Firefly has successfully tested the upper stage of its Alpha rocket

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- Last Thursday Firefly Aerospace tested the second stage of its Alpha rocket.
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- This was a full-duration firing lasting 300 seconds.
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- All went nominal.
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- These screencaps from the 300-second test firing show engine start-up.
  Firefly Aerospace/YouTube
- Firefly Aerospace/YouTube
- The Lightning-1 engine has 15,800 pounds of thrust.
  Firefly Aerospace/YouTube
- That is not bad as upper-stage engines go.
  Firefly Aerospace/YouTube
- By comparison, the RL-10 engine has 24,800 pounds of thrust.
  Firefly Aerospace/YouTube
- And here’s a successful test conclusion.
  Firefly Aerospace/YouTube

Last Thursday, on a green expanse at the edge of the Texas Hill Country, Firefly Aerospace prepared to test the second stage of its Alpha rocket. After years of development, engineers bolted the rocket stage to a vertical test stand and began to feed kerosene and liquid oxygen into the engine.

Then, for 300 seconds, the rocket's Lightning-1 engine fired, blowing white and yellow flame out of its exhaust nozzle. The five-minute test demonstrated the performance of the engine and upper stage over an entire cycle of flight in space, during which the upper stage would boost a satellite and insert into orbit.

During the test, all of the second stage's flight avionics, structures, and propulsion systems were subjected to a sustained firing consistent with a normal flight mission. According to Firefly, preliminary analysis of data from the test show that all of the rocket's systems performed nominally, and a post-test inspection revealed no observable degradation of the stage systems.

Firefly is attempting to complete development of its Alpha rocket, which has a capacity of up to 1 ton to low-Earth orbit, for a launch by the end of this year from Vandenberg Air Force Base in California. The company could reach another milestone as early as August, when Firefly anticipates performing the first long-duration test of the Alpha rocket's first stage.

[embedded content]
Firefly Alpha Second Stage 300 Second Qualification Testing.
Thanks to about $100 million in funding from a Ukrainian entrepreneur, Max Polyakov, Firefly has come roaring back into the small-launch space race. It was left for dead in 2016, when its funding dried up, and Firefly had to let go of its 159 employees crashed hard. But since returning in 2017 with ample funds, Firefly has hired many of those workers back and expanded its staff beyond its original number.

While launching the Alpha rocket this year seems like an enormous challenge, with the successful second stage test it at least seems like it’s still possible.

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