

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549**

**FORM 8-K**

**CURRENT REPORT**

**Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

**Date of Report (Date of earliest event reported): March 15, 2022**

**Astra Space, Inc.**

(Exact name of Registrant as Specified in Its Charter)

**Delaware**  
(State or Other Jurisdiction  
of Incorporation)

**001-39426**  
(Commission File Number)

**85-1270303**  
(IRS Employer  
Identification No.)

**1900 Skyhawk Street  
Alameda, California**  
(Address of Principal Executive Offices)

**94501**  
(Zip Code)

**Registrant's Telephone Number, Including Area Code: (866) 278-7217**

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- ☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- ☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- ☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- ☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

**Securities registered pursuant to Section 12(b) of the Act:**

<b>Title of each class</b>	<b>Trading Symbol(s)</b>	<b>Name of each exchange on which registered</b>
Class A common stock, par value \$0.0001 per share	ASTR	NASDAQ Global Select Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

**Item 8.01 Other Events.**

On March 15, 2022, we announced our orbital launch and first delivery of customer payloads. This launch was livestreamed through NASA Spaceflight and we are furnishing our transcript of the video from this launch as Exhibit 99.1. In conjunction with our livestream of the launch on March 15, 2022, Chris Kemp, our founder, chairman and chief executive officer, spoke with NASA Spaceflight about the launch, which broadcast was also livestreamed. The broadcast is available on our Twitter account (@astra), our LinkedIn account (linkedin/company/astraspace) and our website at www.astraspace.com. We have also furnished the transcript of the broadcast as Exhibit 99.2.

These exhibits shall not be deemed filed for purposes of the Securities Exchange Act of 1934, as amended (the “Exchange Act”) or incorporated by reference in any filing under the Securities Act of 1933, as amended, or Exchange Act, except as shall be expressly set forth by specific reference in such a filing.

**Item 9.01 Financial Statements and Exhibits.**

(d) Exhibits

<u>Exhibit No.</u>	<u>Description</u>
99.1	<a href="#">Transcript of livestream video for launch of LV0009 on March 15, 2022</a>
99.2	<a href="#">Transcript of broadcast on March 15, 2022</a>
104	Cover Page Interactive Data File (embedded with the Inline XBRL document)

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## SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Date: March 22, 2022

Astra Space, Inc.

By: /s/ Kelyn Brannon

Name: Kelyn Brannon

Title: Chief Financial Officer

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**Astra Space (Astra Launches Spaceflight Astra-1 Mission)****March 15, 2022****Corporate Speakers:**

- Thomas Burghardt; NASASpaceflight; News Director
- Carolina Grossman; Astra Space; Director of Product Management

**Participants:**

- Unidentified Participant; ;

**PRESENTATION**

Thomas Burghardt: (Inaudible) the team has now entered terminal count for today's mission.

(Presentation)

Thomas Burghardt: Hello everyone and welcome back to live Astra launch coverage. You are looking at a live view of LV0009 out on the launch pad in Kodiak, Alaska. Astra is just under 30 minutes away from conducting today's launch attempt with the goal of delivering multiple payloads to orbit for Spaceflight Incorporated.

My name is Thomas Burghardt, News Director for NASASpaceflight, and I'm joined once again by Carolina Grossman, the Director of Product Management at Astra.

Carolina, thank you so much for joining me again. How are you doing?

Carolina Grossman: Great. Ready for another launch attempt today.

Thomas Burghardt: Me, too. It should be a great day for launch. Thank you all so much for tuning in to today's coverage. Again, Astra and NASASpaceflight are partnering to bring you this broadcast, so thank you to Astra for helping make this happen.

Over the course of today's broadcast, as usual, we'll be taking your questions. So if you have any questions about today's mission, please tag us at NASASpaceflight and chat, and we'll try to get through as many of those as we can during today's coverage.

This is the second day of the launch window. If you were here yesterday, you know that there was a weather violation causing the new launch target of today.

Carolina, can you tell us a little bit about what the weather is looking like today and the status of today's launch attempt?

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Carolina Grossman: Sure. The team is proceeding through our countdown procedure, and all things are looking nominal. You can see from that middle section of LV0009, that frosty white color indicates that propellant has been loaded onto the vehicle. And the teams are not tracking any issues prior to launch.

Thomas Burghardt: And today's launch window is a 27-minute launch window, which is slightly shorter than yesterday. Can you tell us a little bit about the launch constraints that are defining today's window?

Carolina Grossman: That's right. So this mission has a precise requirement for the local time of the descending node, LTDN. It's one of the parameters that can be used to define an orbit. And due to the specific requirements for this mission, we had a 29-minute window yesterday, and today it's two minutes shorter due to a COLA, or Collision on Launch Avoidance, for a spacewalk happening on the ISS, on the International Space Station. So in order to keep our mission safe, as well as the astronauts on the International Space Station, we have a two-minute shorter window, a 27-minute window today.

Thomas Burghardt: Right now, that countdown clock just under 27 minutes to go is still targeting the opening of the window, which is still 9:22 a.m. Pacific Time or 1622 UTC. And like Carolina said, no item is being worked right now. Everything appears to be on track.

As we start to get into some questions here, again please tag us at NASASpaceflight if you would like to ask a question. We'd like to take a look at the pre-launch static fire test, which was successfully completed last week.

(Begin Presentation)

Unidentified Participant: All tanks at replay. Thirty seconds.

Ten, nine, water on, eight, seven, six, five, four ...

Plus seven shutdown.

Clean shutdown.

(End Presentation)

Thomas Burghardt: And we're starting to get some questions into chat, and we'll start off with this question. [Hinser], genuine name. Nice username there. Is there any payload on this mission? And if so, what type? So, what are the payloads onboard today's mission?

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Carolina Grossman: Sure. We have several payloads on our mission today, which is the Spaceflight Astra-1 mission. We're very pleased to announce our partnership with Spaceflight Incorporated, a launch services provider.

And two of the payloads that we'll highlight are the NearSpace Launch S4 Crossover payload, which is going to remain attached to Astra's second stage. It's a technology demonstration mission, which will test a prototype payload host platform that can be used to test future payloads and also has instrumentation for measuring radiation and plasma density in space.

And so, it is attached to the second stage, but operates completely independently and will operate for a few weeks following the launch, and the Portland State Aerospace Society's ORSAT Zero, which is a fully open source CubeSat satellite system built from scratch by students at Portland State University. It's Oregon's first satellite and it's a 1U CubeSat that is providing flight heritage today for a modular expandable open source and education-friendly ORSAT bus, which has a global climate science and STEM outreach mission. So, some very exciting payloads aboard today's Spaceflight Astra-1 mission.

Thomas Burghardt: And those payloads are bound to a sun-synchronous orbit, which is the target orbit for today's mission. That orbit has an inclination of 97.5 degrees, which is the angle between that orbit and the equator, so actually slightly retrograde, basically orbiting slightly towards the west, but mostly a polar orbit. And that altitude for that orbit is 525 kilometers, a pretty standard sun-synchronous orbit. And that mission will, of course, have the rocket fly south from Kodiak, Alaska that drove the launch site choice for today's mission.

Astra was previously operated from Cape Canaveral in Florida for mid-inclination orbits and will be doing so on future missions alongside the Kodiak Alaska Spaceport, which is the launch site for today's flight.

I'm going to keep some questions coming here. [Samara] is asking how the weather is looking today. We mentioned that weather is looking favorable, much better than yesterday. What are the weather items that the teams are looking at for today?

Carolina Grossman: Right. So yesterday, we were keeping an eye on triggered lightning, which is due to electrical fields in the atmosphere that can cause lightning to strike the vehicle as it moves at very high speed through the atmosphere. Today, the upper level winds are the item that we are tracking, but as of this time, they are not a concern for launch.

Thomas Burghardt: You got a gorgeous view there of the sunrise out in Kodiak. Just 22 minutes to go before launch, and the skies look beautiful. You should get some great views of the rocket as it ascends today.

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I have a question from Sebastian who asked about have the previous failed Astra missions affected today's launch. Of course, this is a return to flight mission. What have the teams learned and implemented for today?

Carolina Grossman: Sure. I want to put in a quick plug for our -- on [astra.com](https://astra.com), you can read a very, very informative post from Andrew Griggs, our Senior Director of Mission Management, that talks about both our post-flight investigation procedure and what we learned.

But if you joined us for the LV0008 mission back in February, we encountered two errors. One was a failure of the fairing separation system due to a mistake, and the engineering drawing that caused these separation mechanisms to fire in the incorrect order. And we also had a software issue that prevented the upper stage from using its thrust vector control system.

And for the first issue, that harnessing issue that, of course, that error was corrected in the engineering drawing. And we've also implemented an end of the line test to make sure that we can detect any similar type of issues before launch. And the software issue, the software team worked incredibly hard to uncover that it was due to a packet loss issue and spent several weeks making the overall flight software for the vehicle more robust. And we are very glad to have worked with the FAA throughout our investigation process and have successfully returned to flight with LV0009 today.

Thomas Burghardt: This mission from Kodiak proceeds the next three launches on the manifest are back at Cape Canaveral actually for the NASA TROPICS mission, so looking forward to returning to the Space Coast as well. But today's mission from Kodiak looks like it'll be some awesome views. It looks like the weather is just clearing up perfectly.

And look at that landscape, I mean, got to love the Kodiak launch site. It's beautiful out there.

Carolina Grossman: Absolutely. It's a gorgeous day for a launch.

Thomas Burghardt: A related question asking, are we located in the same place as the rocket? No, we are coming to you live today from Astra's headquarters in Alameda, California. This is the place where Astra builds the rockets. This is the place for Mission Control, and it's actually literally right behind us.

And this is the office that heads the overall Astra company. The rocket was shipped out from here to the launch site in Kodiak along with its ground support equipment and things like that, as well as the red team out there who's, of course, preparing the rocket before launch and operating the launch site. So we're coming to you from California, and today's launch is up from Kodiak Island, Alaska.

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Carolina Grossman: Yes, that's right. And just to say a little bit more about the red team, we do send a very small team of folks out to the launch site with the rocket. We are very grateful for the work that they do especially in cold, cold Kodiak.

Thomas Burghardt: Yes.

Carolina Grossman: And so we want to give a shout out here to Ryan Hirschfield, our Safety Officer; Adam Fritsch, our Red Lead; Hill Hudson, Robert Freeman, Eric Larson, and Heerschap, our Red 2 through 5, and Steiney who is our I.T. Lead as well, which our team is very nimble and quick. They are able to set-up the entire launch site with just a very small number of folks. And we are very grateful for being able to limit travel during the ongoing COVID-19 pandemic. And the team is taking COVID tests to maintain the health and safety of everyone involved in the mission.

Thomas Burghardt: And in addition to the Red team is, of course, the Mission Control team that's here in Alameda, and we could take a look there. There is the launch team.

Carolina, do you want to run us through the personnel that are on console today?

Carolina Grossman: Sure. Starting from the top-left, we'll have Lucas Hundley, who is our Flight Safety Officer or FTS. It looks like Christopher Rossi, our GNC, is up from his seat for a moment. Joshua Green, our Vehicle Controller with the call sign of Tango. He is the one who is actually operating the system and allowing things to move through the vehicle. Chris May is our Command and Data Handling, or CDH. Jarrett Bullion is our Flight Activities Officer, FAO. And then we have Chris Hofmann, our Flight Director.

As we move around the room, we have also a couple of folks in training, as well as we continue to grow our team. And thank you very much to Mission Control here in Alameda that is operating our vehicle and keeping all of our operations safe today.

Thomas Burghardt: In addition to those personnel that are in the Mission Control room, there's also a couple backroom engineers who are at their own consoles to help support the engineering behind today's mission, but overall a pretty small launch team at Astra compared to a lot of other launch providers, which is part of the design of the Astra launch system. It's interesting.

Looking at some great close-up views of the rocky, you could see it nice and frosty due to the cold liquid oxygen that is loaded onto that first stage. Right below that, the ambient temperature of kerosene, which is, of course, not as cold, although Alaska is pretty cold all on its own. And you can see the transporter erector, the strongback right next to the rocket that is also venting its lines nominally. Everything looks good. That is all a perfectly normal part of the procedure. And the rocket looks to be in pretty good shape as the sun rises over Kodiak.

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Oh, on that point, Ed is asking about the propellant that Astra does use on the rocket. So what propellant does the Astra Rocket 3 vehicle use?

Carolina Grossman: Yes, that's a wonderful question. We use a combination of liquid oxygen, which is that super cooled middle third of the vehicle that you can see, and then the fuel is RPX, which is essentially a form of kerosene. And we do use the same propellant on both the first and the second stage of the vehicle in order to help simplify our design and operations.

Thomas Burghardt: I have another question. [Chad] talking about the Astra store, which we introduced during yesterday's stream, [store.astra.com](https://store.astra.com). And a question, that is only available in the U.S. right now. Is that correct?

Carolina Grossman: Yes, it appears to be only available in the U.S. But part of it is we're taking the same approach to iteration that we do across the rest of our culture. And we only have a few products available right now. We're pretty limited, and we are looking to learn of the kind of merchandise that folks are most interested in purchasing. So again, [shop.astra.com](https://shop.astra.com) is where you can buy cool items like the hoodie that Thomas is modeling today.

And as a special note, for the first two weeks that the store is open, we are donating 100% of all of the profits to efforts supporting Ukraine, including UNICEF, the World Central Kitchen, and the International Committee of the Red Cross.

Thomas Burghardt: And my apologies, it was [shop.astra.com](https://shop.astra.com). My apologies, not store, [shop.astra.com](https://shop.astra.com) if you want to check that out.

And the teams are about to enter the terminal countdown at T-minus 15 minutes and counting. Again, everything is on track. This is the point yesterday where weather caused a delay, but today the weather is cooperating and no technical items being worked. So, at 15 minutes and counting, the team has now entered terminal count for today's mission.

Again, today's mission, the goal is to deliver multiple customers to low-earth orbit. The mission is managed by Spaceflight Incorporated with three different payload customers on board, two of which are NearSpace Launch with the hosted S4 Crossover payload, as well as the Portland State Aerospace Society's ORSAT Zero CubeSat, which will be deployed like a normal satellite from the upper stage at the completion of today's ascent profile.

Got some more questions coming into chat. The first one, how many containers are needed to transport the equipment and the rocket to the launch site?

Carolina Grossman: Well, it's just a few containers that we need to ship everything that almost everything that you see on your screen to our launch site and get everything set-up. The rocket itself actually fits fully integrated tip-to-tail inside a 45-foot shipping

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container. And we have a handful of other containers that provide the vital ground support equipment and functionality that we need to operate the vehicle. So, it's one of the most unique aspects of Astra's launch system is everything fits inside standard shipping and logistics. Excuse me, we're getting an updated UTC launch time.

Thomas Burghardt: Yes, they're setting the 1622 UTC time.

Carolina Grossman: Okay. We are setting our T-zero time to the opening of the launch window, which is 9:22 a.m. Pacific and 1622 UTC.

Thomas Burghardt: Another question in chat while we get through the beginning of terminal count here, can you elaborate on the rocket testing system before a rocket is released for flight? How are tests created for problems, which have never been observed? Is that even possible?

Carolina Grossman: Well, one of the final milestones before we step into our launch operations is a static fire test of the integrated system that you saw the video of at the beginning of the broadcast if you joined us. And that is a full-on integrated test where we light the engines and verify that all of the systems are operating nominally.

We also do a lot of thorough risk analysis of the system, look at the areas where we believe we need to mitigate risk. We fully vet our software as well. And this is all just part of our approach is to learn and test one of the great things about our campus here in Alameda, California as we do have engine testing facilities co-located right here next to the factory. So, we can make changes to the engine and the stages, and test them often the very same day. So, we have a lot of different ways that we test and bet our system for safety before flight.

Thomas Burghardt: There you go. At just under 12 minutes to go, we are coming up on the business end of today's countdown. We'll definitely want to listen in for the go/no go poll, which will come up in about a little over a minute for now. And I will give you a preview of the launch profile once that is confirmed to ready to go. The team is going through the final steps before that go/no go poll right now. Everything appears to be on track.

Again, the launch window opens at 9:22 a.m. Pacific Time, which is just over 11 minutes from now. You can see that the rocket has been propellant loaded, the frost on the outside of the tank indicating that, and the vehicle is going through its final checkouts and configurations for flight.

Unidentified Participant: Systems?

Unidentified Participant: AV1 Manage Power Systems active.

Unidentified Participant: The flight helium stack?

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Unidentified Participant: Helium stack is up.

Unidentified Participant: Please enable Igniter 1 spark test.

Unidentified Participant: Igniter 1 spark test active.

Unidentified Participant: [VV1] first stage power.

Unidentified Participant: [VV1] first stage power active.

Unidentified Participant: [VV1] upper stage power.

Unidentified Participant: [SVV1] upper stage power active.

Unidentified Participant: [VV1] turn on/off PDBs.

Unidentified Participant: [VV1] turn on/off PDBs active.

Unidentified Participant: Water 1, water system.

Unidentified Participant: Water 1, water system active.

Unidentified Participant: Tango, at this time, please activate launch machine.

Unidentified Participant: Launch machine. Tango, on countdown, launch machine is active.

Unidentified Participant: Please toggle lock stopping.

Unidentified Participant: Lock stopping set to true.

Unidentified Participant: This takes us into Step 144. This is the Astra poll for tank pressurization and launch. After this point, any system issue must be called as hold hold hold on countdown that if there are no concerns for flight, call go, otherwise call no go. Red lead?

Unidentified Participant: Red lead is go.

Unidentified Participant: FTS.

Unidentified Participant: FTS is go.

Unidentified Participant: Delphin.

Unidentified Participant: Delphin go.

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Unidentified Participant: Aether.

Unidentified Participant: Aether is go.

Unidentified Participant: Odin.

Unidentified Participant: Odin is go.

Unidentified Participant: INCO.

Unidentified Participant: INCO is go.

Unidentified Participant: ACE.

Unidentified Participant: Go.

Unidentified Participant: Launcher.

Unidentified Participant: Launcher is go.

Unidentified Participant: Orbit.

Unidentified Participant: Go.

Unidentified Participant: Booster.

Unidentified Participant: Booster is no go until we finish lock stopping.

Unidentified Participant: Okay, that means we're stopping.

Unidentified Participant: Very well then booster is go.

Unidentified Participant: GNC.

Unidentified Participant: GNC is go.

Unidentified Participant: FAO.

Unidentified Participant: FAO is go.

Unidentified Participant: CDH.

Unidentified Participant: CDH is go.

Unidentified Participant: Tango.

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Unidentified Participant: Tango's go.

Unidentified Participant: Safety.

Unidentified Participant: Safety is go.

Unidentified Participant: Flight is go. Tango and AV1, manage polling. Toggle do only ground.

Unidentified Participant: Do only ground polling set to true.

Unidentified Participant: Tango, let me know when you're ready to load sequences.

Unidentified Participant: Good to load.

Unidentified Participant: Delphin, please provide.

Unidentified Participant: Igniter 703, Victor 3.

Unidentified Participant: Igniter sequence 703, Victor 3, slot zero. Good load.

Unidentified Participant: Alpha 887, Victor 1.

Unidentified Participant: Engine Alpha 887, Victor 1, slot zero. Good load.

Unidentified Participant: Bravo 887, Victor 1.

Unidentified Participant: Engine Bravo 887, Victor 1, slot zero. Good load.

Unidentified Participant: Charlie 887, Victor 1.

Unidentified Participant: Engine Charlie 887, Victor 1, slot zero, loading. Good load.

Unidentified Participant: Delta 887, Victor 1.

Unidentified Participant: Engine Delta 887, Victor 1, slot zero. Successful load.

Unidentified Participant: Echo 887, Victor 1.

Unidentified Participant: Engine Echo 887, Victor 1, slot zero. Successful load.

Unidentified Participant: Aether, please provide.

Unidentified Participant: Aether sequence 883, Victor 4 please.

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Unidentified Participant: Aether sequence 883, Victor 4, kicking the door, slot zero. Good load.

Unidentified Participant: Tango and AV1, manage polling. Set us back and do both ground and guidance polling mode.

Unidentified Participant: AV1, manage polling. Do both ground and guidance polling set to true.

Unidentified Participant: Delphin, confirm GSC igniter system is ready for launch.

Unidentified Participant: GSC igniter system ready.

Unidentified Participant: Tango, verify vehicle looks ready for launch aside from tank press.

Unidentified Participant: Confirmed (inaudible) topping.

Carolina Grossman: And as you heard a few moments ago, the team completed the go/no go poll. There was a brief no go call from Booster, which is our first stage engineer as we waited for propellant to complete topping. But we are all set. We also just got final range green as well.

Thomas Burghardt: So right now the teams are moving through the final steps of the terminal countdown, again just over five minutes to go for launch, and everything appears on track. Let's take a look at the mission profile for today's ascent. Carolina?

Carolina Grossman: All right. So, starting from the bottom at T-zero, the first stage engines will light and we will have liftoff. A few seconds later, the vehicle will begin its pitch over maneuver. And at about one minute and 10 seconds, we will reach max Q, which is the point of maximum aerodynamic pressure on the vehicle. And the vehicle will continue to move through first stage flight up until three minutes, at which point we'll have main engine cut off, or MECO.

And then a few things happen in pretty quick succession. The fairing will separate. The stages will separate. And then at three minutes and 15 seconds after liftoff, the upper stage engine will ignite. And we will run for about five and a half minutes before second engine cut off, or SECO. And very shortly thereafter, we will have our payload deployment for the Spaceflight Astra-1 mission.

Thomas Burghardt: And we are just over four minutes away from the beginning of that ascent profile. Again, this is the launch attempt for the Spaceflight Incorporated Astra-1 mission on Astra's Rocket 3 vehicle LV0009 from Kodiak Island, Alaska.

That launch time is 9:22 a.m. Pacific Time, 1622 UTC. And the three different customers managed by Spaceflight Incorporated onboard headed to a sun-synchronous

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orbit inclined 97.5 degrees, altitude 525 kilometers low-earth orbit. And everything is on track for launch right now. We're going to be listening into the countdown as we get closer to T-zero, and we'll keep you updated as that proceeds.

Unidentified Participant: Range is recording telemetry.

Unidentified Participant: Reminder, Control Room, if you require RF data, once the vehicle leaves the pad, be prepared to switch over your Grafana pages.

FSO, flight on countdown, be prepared to issue option when rocket IIP marker passes [option enable gate] calling out to three minutes.

Thomas Burghardt: Minus three minutes and counting.

Unidentified Participant: Reminder to all that any three-word hold from here on out will be an immediate abort regardless of source.

Thomas Burghardt: Two and a half minutes to go. All on track.

Unidentified Participant: Two minutes.

Thomas Burghardt: And there you got the Astra team watching live from Alameda, California, looking forward to today's launch. Just over 90 seconds away.

Unidentified Participant: Ninety seconds. ACE, at this time, start your PSD recordings and downrange ground station recordings.

Unidentified Participant: Done.

Unidentified Participant: Sixty seconds, vehicles on internal control.

Thomas Burghardt: Less than 60 seconds to go. The rocket has taken control of the countdown, and everything is on track for liftoff. You'll have live telemetry on the bottom right-hand of your screen.

Unidentified Participant: Forty-five.

Thomas Burghardt: And you can (inaudible) on the way.

Unidentified Participant: (Inaudible) lock tank (inaudible) pressure. Upper stage tanks at pre-liftoff. First stage fuel tank pressurizing.

Thirty seconds.

Twenty.

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Fifteen.

Ten, water on, eight, seven, six, five, four, three. First motion (inaudible) vehicle has cleared the tower.

Carolina Grossman: LV0009 is on its way to space. Our next objective is max Q in just under a minute.

Thomas Burghardt: Gorgeous liftoff views from Kodiak, Alaska, T plus 25 seconds, looking good.

T plus 45 still looking good. You can see the vehicle pitching downrange south from Kodiak, Alaska towards orbit. And there you got an onboard view on the first stage looking down towards the engine section and a beautiful contrail as the vehicle ascends towards space.

Vehicle is now through the area of maximum dynamic pressure or max Q, the point of maximum stress on the vehicle. Everything looking good.

Carolina Grossman: We have about 90 seconds remaining in the first stage portion of the flight.

Thomas Burghardt: Coming up will be main engine cut off, or MECO, which is the shutdown of the five first stage engines prior to stage separation. And you can see the plume from the first stage expanding as the rocket gets higher in the atmosphere with less atmospheric pressure.

Carolina Grossman: T plus two minutes into the flight of LV0009.

Thomas Burghardt: Still got a great tracking shot from the launch site in Kodiak.

Unidentified Participant: Good tracking downrange.

Carolina Grossman: And in just about 30 seconds we have a string of milestones on quick succession. We'll have the first stage engines shutdown, main engine cut off, and then the fairing separation, and stage separation, and upper stage ignition steps will happen in very quick succession.

Unidentified Participant: Safety, can you confirm option received?

Unidentified Participant: Option received.

Unidentified Participant: Vehicles left the gate.

Thomas Burghardt: There is fairing separation.

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Unidentified Participant: MECO?

Thomas Burghardt: Stage separation.

Carolina Grossman: Stage separation.

Unidentified Participant: We have sep.

Carolina Grossman: And upper stage engine ignition. Cheers coming from the Astra team as a significant portion of our flight milestones have been accomplished. We have about five minutes of second stage flight before our payloads are deployed.

Thomas Burghardt: And just a great view of the earth from space on that upper stage camera on your right, still seeing the first stage camera looking up at the upper stage on the left. So cool camera views.

Over four minutes into the flight, everything looking good so far. Upper stage is accelerating horizontally towards orbit, needing to achieve that horizontal velocity to stay in a sun-synchronous orbit, again aiming for an altitude of 525 kilometers today. It looks like now we've got that telemetry updating in the bottom right-hand of your screen, over 300 kilometers in altitude right now and a little under 4.5 kilometers per second of velocity.

On the left, the launch team here at Alameda watching the vehicle closely. Everything looks to be operating nominally.

Carolina Grossman: All right. T plus five minutes and counting. Here's much of the Astra team in our factory here in Alameda that's gathered around our big screen jumbotron. As we enjoy the second stage portion of flight, I want to take a shout-out to all of the team and all of the families and loved ones who have helped make today's launch possible.

Thomas Burghardt: T plus five and a half minutes, still looking good. About three more minutes left in the burn of today's flight and another gorgeous onboard view of earth.

Unidentified Participant: Vehicle is now passing Hawaii.

Carolina Grossman: T plus six minutes. We've crossed 400 kilometers in altitude. We have about two and a half minutes remaining in the second stage flight.

Thomas Burghardt: You see that engine bell glowing red hot as it burns? That is expected, of course. And a live telemetry view showing the trajectory south from Kodiak, Alaska, again towards that sun-synchronous orbit, right down the middle so far.

Over six and a half minutes in the flight now, coming up on 450 kilometers in altitude over five kilometers per second.

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Seven minutes in the flight, still looking good.

You can see just the faint outline of earth as sunrise rose over the launch site not long before liftoff. Over six kilometers per second of velocity now and coming up on 500 kilometers altitude.

Less than a minute to go until SECO or second engine cut off.

Carolina Grossman: And shortly after SECO, second engine cut off, we will have the deployment of some of the payloads aboard, today's mission of Spaceflight Astra-1. There is one payload that will remain attached to the upper stage and will begin its mission after SECO as well.

Thomas Burghardt: And we're coming up on that second engine cut off milestone next.

Unidentified Participant: SECO.

Thomas Burghardt: And there you have it, second engine cut off, SECO confirmed.

Carolina Grossman: We'll be looking for the callouts for the payloads that are being deployed next.

Thomas Burghardt: There you have the trajectory right down the middle for today's ascent, and we're standing by to hear a word of payload separation.

Carolina Grossman: We're at T plus 11 minutes after liftoff. We've completed the first and second stage portions of flight, reaching our mission altitude of 525 kilometers and are awaiting confirmation that the payloads have been deployed.

Picking up a view of our pad in Kodiak, Alaska where just 12 minutes ago LV0009 lifted off.

T plus 13 minutes, we're still waiting confirmation that the payloads have deployed successfully. Otherwise, it appears all other mission events were nominal during the LV0009 flight this morning.

And thanks for standing by with us. We are still awaiting confirmation that our payload deployment has been successful. About six minutes ago, we completed the flight profile of LV0009 ending in a successful second engine cutoff at the mission altitude of 525 kilometers.

Looking again there at our trajectory for today's flight, a nominal first stage and second stage flight of Astra's LV0009.

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Thomas Burghardt: Again, folks, thanks for staying patient. We're just waiting for some final word on that final step of the ascent profile. We want to make sure that is confirmed before we report anything, so just standing by for that. But the early ascent looked picture perfect, so just standby for one more confirmation.

Unidentified Participant: We can do a quick (inaudible).

Carolina Grossman: And thank you so much for joining us for this morning's LV0009 launch broadcast. We're at T plus about 20 minutes from the launch. About 10 minutes ago, LV0009 successfully made it to orbit after a nominal first stage and second stage flight.

We have not yet received any information about the payloads being successfully deployed. The vehicle was far downrange of our telemetry dish, which is as expected, and so it may be a little while before we have an update on that. And we will provide that update on Twitter as soon as we have it. But for now, we're going to wrap up today's broadcast after a successful ride to orbit for Astra's LV0009.

Thomas Burghardt: Yes, just stay tuned for that final confirmation step. That will be all over Astra's social media channel, as well as by NASASpaceflight. But thank you so much for tuning in to our live launch conference for a picture-perfect launch of the rocket.

Carolina, thank you so much for joining me for today's launch. It was a pleasure.

Carolina Grossman: Thank you as always, Thomas.

Thomas Burghardt: Thank you all so much for watching. And thank you to Astra for once again partnering with NASASpaceflight for today's launch coverage. Stay tuned for future launch coverage and other space flight news coverage here on NASASpaceflight. And until the next time, this is Thomas Burghardt, News Director for NASASpaceflight signing off. We'll see you next time.

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March 15, 2022

Transcript from Status Update on Astra's Spaceflight Astra-1 Mission

<https://www.youtube.com/watch?v=8Zkzqx21h5s>

*(NASASpaceflight standard opener)*

**Thomas Burghardt:** Hello everyone and welcome back to our live Astra launch coverage I'm here with Astra CEO Chris Kemp who has got an update on today's mission. Chris.

**Chris Kemp:** Yea thanks Thomas. It's been an exciting morning. We have just started to hear back from our customers' payloads and we have great news to report. The payloads have started to communicate with ground stations, our customers are calling us and indicating that satellites are alive. They're talking. Which means they've been successfully deployed.

**Chris Kemp:** The flight was nominal. We were able to precisely deliver to the targeted orbit and inclination at orbital velocity. And I just want to stop here. It's been a long journey. We've got an incredible team behind me right here.

*(cheers and applause from team)*

**Chris Kemp:** These guys have worked hard for this. This has not been easy. We had a flight just over a month ago and the team worked really hard, every day, every weekend. Many nights. To quickly identify the issues we have on the flight. Get another rocket back up to Kodiak and fly it. And it was absolutely the right thing to do. I'm so proud of the team.

**Chris Kemp:** I'm so grateful for our shareholders who have been patient with us. The customers who stuck with us and flew these satellites just a few weeks later on this rocket, and we couldn't be more excited to continue to deliver for our customers. And we're just in awe of all the hard work that's gone into getting us to the point.

**Thomas Burghardt:** A huge thank you on behalf of NASASpaceflight for letting us partner to bring you the live coverage of these events. It's awesome to be able to share this with the world. And a huge congratulations to you, and your entire team on today's milestone and looking forward to the future launches.

**Chris Kemp:** Thank you for being with us for the adventure. And we're excited to see you back here, very soon, our serial number 10 flight.

**Thomas Burghardt:** Looking forward to it. Thank you all so much for watching again. From NSF and Astra!

**Chris Kemp:** Thank you all! (cheers from crowd again)

**Thomas Burghardt:** See you all next time!

*(NASASpaceflight standard opener)*

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