



# THEY GO UP SO FAST

# LAUNCH INFORMATION



## LAUNCH WINDOW

No earlier than 23 March 2021 NZT / 22 March UTC



## LAUNCH SITE

Launch Complex 1, Pad A  
Māhia Peninsula,  
New Zealand



## DAILY LAUNCH OPPORTUNITY

The opening of the launch window adjusts to an earlier start time each day to best support our customers' orbital requirements.

Date	NZDT	UTC	PT	ET
Mar. 23, 2021	11:20-12:30	(Mar. 22) 22:20-23:30	(Mar. 22) 15:20-16:30	(Mar. 22) 18:20-19:30
Mar. 24, 2021	11:00-12:10	(Mar. 23) 22:00-23:10	(Mar. 23) 15:00-16:10	(Mar. 23) 18:00-19:10
Mar. 25, 2021	10:30-11:40	(Mar. 24) 21:30-22:40	(Mar. 24) 14:30-15:40	(Mar. 24) 17:30-18:40
Mar. 26, 2021	10:00-11:10	(Mar. 25) 21:00-22:10	(Mar. 25) 14:00-15:10	(Mar. 25) 17:00-18:10
Mar. 27, 2021	9:30-10:40	(Mar. 26) 20:30-21:40	(Mar. 26) 13:30-14:40	(Mar. 26) 16:30-17:40
Mar. 28, 2021	9:15-10:25	(Mar. 27) 20:15-21:25	(Mar. 27) 13:15-14:25	(Mar. 27) 16:15-17:25
Mar. 29, 2021	8:50-10:00	(Mar. 28) 19:50-21:00	(Mar. 28) 12:50-14:00	(Mar. 28) 15:50-17:00
Mar. 30, 2021	8:20-09:30	(Mar. 29) 19:20-20:30	(Mar. 29) 12:20-13:30	(Mar. 29) 15:20-16:30
Mar. 31, 2021	8:00-09:10	(Mar. 30) 19:00-20:10	(Mar. 30) 12:00-13:10	(Mar. 30) 15:00-16:10



## ORBIT

550km  
and 450km



## SATELLITES

7



## INCLINATION

45  
Degrees



## CUSTOMERS

Rideshare

Incl. smallsats for government organizations, commercial operators, academia, and start-ups.

# MISSION OVERVIEW

ABOUT 'THEY GO UP SO FAST'

LAUNCHING FROM ROCKET LAB LAUNCH COMPLEX 1 ON NEW ZEALAND'S MĀHIA PENINSULA, 'THEY GO UP SO FAST' WILL BE ROCKET LAB'S 19TH ELECTRON LAUNCH AND SECOND MISSION OF 2021.



ELANA-19 IGNITION  
16 DECEMBER 2018

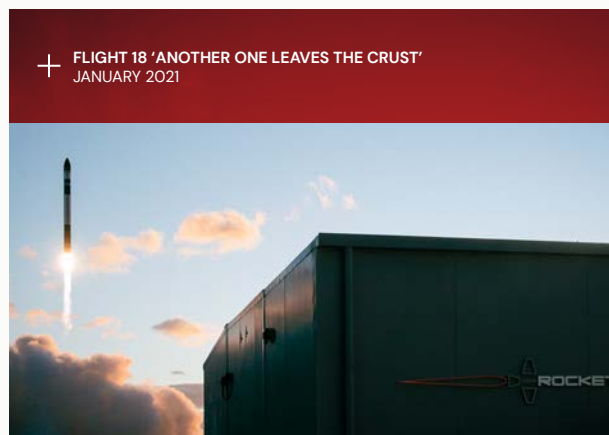
The launch will bring the total number of satellites launched by Electron to 104.

The spacecraft onboard Electron for this mission include a range of commercial and government satellite operators, as well as a next-generation Photon spacecraft.

Each payload will be integrated onto Photon, which will initially act as a Kick Stage space tug to circularize and deploy the satellites to precise orbits.

After deploying the first five satellites to a 550 km circular orbit, Photon's Curie engine will reignite to lower its attitude and deploy the final satellite to a 450 km orbit.

The Curie engine's unique ability to perform multiple reights on orbit enables Rocket Lab to deploy satellites to different orbits on the same launch – a level of payload deployment flexibility typically reserved for dedicated missions but is a standard capability on all Electron missions.



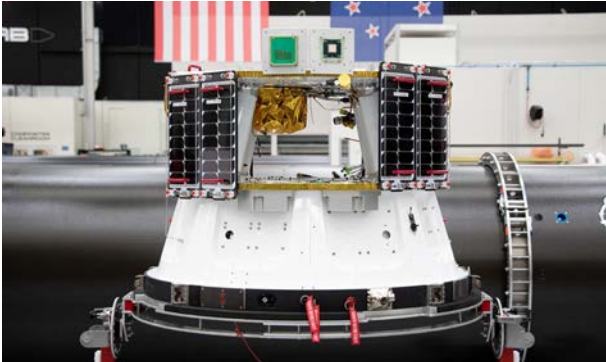
+ FLIGHT 18 'ANOTHER ONE LEAVES THE CRUST'  
JANUARY 2021



+ FLIGHT 17 (CREDIT: RORY GANNAWAY)  
DECEMBER 2020



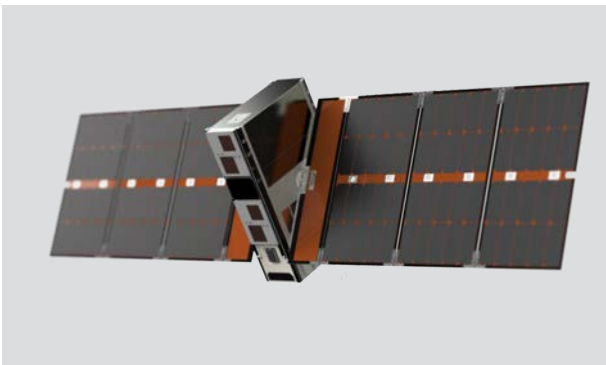
## PAYLOADS ONBOARD ELECTRON



### PAYLOAD: PHOTON PATHSTONE

Organization: Rocket Lab

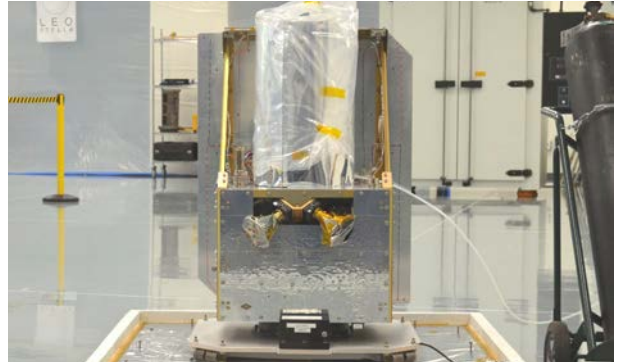
The Photon onboard this mission is the latest configuration of Rocket Lab's in-house satellite platform built for operations in low Earth orbit, deep space, and on interplanetary missions. Photon Pathstone is a risk reduction demonstration of technologies that will be used for Rocket Lab's upcoming mission to the Moon for NASA. The first successful launch and deployment of Rocket Lab's Photon spacecraft was on the I Can't Believe It's Not Optical mission in August 2020.



### PAYLOAD: CENTAURI 3

Organization: Fleet Space, procured by Tyvak

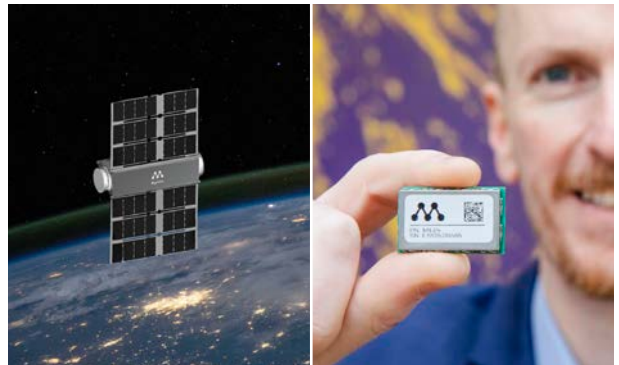
Centauri 3 is a newly-designed 6U NanoSat that will join Fleet Space's planned constellation of 140 Industrial Internet of Things (IIoT) satellites in low Earth orbit. Designed for use in the energy, utilities, and resource industries, the Centauri 3 will also test new hardware and space systems developed by Fleet Space that will support the 2023 Seven Sisters mission, a resource exploration mission by an Australian team of space, remote operations, and resource exploration companies that will launch nanosatellites and sensors to develop new resource exploration techniques for Earth, the Moon, and Mars, in support of NASA's Artemis Program.



### PAYLOAD: BLACKSKY GLOBAL SERIES

Organization: BlackSky, procured by Spaceflight Inc.

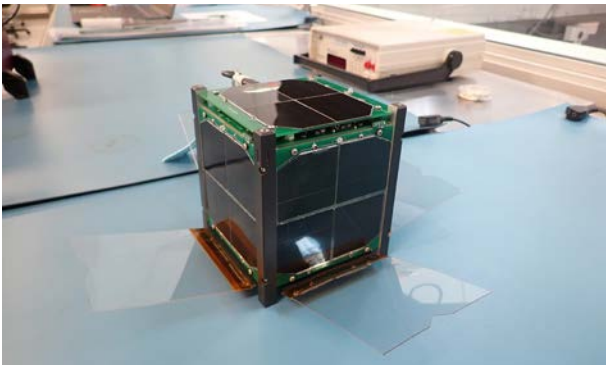
The BlackSky payload is an Earth-observation microsatellite that captures high-resolution images of the planet. BlackSky uses artificial intelligence to analyse and make sense of satellite images to track trends from a region's economic recovery from COVID-19 through to international cargo transport. This is the seventh launch of a Gen-2 spacecraft to date. Spaceflight Inc. arranged the launch and is providing mission management and integration services for BlackSky.



### PAYLOAD: MYRIOTA 7

Organization: Myriota, procured by Tyvak

Myriota is the global leader in low-cost, secure satellite connectivity for the Internet of Things. Myriota 7 is the latest addition to its satellite constellation, and forms part of a crucial next step for the business, as it moves towards near-real time connectivity. It will support Myriota's customers by further improving its existing service, which provides access to data from anywhere on Earth. Myriota's long battery life and direct-to-orbit connectivity supports products from technology partners servicing a wide range of industries including utilities, transport and logistics, supply chain, agriculture, mining and defense.



**PAYLOAD: VEERY HATCHLING**

**Organization: Care Weather Technologies**

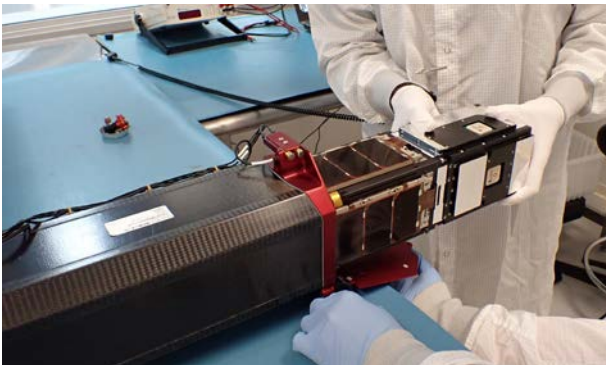
The Veery Hatchling mission will test Care Weather’s vertically-integrated satellite power, computing, and avionics systems in a 1U CubeSat. It paves the way for Care Weather’s future constellation of scatterometric radar weather satellites capable of producing hourly maps of global wind speed and direction over the surface of the ocean. Veery Hatchling is the first step in Care Weather’s mission to save lives and livelihoods by better forecasting Earth’s extreme weather.



**PAYLOAD: M2**

**Organization: The University of New South Wales’s Canberra Space**

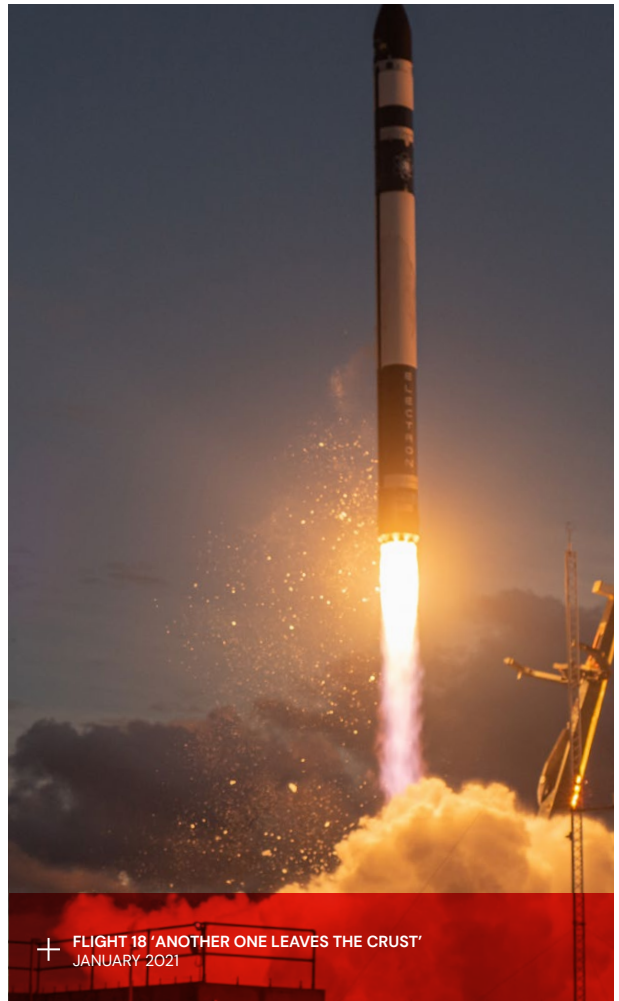
This spacecraft from the University of New South Wales Canberra Space, in collaboration with the Royal Australian Air Force, will bring together emerging technologies that deliver advanced capabilities in Earth observation, maritime surveillance, quantum computing, advanced AI, and laser communications. M2 follows on from the successful M2 Pathfinder mission deployed in June 2020 on Rocket Lab’s 12th mission, ‘Don’t Stop Me Now’.



**PAYLOAD: GUNSMOKE-J**

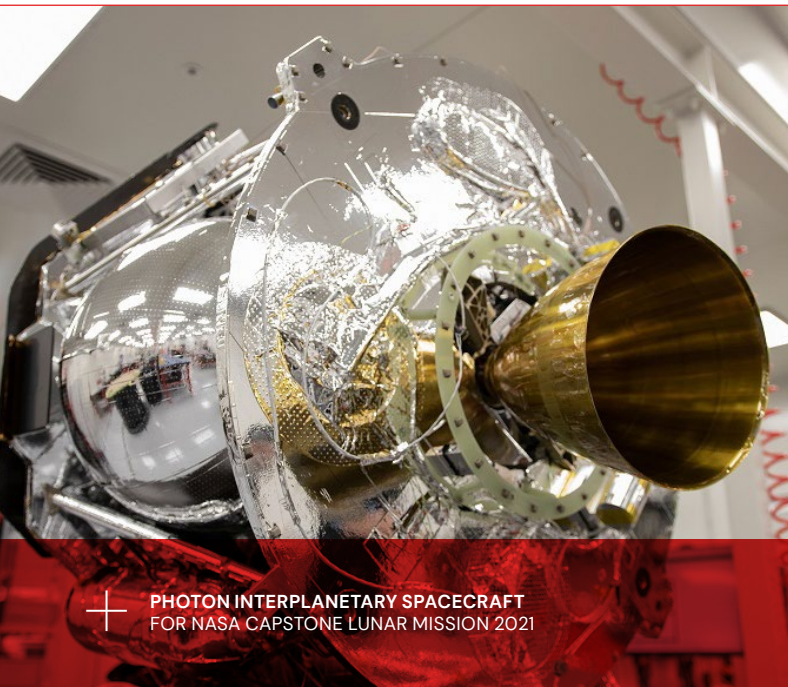
**Organization: U.S. Army’s SMDC, procured by TriSept**

TriSept procured the rideshare slot on Electron for the U.S. Army’s Space and Missile Defense Command (SMDC). Gunsmoke-J is an experimental 3U CubeSat that will test technologies that support development of new capabilities for the U.S. Army. “TriSept is thrilled to be providing the rideshare slot, dispenser hardware, regulatory compliance in both the U.S. and New Zealand, and spacecraft integration for this important technology demonstration in space. We look forward to the integration of this small but game-changing payload aboard Rocket Lab’s Electron,” said TriSept CEO, Rob Spicer.

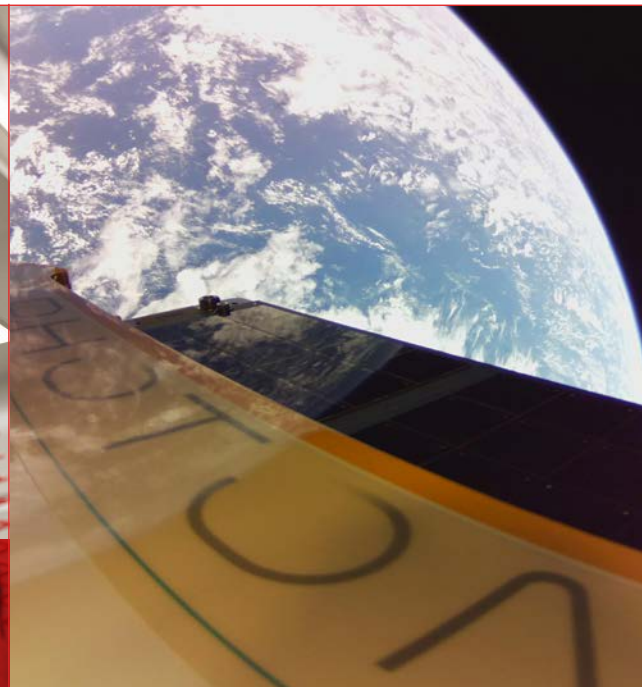




# NASA IS RETURNING TO THE MOON AND ROCKET LAB IS TAKING THEM THERE



PHOTON INTERPLANETARY SPACECRAFT  
FOR NASA CAPSTONE LUNAR MISSION 2021



PHOTON FIRST LIGHT MISSION  
AUGUST 2020

Human space travel has long captured imaginations but there's still a lot to learn about how humanity will explore beyond Earth's gravitational pull. A good place to start learning? One particular orbit around our Moon where NASA wants to send its next lunar astronauts.

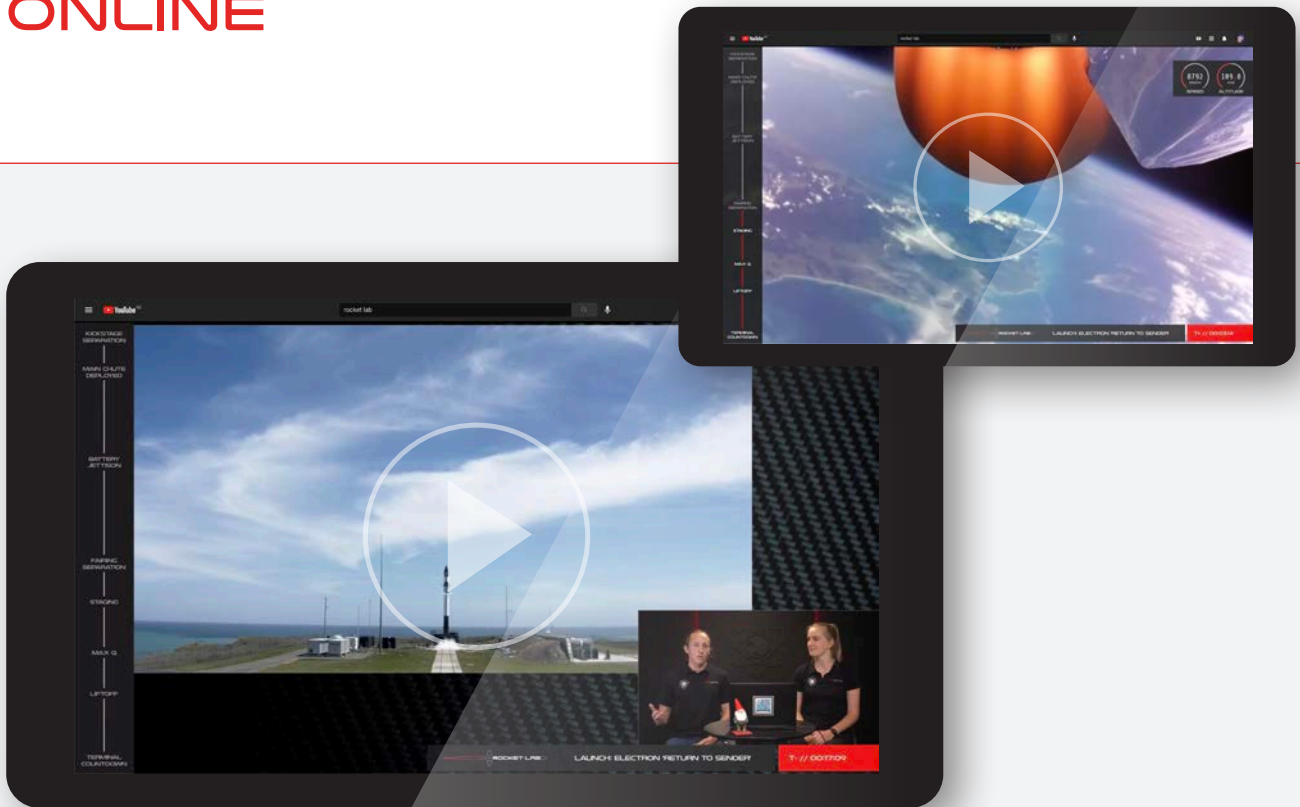
Launching on Electron in 2021, NASA's CAPSTONE mission will include a small sat on a scouting mission to verify the dynamics of a near rectilinear halo orbit, or NRHO, around the Moon. It is in this cislunar space that NASA wants to establish a Moon-orbiting outpost for humans to return to the lunar surface called Gateway. Not only does the NRHO have an unobstructed view of Earth at all times, it could also be a good position for Gateway to act as a communications relay between astronauts on the Moon and Mission Control back on Earth. Scheduled for launch on Electron later this year, Rocket Lab will send CAPSTONE to an initial low Earth orbit before our Photon spacecraft takes over. Photon and its foundational Kick Stage structure are no strangers to low Earth orbit, having deployed payloads or operated in space for every Electron mission since It's Business Time in 2018. But to break free of Earth's gravitational pull, Photon will kick things up a gear by providing in-space propulsion to conduct a series of orbit raising maneuvers.

This builds up enough velocity to perform a translunar injection, allowing CAPSTONE to break free of Earth's gravity and set a course for the Moon. After deploying CAPSTONE, Photon will continue on its own trajectory to conduct a lunar fly-by, while CAPSTONE will use its own propulsion system to enter a cislunar orbit.

Onboard They Go Up So Fast is a precursor Photon spacecraft for the CAPSTONE mission we've named Pathstone. Pathstone is the second Photon spacecraft to be deployed to orbit, following the launch of Photon First Light in August 2020. This Photon will build up flight heritage by demonstrating a new avionics stack, software, radio, sensors, actuators, custom solar panels, and more. With in-house manufactured reaction wheels and a control system representative of what we'll use for CAPSTONE, Photon Pathstone will demonstrate the precision pointing required for this mission's multiple Hyper Curie burns. Photon Pathstone's new radio will also showcase how we'll communicate with the spacecraft at lunar distances and provide valuable ranging data.

CAPSTONE will be the first CubeSat to fly in cislunar space – a feat made all the more easier by the dedicated service for small sats that Electron and Photon can provide. We're thrilled to be partnering with NASA for this exciting inch forward to humans landing on another surface once more.

# VIEWING A LAUNCH ONLINE



## LIVE STREAM

The best way to view a launch is via Rocket Lab's live video webcast. This offers the best views of launch and includes helpful commentary about the launch process. A livestream will be made available approximately 15–20 minutes prior to a launch attempt. Rocket Lab will post links to the webcast when live via Facebook and Twitter.

## LIVE STREAM LINKS

The livestream is viewable at:  
[rocketlabusa.com/live-stream](https://www.rocketlabusa.com/live-stream)

Also available on:  
[youtube.com/RocketLabNZ](https://www.youtube.com/RocketLabNZ)

## LAUNCH FOOTAGE & IMAGES

Images and footage of the 'They Go Up So Fast' launch will be available shortly after a successful mission at:

[www.rocketlabusa.com/news/updates/link-to-rocket-lab-imagery-and-video](https://www.rocketlabusa.com/news/updates/link-to-rocket-lab-imagery-and-video)

## UPDATES

For information on launch day visit:  
[rocketlabusa.com/next-mission](https://www.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.

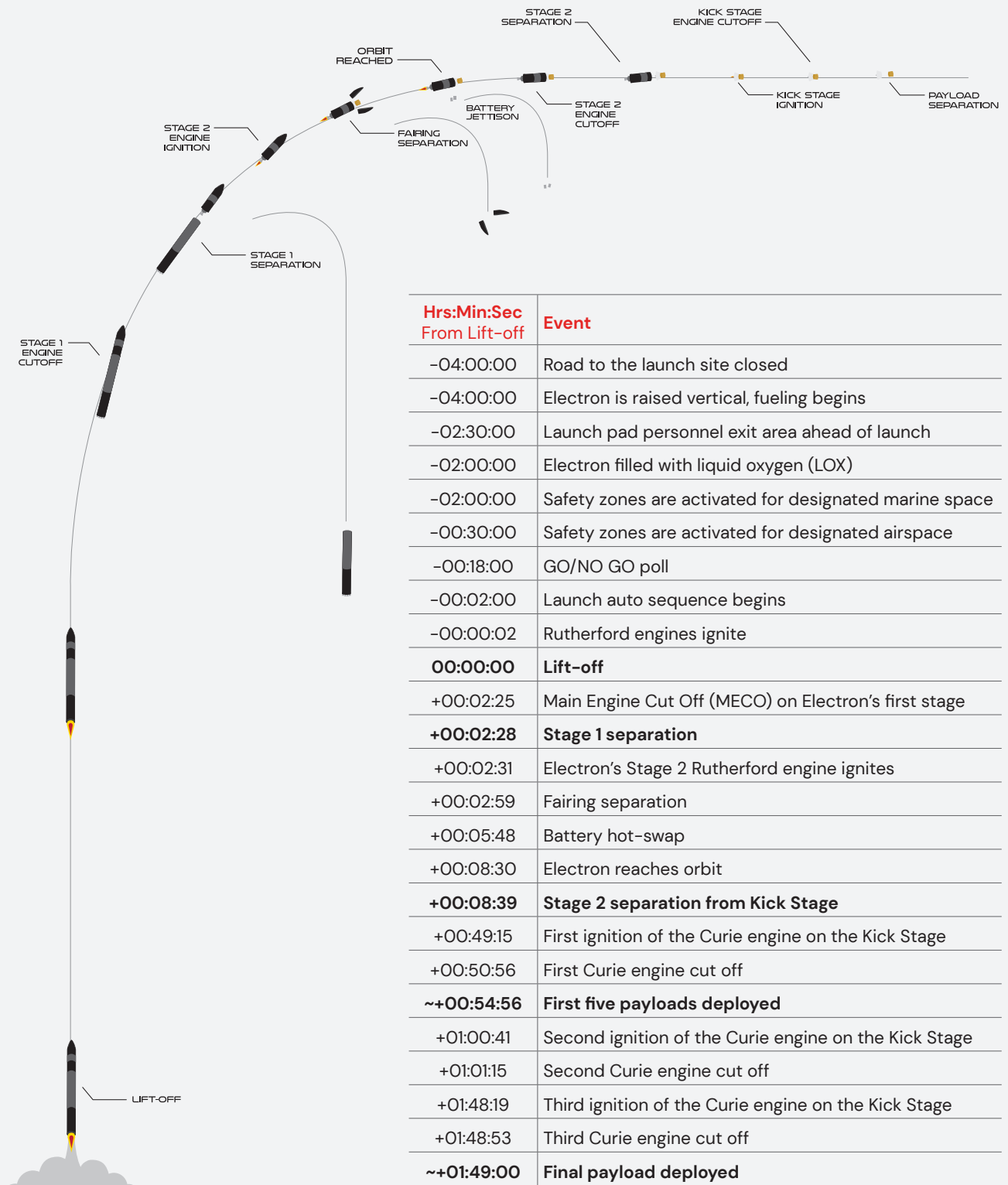
## More information visit

[www.visitwairoa.co.nz/welcome-to-wairoa/space-coast-new-zealand](http://www.visitwairoa.co.nz/welcome-to-wairoa/space-coast-new-zealand)





# TIMELINE OF LAUNCH EVENTS



# 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

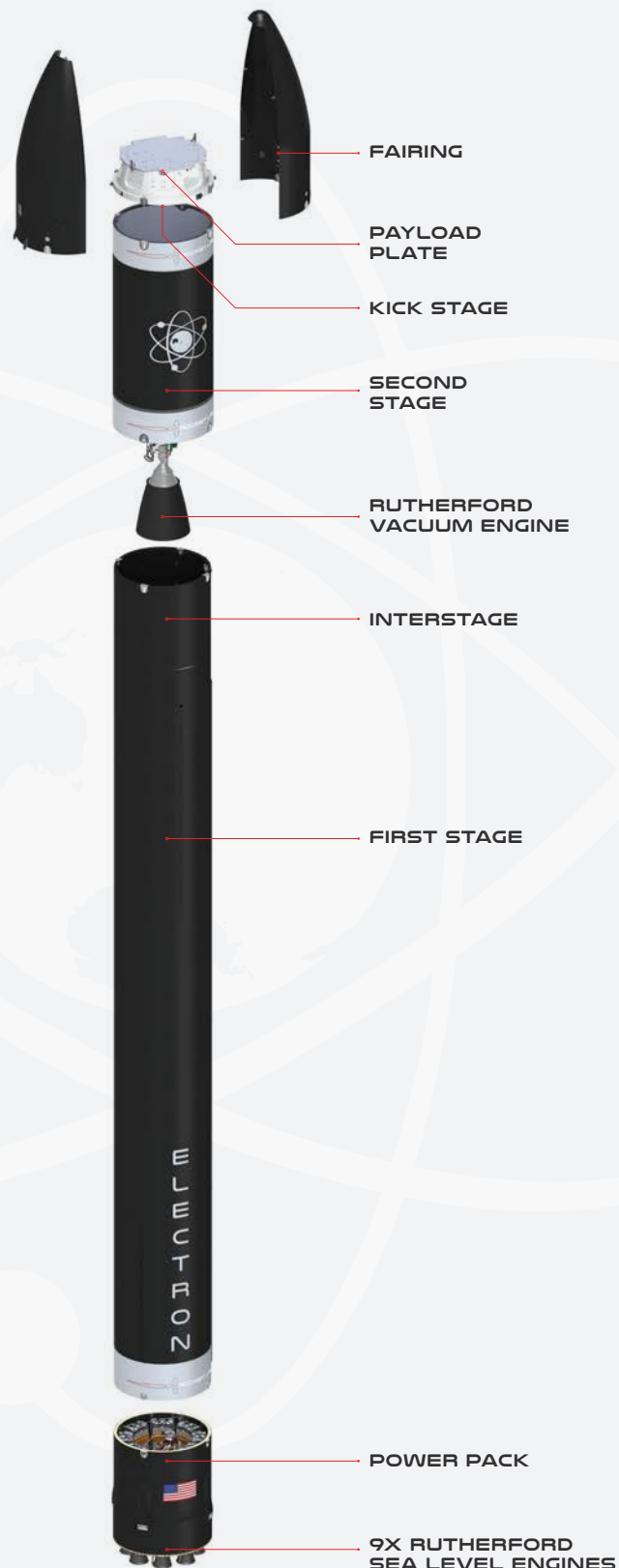
9x Rutherford Sea Level Engines

### THRUST

5600 LBF Sea Level (Per Engine)

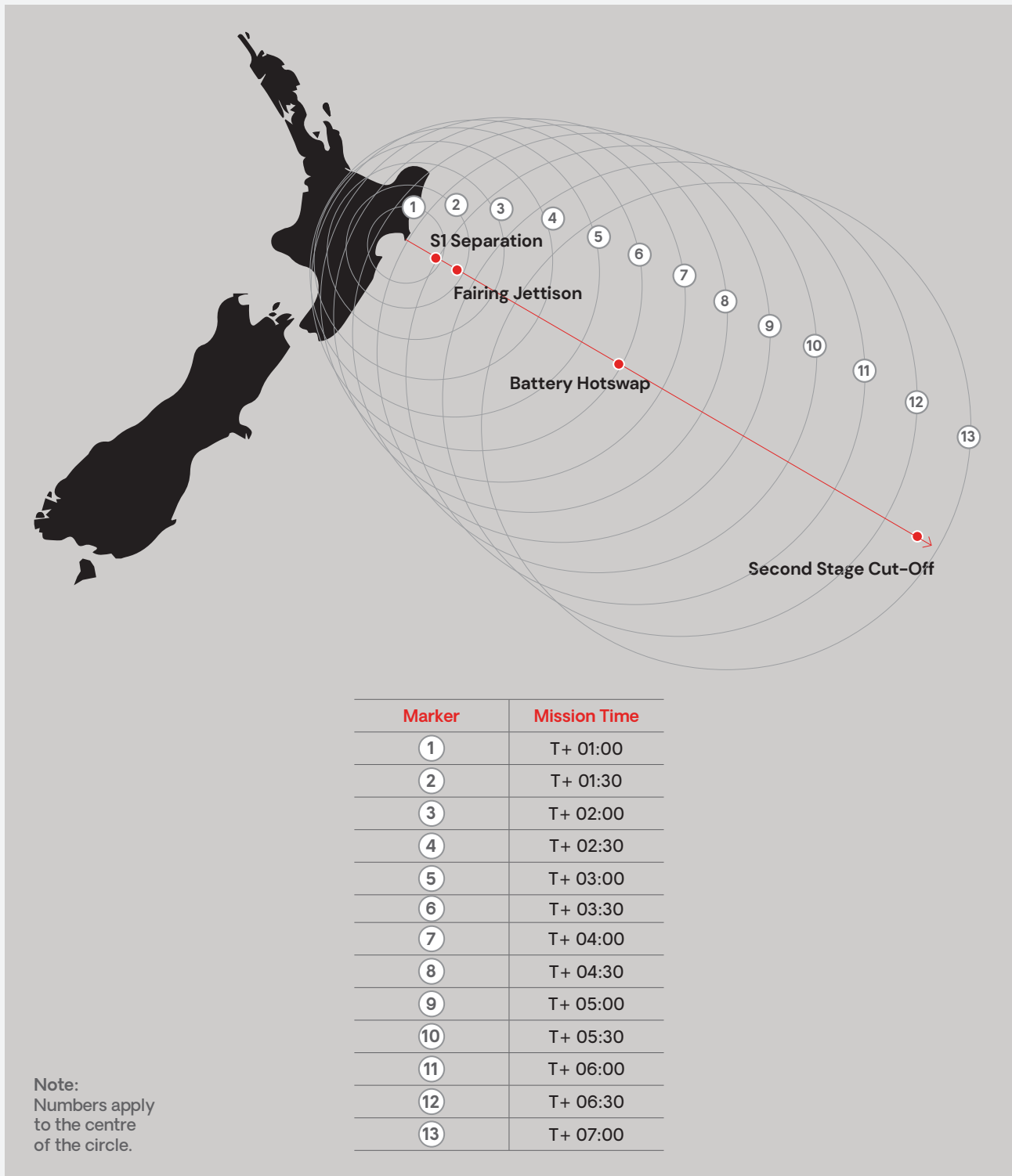
### ISP

311 Sec




# LAUNCH VISIBILITY MAP


WHEN AND WHERE TO SPOT THE LAUNCH






## CONTACT US


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