ANTIPODEAN ADVENTURE

PRESS KIT | NET 02 AUGUST UTC

Rocket Lab USA, Inc.
rocketlabusa.com

ROCKETLAB

LAUNCH INFORMATION

LAUNCH WINDOW
Opens 02 August UTC 2022.

DAILY LAUNCH OPPORTUNITY
A launch is possible within this time band for each day of the launch window.

Time Zone	Window Open
NZST	17:00 — 19:00
UTC	05:00 — 07:00
EDT	01:00 — 03:00
PDT	22:00 — 00:00 (Day Prior)

LAUNCH SITE
LC-1 B
Mahia, New Zealand

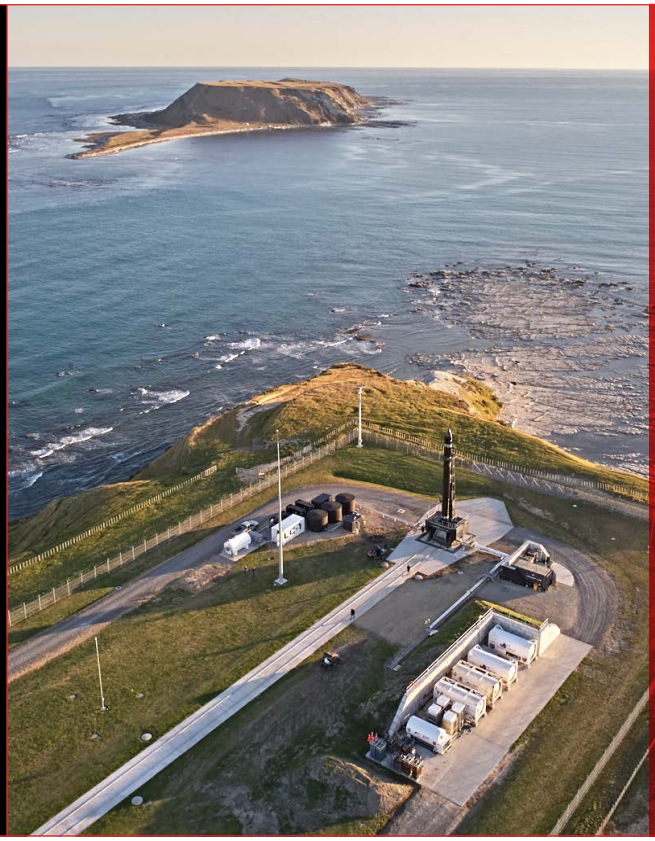
PAYLOAD
NROL-199

CUSTOMER
NRO
National Reconnaissance Office

MISSION OVERVIEW

ABOUT 'ANTIPODEAN ADVENTURE'

Launching from Rocket Lab Launch Complex 1, Pad B, on New Zealand's Mahia Peninsula, the **'Antipodean Adventure'** mission will be Rocket Lab's 29th Electron launch.



Launch Complex 1
Mahia, New Zealand

NROL-199 is the second of two NRO missions in partnership with the Australian Department of Defence (AUS DoD). The mission follows the successful launch of NROL-162 "Wise One Looks Ahead" from Launch Complex 1 on July 13, 2022 UTC. These twin missions for the NRO are a demonstration of national security responsive launch for the United States – a critical capability that will become a hallmark of future operations in space.

ABOUT THE NRO

The NRO is the leader in developing, acquiring, launching, and operating the nation's intelligence, surveillance, and reconnaissance satellites to secure and expand America's advantage in space. The NRO is building a diversified and resilient architecture of spacecraft and ground systems designed to meet the challenges of a changing space environment by accelerating innovation and leveraging strategic partnerships, backed by a diverse and highly skilled workforce.

Since 1961, the NRO has pushed the envelope of U.S. space-based intelligence collection with boldness and ingenuity. Today, the NRO's innovative legacy continues to thrive as it develops, acquires, launches, and operates the world's most capable national security satellites. NROL-162 will strengthen the NRO's ability to provide a wide-range of timely intelligence information to national decision makers and intelligence analysts to protect the United States' vital interests and support humanitarian efforts worldwide.

The NROL-162 & 199 missions are the latest examples of the NRO's commitment to enhancing relationships with U.S. allies and partners and demonstrates the NRO's capability to launch multiple rockets from overseas locations back-to-back.

Learn more at: NRO.gov.

Satellites have changed the way the world responds to conflicts and crises.

Data and imagery from the right place at the right time can provide decision-makers with insights into ship and plane movements, weather patterns, and economic activity. During humanitarian crises, satellite data can reveal troop movements and refugee streams that help governments, first responders, and aid organizations focus on where they're needed the most.

But the way these systems reach space can still be a long and expensive process. The faster satellites can be placed in space, the more capable a country's space infrastructure will be. Modern nations require a modern approach to space – one that includes more a flexible, faster, and cheaper access to orbit with responsive rockets, responsive launch pads, and responsive satellites.

At Rocket Lab, we have all three.

RESPONSIVE SPACE

SPACE ON DEMAND

Responsive Satellites

Responsive satellites are ones which can test new technologies, replace broken or destroyed spacecraft, or fill out a constellation that provides on-demand communication, location services, and exchanges data with millions of people across the globe. They should be small, simple to build, and offer flexibility in their service – which is exactly the type of platform our spacecraft bus, Photon, was designed to deliver.

Responsive Rockets

Responsive launch vehicles need to be able to get to space quickly and affordably, and do so reliably. They also need to be able to deliver payloads to their specific orbital destination with pinpoint accuracy. With 140+ satellites delivered accurately to their orbital destinations across 27 missions, our Electron launch vehicle is the premier responsive small launcher. And with a strong heritage of accurate orbital insertion for the payloads we've flown, Electron is relied upon to deliver mission success across both government and commercial space operators.

Responsive Launch Sites

With responsive satellites needing responsive rockets, the third and final solution is the responsive launch site to fly them. Launchers which use public sites will always be at the whim of tight launch corridors, busy range schedules, and small gaps in overhead air traffic. A responsive launch site is one that stands ready to support rapid call-up launch with unrivalled launch opportunities – and with two orbital launch pads (a third at Launch Complex 2 on Wallops Island, Virginia, expected to be operational in 2022), private range control, and 120 flight opportunities a year, Rocket Lab Launch Complex 1 provides the possibility of back-to-back launches within hours or days, not weeks or months.

MISSION SUCCESS FOR NATIONAL SECURITY

Rocket Lab has a strong track record of support for U.S. national security launches. As the premier small launch provider to the nation's intelligence and defense communities, Electron is the most frequently flown small rocket in support of U.S. national security missions.

STP-27RD | 05 May 2019

The Falcon Orbital Debris Experiment (Falcon ODE), sponsored by the United States Air Force Academy, evaluated ground-based tracking of space objects. The Falcon ODE was an educational tool for cadets at the Academy to better understand Department of Defense space missions.

STP-27RD | 05 May 2019

The 150kg Harbinger satellite was a commercial small satellite built by York Space Systems and sponsored by the U.S. Army to demonstrate the ability of an experimental commercial system to meet DoD space capability requirements by delivering Earth imagery to the ground quickly.

DARPA R3D2 | 28 March 2019

The R3D2 (Radio Frequency Risk Reduction Deployment Demonstration) payload for DARPA was a prototype reflect array antenna designed to improve radio communications in small spacecraft.

Return To Sender | 20 November 2021

Mandrake-1 was a technology demonstration payload carrying supercomputer processing chips which launched on Electron as part of DARPA's Blackjack satellite program. The Blackjack program aims to develop and demonstrate a global high-speed network in low Earth orbit for the agency.

SPARC-1 | 05 May 2019

The Space Plug and Play Architecture Research CubeSat-1 (SPARC-1) payload, sponsored by the Air Force Research Laboratory Space Vehicles Directorate (AFRL/RV), was a joint Swedish-United States experiment to explore technology developments in avionics miniaturization, software defined radio systems, and space situational awareness (SSA).

Flight 7 'Make It Rain'
Launch Complex 1, Mahia, New Zealand

Make It Rain | 29 June 2019

Two U.S. Special Operations Command (SOCOM) Prometheus satellites were deployed by Electron to low Earth orbit on this June 2019 rideshare mission. The pair of 1.5U CubeSats were part of a US SOCOM technology development and demonstration effort to see whether a group of small satellites working together can help SOCOM be more responsive to mission requirements.

Look Ma, No Hands | 19 August 2019

The Pearl White payload for the U.S. Air Force Space Command was part of a demonstration program to design, develop, and operate two 6U CubeSat experimental satellites. The mission tested new technologies in propulsion, power, communications, and drag capabilities for potential applications on future spacecraft.

SEDENA
SECRETARÍA DE LA DEFENSA NACIONAL

Make It Rain | 29 June 2019

Painani-1 was an experimental CubeSat equipped with four sensors for remote imaging which flew alongside two U.S. Special Operations Command (SOCOM) payloads on a commercial rideshare mission. Owned by the Mexico Secretariat of National Defence (Secretaría de la Defensa Nacional, or SEDENA), Painani-1 was developed by the Ensenada Centre for Scientific Research and Higher Education as a university project sponsored by SEDENA. The purpose of the mission was to enable students to conduct digital image processing and software improvement experiments as part of their study.

Birds of a Feather | 31 January 2020

NROL-151 was a classified payload launched on Electron for the United States' National Reconnaissance Office. The mission was the first awarded under the NRO's Rapid Acquisition of a Small Rocket (RASR) contract to explore launch opportunities that can provide a streamlined and commercial approach for getting small satellites into space.

Don't Stop Me Now | 13 June 2020

Rocket Lab's second launch in 2020 for the National Reconnaissance Office deployed three classified payloads designed, built, and operated the NRO to space. It was also the second mission contracted to Rocket Lab under the Office's Rapid Acquisition of a Small Rocket (RASR) contract, allowing the NRO to pursue the use of both large and small satellites for an integrated architecture designed to provide global coverage for a wide range of intelligence requirements.

AIR FORCE

Don't Stop Me Now | 13 June 2020

The M2 Pathfinder was an Australian CubeSat designed and built by the University of New South Wales (UNSW) for the Royal Australian Air Force (RAAF), which flew on a commercial rideshare mission alongside payloads for the National Reconnaissance Office. The M2 Pathfinder was an important test mission of communications architecture and other satellite technologies that the RAAF intended to fly on its final M2 mission – later launched by Rocket Lab in March 2021.

They Go Up So Fast | 22 March 2021

The M2 mission was a payload consisting of two CubeSats which separated on orbit to engage in formation flying. M2 flew on a commercial rideshare mission alongside a payload manifested on Electron for the U.S. Army's Space and Missile Defense Command (SMDC). This enabled the Royal Australian Air Force to conduct research into satellite control mechanisms, space domain awareness, and inter-satellite communications. The M2 payload was designed and built in Australia in a collaboration between the RAAF and the University of New South Wales (UNSW) Canberra Space. M2 followed on from the successful M2 Pathfinder mission deployed in June 2020 on our 12th Electron launch, 'Don't Stop Me Now'.

Flight 12 'Don't Stop Me Now'
Launch Complex 1, Mahia, New Zealand

They Go Up So Fast | 22 March 2021

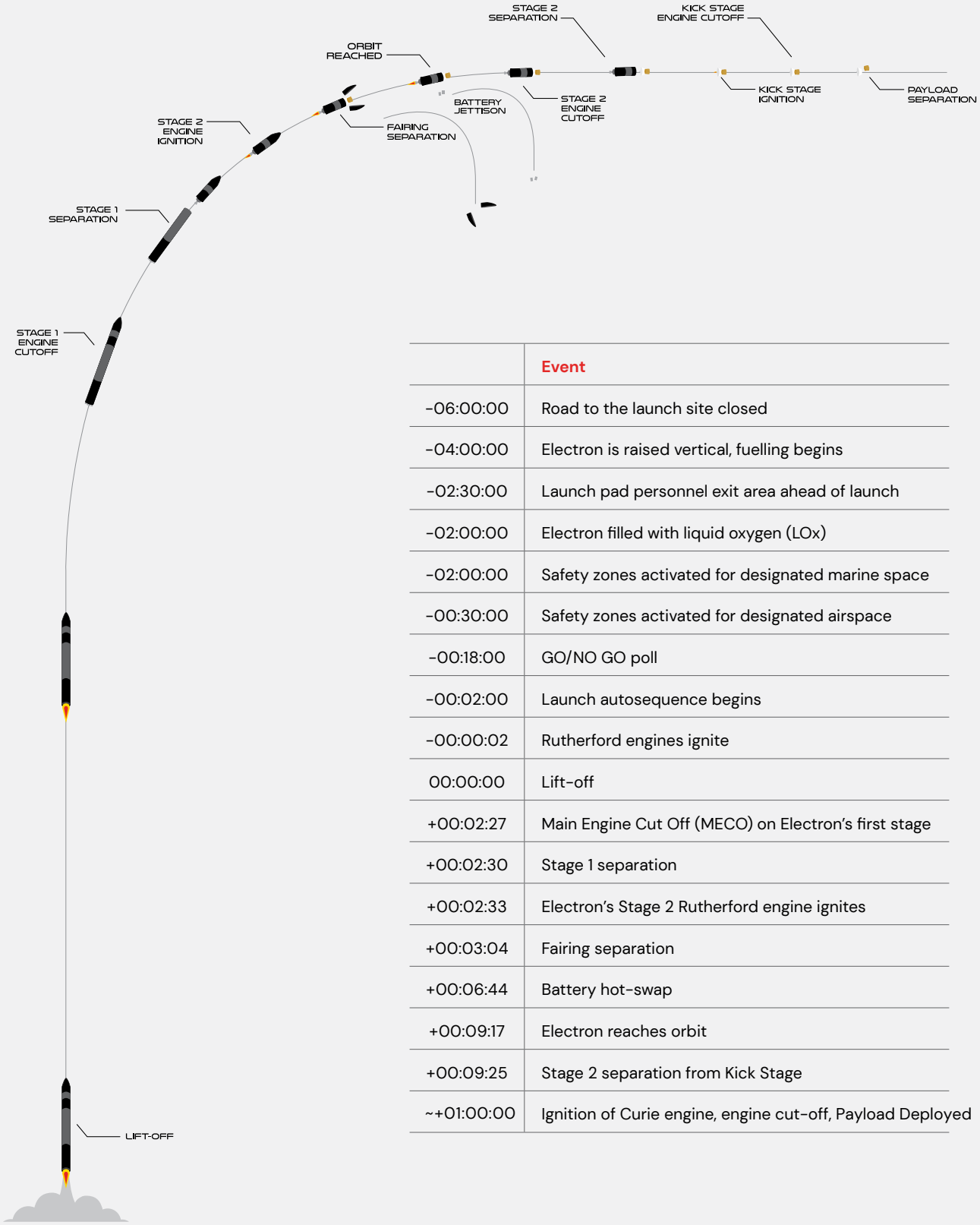
On this rideshare mission was a payload for the U.S. Army's Space and Missile Defense Command (SMDC) called Gunsmoke-J: an experimental 3U CubeSat that tested technologies to support development of new capabilities for the U.S. Army.

UNITED STATES
SPACE FORCE

It's A Little Chile Up Here | 29 July 2021

Successfully deployed for the United States Space Force on a dedicated Electron launch, Monolith demonstrated the use of a deployable sensor – where the sensor's mass is a substantial fraction of the total mass of the spacecraft – to test how it might change the spacecraft's dynamic properties and ability to maintain attitude control. Analysis from this mission will help determine whether future spacecraft like weather satellites can be built using a deployable sensor, saving cost, time, and complexity for future missions for the Space Force.

TIMELINE OF LAUNCH EVENTS



	Event
-06:00:00	Road to the launch site closed
-04:00:00	Electron is raised vertical, fuelling begins
-02:30:00	Launch pad personnel exit area ahead of launch
-02:00:00	Electron filled with liquid oxygen (LOx)
-02:00:00	Safety zones activated for designated marine space
-00:30:00	Safety zones activated for designated airspace
-00:18:00	GO/NO GO poll
-00:02:00	Launch autosequence begins
-00:00:02	Rutherford engines ignite
00:00:00	Lift-off
+00:02:27	Main Engine Cut Off (MECO) on Electron's first stage
+00:02:30	Stage 1 separation
+00:02:33	Electron's Stage 2 Rutherford engine ignites
+00:03:04	Fairing separation
+00:06:44	Battery hot-swap
+00:09:17	Electron reaches orbit
+00:09:25	Stage 2 separation from Kick Stage
~+01:00:00	Ignition of Curie engine, engine cut-off, Payload Deployed

ELECTRON LAUNCH VEHICLE

OVERALL

LENGTH
18m

DIAMETER (MAX)
1.2m

STAGES
2 + Kick Stage

VEHICLE MASS (LIFT-OFF)
13,000kg

MATERIAL/STRUCTURE
Carbon Fiber Composite/Monocoque

PROPELLANT
LOX/Kerosene

PAYLOAD

NOMINAL PAYLOAD
200kg / 440lbm To 500km SSO

FAIRING DIAMETER
1.2m

FAIRING HEIGHT
2.5m

FAIRING SEP SYSTEM
Pneumatic Unlocking, Springs

STAGE 2

PROPULSION
1x Rutherford Vacuum Engine

THRUST
5800 LBF Vacuum

ISP
343 Sec

INTERSTAGE

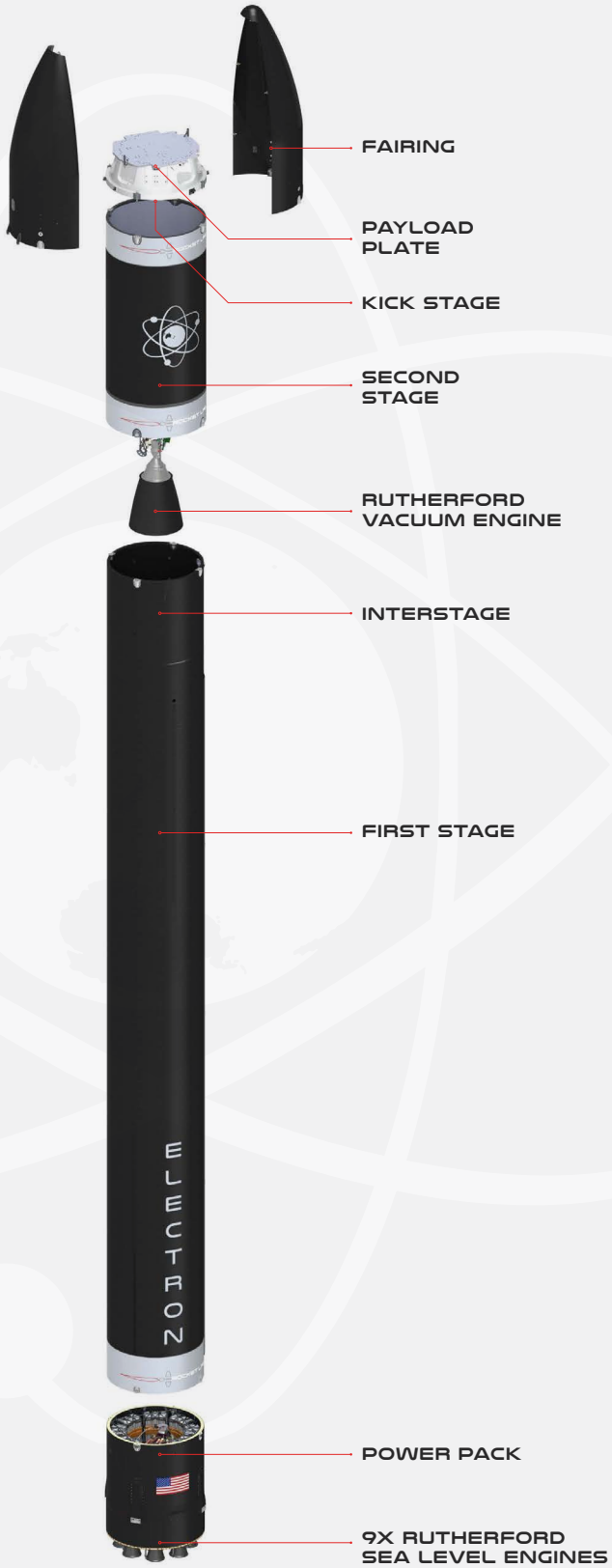
SEPARATION SYSTEM
Pneumatic Pusher

STAGE 1

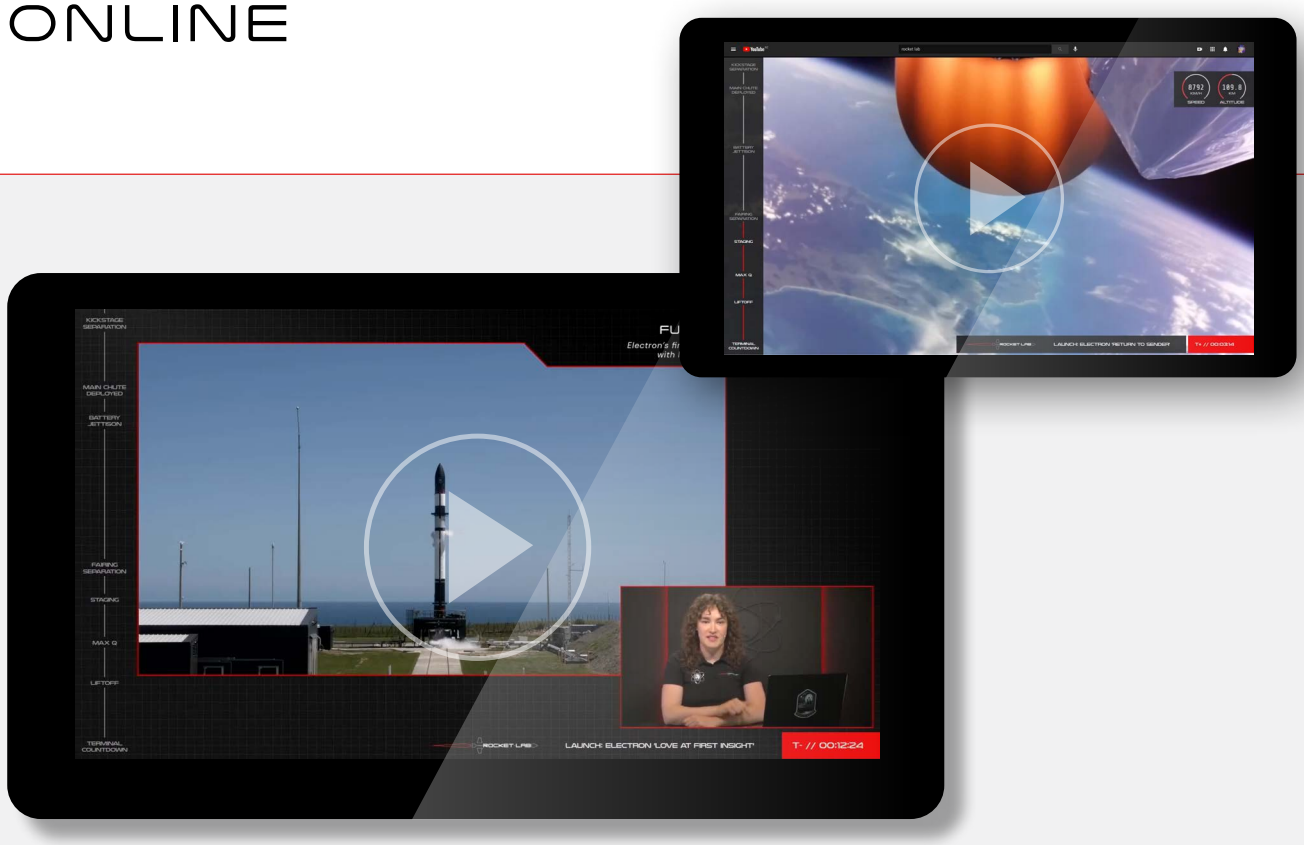
PROPULSION
9x Rutherford Sea Level Engines

THRUST
5600 LBF Sea Level (Per Engine)

ISP
311 Sec



VIEWING A LAUNCH ONLINE



LIVE STREAM LINKS

The livestream is viewable at:

rocketlabusa.com/live-stream

Webcast will be live approx. T-20 minutes

LAUNCH FOOTAGE & IMAGES

Images and footage of the 'Antipodean Adventure' launch will be available shortly after a successful mission at:

https://www.flickr.com/photos/rocketlab/

UPDATES

For information on launch day visit:

rocketlabusa.com/next-mission

FOLLOW ROCKET LAB:

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VIEWING A LAUNCH IN PERSON

Location

Wairoa District Council has allocated a rocket launch viewing area for the public near Nuhaka, accessible via Blucks Pit Road. Scrubs and postponements are likely during launch windows, so visitors to the Blucks Pit viewing site should anticipate multiple postponements, sometimes across several days.

More information visit

visitwairoa.co.nz/welcome-to-wairoa/space-coast-new-zealand

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