

Like Soaring on Mars

Stratodynamics continues to prove out its RC glider-based high altitude research platform.

[The NEW RC Soaring Digest Staff](#)



The HiDRON™ moments before it was released from its launch vehicle at 25km (82,000ft) over the New Mexico desert. (image: Stratodynamics Inc.)

Readers of RC Soaring Digest have been known to go to some rather extraordinary lengths to find exactly the right spot to launch their latest ship. But it's safe to say the recent flight of Stratodynamics' HiDRON™ high altitude research platform likely has achieved a new 'high bar' for great places to start a great flight — how about 30km (98,000ft) above the New Mexico desert, as was the case on June 6th, 2021. Five hours after being released from its weather balloon launch vehicle, HiDRON™ landed safely at

Spaceport America, located at Truth or Consequences, New Mexico which was also where the flight originated. During the time aloft, HiDRON™ collected reams of sensor data which will now be used to further research clear air turbulence in Earth's atmosphere.



The HiDRON™ and its balloon launch vehicle as they depart Spaceport America on June 6, 2021. (image: Stratodynamics Inc.)

Of particular interest to RCSD readers is that part of the flight program included Auto Soaring (which we covered in last month's issue). One segment of the flight involved first identifying and then circling in a thermal rising from the desert floor, wherein HiDRON™ was able reclaim one kilometre (3,280ft) of altitude and extend the flight.

At 30km Earth's atmosphere — at 1.15 kPa (11.5 mbar) — is roughly the equivalent to at least parts of Mars. The extremely thin air at the drop altitude explains why after being released from its launch gondola, HiDRON™ quickly accelerated to 480km/h (300mph) during its pullout manoeuvre and achieved controlled flight at 28km (92,000ft).

If RCSD readers think they recognize the aircraft which is the basis for HiDRON™, that's because it features "a Simitri F5J main wing with a customized fuselage and empennage, designed to improve stability in low Reynolds number conditions", said Stratodynamics CEO Gary Pundsack.

Following the successful series of increasingly ambitious test launches commencing on June 1st and concluding with the June 6th flight, CEO Pundsack commented:

"This mission represents a major milestone for Stratodynamics in achieving controlled, autonomous flight at record-setting altitudes and with aircraft's aerodynamically efficient airframe capable of utilizing available natural energy. The HiDRON™ also performs as an extremely sensitive instrument that can detect turbulence and correlate data collected from payload sensors. This campaign will contribute to Stratodynamics' turbulence detection systems currently in development for multiple aviation-based applications."

Spaceport America Launch. (video: Stratodynamics Inc.)

While the 30km New Mexico launch is impressive, it does not represent the absolute maximum for the HiDRON™. In September of 2019, the platform achieved an altitude of 33.9km (111,434ft) after a launch originating near Timmins, Ontario.

The New Mexico flights represented a broad collaboration of agencies and institutions including Stratodynamics, UAVOS, the University of Kentucky, New Mexico State University, Spaceport America and was supported by the NASA Flight Opportunities Program.

We hope to provide additional, in-depth coverage of this fascinating project in the future. We would also like to think we could someday feature Gary Pundsack and his team in a future episode of the still-in-development RCSD podcast.

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Resources

- [*Technology Advancement Utilizing Suborbital Flight Opportunities*](#) (NASA research opportunities using Stratodynamics technology)
- [*Auto Soaring*](#) (RCSD article by Norimichi Kawakami)



The HiDRON™ crew after the successful flight on June 6th, 2021. Pictured, from left-to-right: Flight Technician Ryan Nolin and Principle Investigator Sean Bailey from the University of Kentucky; Stratodynamics CEO Gary Pundsack; Autopilot Designer and UAVOS CEO Aliaksei Stratsilatau. (image: Stratodynamics Inc.)

We would like to thank Nick Craine, Business Development Lead at Stratodynamics, who provided tireless assistance organising the images and video for this article. Read the [next article](#) in this issue, return to the [previous article](#) in this issue or go to the [table of contents](#). A PDF version of this article, or the entire issue, is available [upon request](#).