingly well at reading the average temperature of a 0.5-mile square section of the Earth's surface below the balloon. The temperatures recorded were close to the temperatures expected in the area being viewed by the sensor. I would have liked to have some data points while the balloon was transiting over clouds and water, maybe next time.

Second, the solar battery charging circuit seemed to work well in keeping the solar panel voltage very close to its maximum power point of 4.46 Volts. The readings from extended telemetry showed a solar panel voltage of 4.3 – 4.4. This value was in line with tests done prior to launch. The battery charged to 4.10 Volts from a low of 3.9 Volts during the flight and would have most likely made it to 4.2 Volts had the flight lasted longer. The charging circuit also held up to daytime temperatures of -20 C. I would have liked to see the battery charged to 4.2 Volts to confirm a solar panel voltage rise, as it did in testing. I plan to fly the same circuit again in the future.

Third, the Beta U4B firmware transmitted extended telemetry flawlessly. It was displayed accurately in the Traquito Spots Dashboard. Also, the modified I2CR worked well for reading the data from the IR sensor. Thank you, Hans!

Finally, the elephant in the room, the balloon. It seems consistent prep results in inconsistent outcomes. The solution is a clear high-quality balloon of a size necessary to launch 40 – 50-gram payloads. The search continues.