ROCKET LAB USA 2017

'STILL TESTING' PRESS KIT DECEMBER 2017

ROCKET·LAB

INTRODUCTION

'Still Testing' is Rocket Lab's second test flight of the Electron orbital launch vehicle. The test will be carried out from Rocket Lab Launch Complex 1 on the Māhia Peninsula in New Zealand.

Rocket Lab will open a ten day launch window from Friday 8 December, 2017. During this time a four hour launch window will open daily from 2:30pm NZDT.

'Still Testing' is the important next step in Rocket Lab's mission to usher in a new era of unprecedented access to space. The mission objective is to gather more data from the launch process to inform future launches and to place Electron's first customer payloads into orbit. The test flight will launch small satellite payloads for Planet and Spire to carry out advanced Earth-imaging, as well as maritime, aviation, and weather tracking.

The test launch attempt will only proceed if conditions are ideal for launch. Due to the nature of launching rockets, planned lift-offs are often subject to multiple and subsequent postponements (scrubs). With thousands of technical factors to consider and the potential for unsettled weather, the opportunity for a feasible attempt is limited.

Due to safety and security requirements there will be no access to the launch site for this event and road closures will be in operation. Launch Complex 1 is not visible during the test launch from any publicly accessible point on the Māhia Peninsula.

A live stream of the launch will be available at www.rocketlab.co.nz/livestream. The feed will be live approximately 12 minutes prior to a launch. Rocket Lab will post to Twitter when a feed is live.

Following the completion of a successful test launch, video and press materials will also be distributed to the media.

LIFT OFF | Electron, 'ITS A TEST' launch, Māhia Peninsula, May 2017

ABOUT ROCKET LAB

Rocket Lab's mission is to revolutionize the way we access space. Since its creation in 2006, Rocket Lab has been eliminating commercial barriers through the development of lightweight, cost-effective and high-frequency rocket launch services, ushering in a new era of unprecedented access to space. The company was founded on the belief that small payloads require dedicated launch vehicles and flexibility to liberate them from the choke of traditional launch systems.

On May 25, 2017, Rocket Lab successfully launched its first Electron rocket, It's a Test, from Rocket Lab Launch Complex 1 on New Zealand's Mahia Peninsula. The flight made it to space, at an altitude of 250km, completing a successful first stage burn, stage separation, second stage ignition and fairing separation. Reaching space in the first test puts Rocket Lab in a strong position to deliver customers to orbit and open space for business.

Rocket Lab is a privately funded company with top tier investors including Khosla Ventures, DCVC (Data Collective), Bessemer Venture Partners, Lockheed Martin and Promus Ventures.

ELECTRON AT ROCKET LAB LAUNCH COMPLEX 1 | Māhia Peninsula, 2017

ABOUT LAUNCH COMPLEX 1

Rocket Lab's Launch Complex 1 is located on the tip of the Māhia Peninsula, between Napier and Gisborne on the east coast of the North Island of New Zealand. The complex is the first orbital launch site in New Zealand, and the first privately operated orbital launch site globally. The remote location of Launch Complex 1, particularly its low volume of air and marine traffic, is a key factor in enabling unprecedented access to space. The geographic position of the site means it is possible to access a large range of orbital azimuths – satellites launched from Māhia can be delivered to a wide range of inclinations to provide services across many areas around the world.

ABOUT RUTHERFORD ENGINE

Rutherford is a state of the art oxygen and kerosene pump fed engine specifically designed from scratch for Electron, using an entirely new propulsion cycle. A unique feature of Rutherford is the high-performance electric propellant pumps which reduce mass and replace hardware with software.

Rutherford is the first engine of its kind to use 3D printing for all primary components. These features are world firsts for a high-performance liquid rocket engine with propellants that are fed by electric turbopumps. The production-focused design allows Electron launch vehicles to be built and satellites launched at an unprecedented frequency.

RUTHERFORD ENGINE TEST | New Zealand, 2016

> RUTHERFORD IS A STATE OF THE ART OXYGEN AND KEROSENE PUMP FED ENGINE SPECIFICALLY DESIGNED FROM SCRATCH FOR ELECTRON, USING AN ENTIRELY NEW PROPULSION CYCLE.

ELECTRON

Electron is an entirely carbon-composite vehicle that uses Rocket Lab's 3D-printed Rutherford engines for its main propulsion system. The Electron vehicle is designed to carry payloads, such as small satellites, to a low orbit. Owing to the modern design and construction of the Electron – rapid and scalable manufacture with high levels of automation is possible.

The Electron launch vehicle will allow constellations of small satellites to provide services like affordable internet from space and live-earth observation for activities such as environmental monitoring, natural disaster prediction, up-to-date maritime data and search and rescue services.

Electron is capable of delivering payloads of up to 150 kg to a 500km sun-synchronous orbit – the target range for this high-growth constellation-satellite market. Customers signed to fly on Electron include NASA, Planet, Spire and Moon Express.

MAX. PAYLOAD
225KG

STAGES
2

HEIGHT
17M

NOMINAL PAYLOAD
150KG

NOMINAL SUN-SYNC. ORBIT
500KM

DIAMETER
1.2M

ABOUT THE TEST LAUNCH

LAUNCH PLANNING AND OPERATIONS

Activities on the day of a launch are the culmination of many months of preparations.

The launch vehicle undergoes extensive testing at every stage of its development. These tests include analysis and simulation prior to fabrication; tests of individual components, assemblies and systems and complete stage stack hot fire tests. Every part of the rocket is trialled prior to an attempted launch.

Launch personnel develop procedures to prepare the vehicle for flight, from lifting it into position, to fuelling, and establishing its communications with ground control. Operators rehearse every step of a launch using a combination of real rocket systems and high-fidelity computer simulations – similar to airline pilots repeatedly practicing difficult take-offs and landings, using flight simulators.

Launch planning is carried out with public safety as the primary consideration at every stage. The effects of planning decisions are carefully calculated months before the rocket approaches the launch pad to ensure that public and personnel safety is maintained above very strict thresholds.

Planning for this launch has accumulated years of weather data, local marine and air traffic conditions, and coordination with multiple local, national and international authorities and agencies. Emergency services have taken part in rehearsals around the launch site to help familiarize personnel with the unique aspects of space launch activities.

Throughout the countdown, the condition of the launch vehicle, the range, and the environment around the flight path is continually monitored. Surface and air traffic is monitored by radar, boats, and aircraft; road traffic leading to the launch site is controlled to protect against vehicle accidents on the narrow, unsealed road and up-to-the-minute weather observations are made with radar and balloons. Thousands of data channels from the launch vehicle itself are continuously received and automatically checked.

Only if all conditions are within predetermined safe limits will Rocket Lab permit the launch to go ahead. This may result in occasional, repeated, or lengthy delays – in particular during a test launch.

Space flight is a complex process. A decision to postpone a planned launch can occur up to 48 hours ahead of time or as late as 0.1 seconds before lift-off.

LAUNCH AREA

As Rocket Lab's top priority is public safety, there are safety zones in place during a launch and no access will be permitted to Onenui Station. Temporary road closures will be in place for traffic management and to ensure the safety of vehicles on the Māhia East Coast Road.

Launch Complex 1 is not visible during a launch from any publicly-accessible point on the Māhia Peninsula.

Temporary limitations will apply to the airspace over the site. Pilots and airlines will be advised by Airways NZ ahead of time through the AIP and Airways IFIS, and given details on the day through the standard Notice to Airmen (NOTAM) process.

Rocket Lab will also maintain exclusive use of an area of water surrounding the launch site for a brief period during launch window. This will be publicly advertised and available via a Notice to Mariners (NOTMAR) and on signage at Māhia boat ramps. Rocket Lab continues to consult and communicate with recreational and commercial users of the area.

CONDITIONS FOR SUCCESSFUL LAUNCH

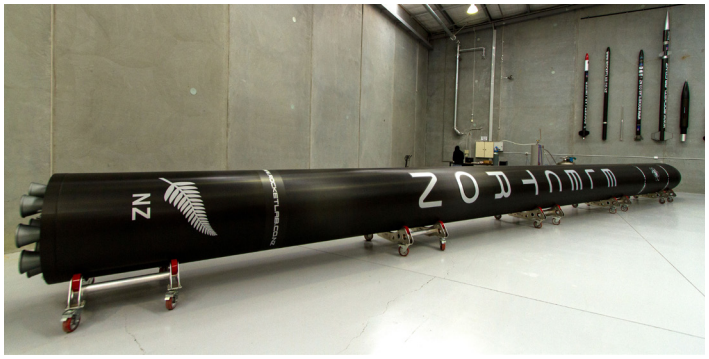
Due to the nature of launching rockets, planned launches will often be postponed or scrubbed (i.e. rescheduled to another day) to ensure ideal launch conditions.

A scrub is a high possibility as weather conditions constantly change. Triggers that would immediately postpone a launch include excessive cloud cover, rain, lightning or winds at high altitude.

Before a launch, a series of routine checks are completed with ground support equipment. If anything does not perform exactly as expected, the launch will be delayed to resolve the issue.

If the atmospheric or technical parameters required for launch are not optimal, a decision will be made to scrub the launch. Rocket Lab will announce the decision to scrub a launch as soon as possible after it is made in order to reduce the burden on marine and air traffic.

SUCCESSFUL LAUNCH



ELECTRON | New Zealand, 2017

At ignition, a deluge of water used to protect the launch pad and suppress exhaust noise will be vapourised into large billowing white clouds of steam. After the engines have burned for a couple of seconds to confirm nominal thrust levels, the Electron will be released and begin to climb from the pad. It will ascend away from the steam cloud, supported by an intensely bright white-orange plume and leaving little or no smoke trail.

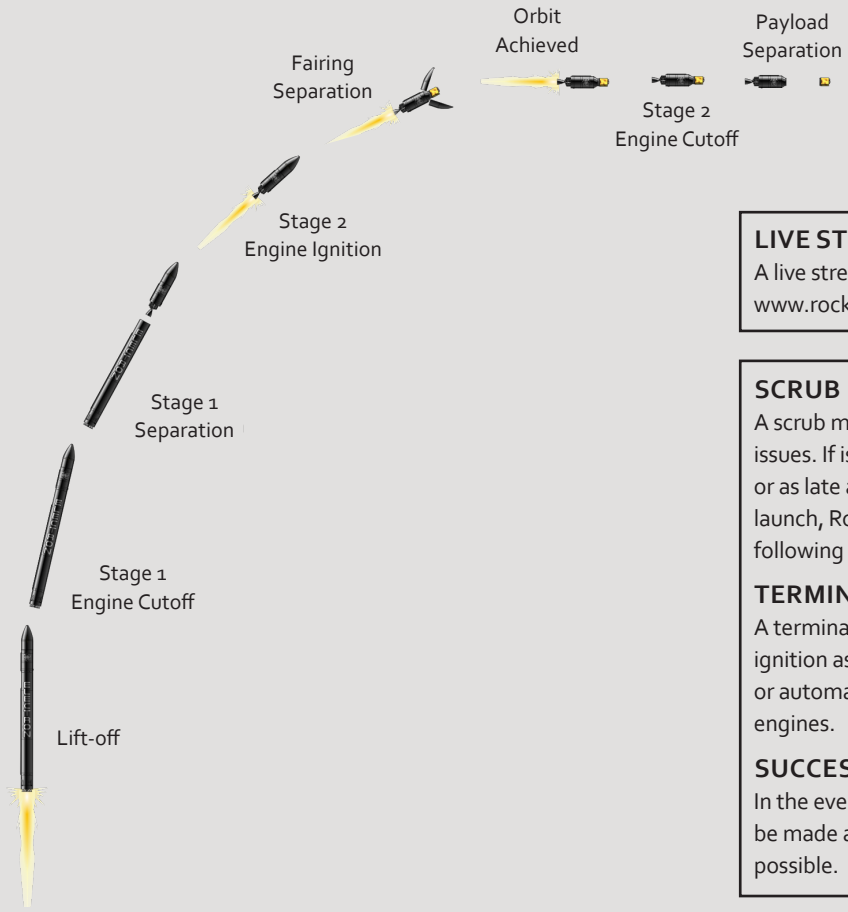
The climb will be slow at first, taking approximately three seconds to clear the 4-storey tall launch tower. As the rocket climbs and becomes lighter it will accelerate, reaching a commercial airliner's typical cruising altitude in approximately one minute.

Once it has left the thicker parts of the atmosphere, the rocket will begin to turn south and start building up the 27,000km/h horizontal velocity in order to achieve orbit. Observers on the ground may see the rocket turn and fly towards the southern horizon.

The launch will be monitored at Mission Control in Auckland and all site and launch safety is managed at Range Control, 2.4km north of the launch site.

TIMELINE OF EVENTS

HOURS:MINUTES:SECONDS FROM LIFT-OFF	EVENT
	The team move the rocket from the hangar to the launch pad and assess weather conditions up to lift-off
-07:00:00	Emergency crews, local officials and Rocket Lab team are briefed and move into position for launch
-06:00:00	Road to the launch site closed
-04:00:00	Electron lifted to vertical position and filled with fuel
-02:30:00	Launch pad personnel exit area in preparation for launch
-02:00:00	Electron filled with liquid oxygen (LOx)
-01:00:00	Aviation authority advised to alert aircraft pilots of potential hazards
-00:10:00	Final preparations for launch commence
-00:02:00	Autosequence commences and the Electron's on-board computers initiate the launch sequence
-00:00:02	Ignition of the nine Rutherford engines powering Electron's first stage
00:00:00	Lift-off – Electron climbs from the launch pad – initially rising slowly and increasing in speed as the Electron gets lighter
+00:02.30	Engines powering Stage 1 cut off
+00:02.34	Stage 1 of Electron separates
+00:02.36	The vacuum Rutherford engine on Stage 2 ignites
+00:03.04	The Electron's fairing (the protective casing around the payload) separates
+00:08.08	Electron reaches orbit
+00:08.14	Stage 2 engine cuts off
+00:08:31	Payload separates from the launch vehicle



LIVE STREAM

A live stream will go live approximately 12 minutes before lift off at www.rocketlab.co.nz/livestream

SCRUB

A scrub may be called primarily in the case of weather or technical issues. If issues arise a scrub can occur at any time ahead of launch or as late as 0.1 seconds before lift-off. In the event of a scrubbed launch, Rocket Lab will issue a statement as quickly as possible following the decision.

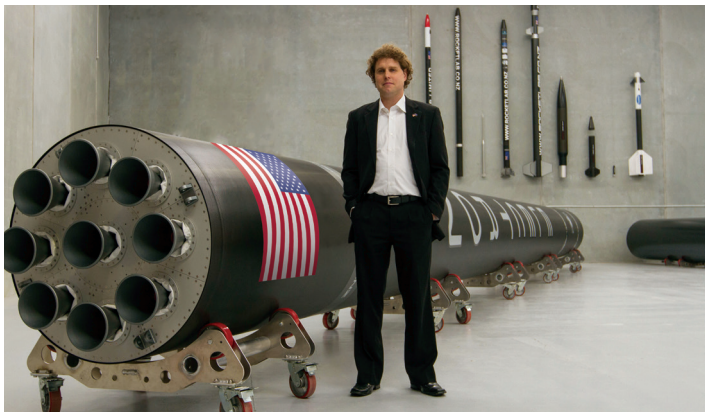
TERMINATION

A termination of the launch can be issued at any time following ignition as a result of a malfunction. A termination can be manually or automatically executed, which cuts all power to the Rutherford engines.

SUCCESSFUL LAUNCH

In the event of a successful launch, video and other materials will be made available and sent to members of the media as quickly as possible.

EXECUTIVE LEADERSHIP



PETER BECK – CEO, CHIEF ENGINEER AND FOUNDER
Peter Beck is the CEO and chief engineer behind Rocket Lab, an aerospace company founded in 2006 with the goal of democratizing space.

In 2009, Rocket Lab became the first private company in the Southern Hemisphere to reach space. Following this success, Peter began to focus on making space truly, commercially accessible and, in 2013, initiated the Electron orbital rocket program to achieve this goal.

Space has traditionally been the domain of governments but Peter has proven its commercial viability by growing a billion-dollar company in under three years, with a large, passionate team in both New Zealand and the USA.

Peter's vision is to make space accessible and to drive substantive change in an industry that has been slow to evolve. In order to enable disruptive change, Peter has played an instrumental role in establishing international treaties and legislation, which have resulted in the birth of New Zealand's space industry. He also oversaw the development of major infrastructure required to support the Electron project. This included the world's first and only private orbital launch range.

As a celebrated scientist and business leader, Peter has been awarded a Meritorious Medal from the Royal Aeronautical Society and the Cooper Medal, presented by the Royal Society (NZ) bi-annually to those deemed to have published the best single account of research in physics and engineering.In 2015, Peter was awarded New Zealander of the Year (innovation) and in 2016 was recognised as New Zealand EY Entrepreneur of the Year.

Peter is changing how we access space, enhancing humanity's capability to better understand our planet and our impact on it.

BRADLEY SCHNEIDER | EVP - USA OPERATIONS
Bradley Schneider is responsible for day-to-day operations and development of Rocket Lab USA. Bradley has 35 years of experience in the aerospace and defense industry, focusing the last decade and a half on the development of small satellite and small launch vehicle technologies.

Bradley has performed senior leadership roles as Chief Financial Officer, Chief Operating Officer and General Manager for various start-up/private companies and extensive public sector experience with Lockheed Martin Corporation and Raytheon. As a senior executive of innovative aerospace companies dedicated to the design, development and manufacturing of state-of-the-art systems, Bradley has been committed to reducing the cost of access to space.

Bradley received a B.S. degree in Finance and Accounting from Brigham Young University. He has been recognized by NASA, American Institute of Aeronautics and Astronautics (AIAA), Wharton Business School and Inc. 500 for outstanding leadership and achievement.

SHAUN O'DONNELL | VP - GLOBAL OPERATIONS
Shaun O'Donnell iS responsible for the global day-to-day operations of Rocket Lab and manages a large number of cross-functional teams. He has been with the company for more than a decade leading the development of a number of complex space systems.

Previously, Shaun was the head of the Guidance Navigation and Control (GNC) division at Rocket Lab, and had responsibility over all electronic and software systems on board Electron. Shaun has been involved with Rocket Lab since 2007, where he was solely responsible for all avionics and software systems, including the Atea 1, Instant Eyes and VLM projects.

Shaun holds an Electrical and Electronic Engineering degree from the University of Auckland.

LACHLAN MATCHETT | VP - PROPULSION
Lachlan Matchett is responsible for all propulsion activities at Rocket Lab. This includes all orbital propulsion systems including the Rutherford sea level and vacuum engines. Lachlan was responsible for the initial design of the Rutherford engine and has managed the development of the engine from concept through flight qualification and production.

Lachlan holds a Bachelor's degree in Mechanical Engineering and Master's degree in Electrical Engineering from the University of Canterbury in New Zealand.

Lachlan was named 2017 IPENZ Young Engineer of the Year.

SHAUN D'MELLO | VP - LAUNCH
Shaun D'Mello has overseen the design, licensing and development of the world's first private orbital launch range, Launch Complex 1.

Shaun is responsible for the operation of launch systems and range infrastructure including fluids systems, structures and mechanisms, tooling and ground support equipment. Shaun manages range safety analysis, operations and launch licensing as well as mission and launch integration, planning and coordination.

Shaun has a First Class Honors degree in Aerospace Engineering from the University of Sydney, and is a member of the American Institute of Aeronautics and Astronautics (AIAA). Previously, Shaun has worked on the design of light experimental aircraft, and the research, development and structural testing of composite structures for automotive and aerospace applications.

SHANE FLEMING | VP - USA OPERATIONS
Shane Fleming is responsible for the management operations of Rocket Lab's headquarters in Huntington Beach, California. Previously, Shane managed the operations at Rocket Lab's Auckland, New Zealand facility, as well as Launch Complex 1. With a decade of experience developing and commercializing innovative and disruptive technologies, Shane is accustomed to leading diverse teams and navigating complex international projects.

Prior to Rocket Lab, Shane spent seven years at biotechnology firm LanzaTech, leading the Global Engineering Operations and managing teams of engineers, scientists, and technicians at five production facilities in four countries across China, Taiwan, Japan, and the US.

Shane has a background in mechanical engineering from the University of Colorado Boulder.

FAQS

WHO WILL PUSH THE IGNITION SWITCH?
There is no physical ignition switch for the launch. Once the order to commence autosequence is given the on-board systems will initiate launch.

WHAT SAFETY ZONE WILL BE IN PLACE?
A safety exclusion zone will apply around the launch site shortly before, during and after the flight. The exclusion zone applies to all unauthorized pedestrians, vehicles and vessels.

HOW BIG IS THE SAFETY ZONE
Information on exclusion zones will be on our website www.rocketlab.co.nz/mahia and on signage at Māhia boat ramps.

HOW MUCH FUEL WILL BE USED?
The fuel used for the entirety of the flight is equal to the amount of fuel required for a flight from San Francisco to Los Angeles. However, the Electron will travel significantly further than this distance.

WILL THE TEST LAUNCH CARRY A PAYLOAD?
Electron will carry an Earth-imaging Dove satellite for Planet and two Lemur-2 satellites from Spire for weather and ship tracking.

WILL LOCALS BE AFFECTED BY NOISE LEVELS?
Peak sounds will be very brief, with the highest sound levels only sustaining for less than 30 seconds. The highest predicted sound level for any house outside the exclusion zone, on the peninsula, will be roughly the same as the sound of a vacuum cleaner. The peak sound in Māhia Township will be similar to the level of a conversation in a quiet office.

HOW LONG AFTER A SCRUB WILL THE NEXT LAUNCH ATTEMPT BE?
A decision will be made as soon as possible after a scrub as to when the next launch attempt will occur. This decision will be based on a myriad of factors, including weather, but a follow up attempt could be as early as the following day.

HOW CLOSE CAN I GET TO THE LAUNCH SITE?
As Rocket Lab's top priority is safety, safety zones will be in effect during the launch and no access will be permitted to Onenui Station. A security cordon will be in place on Māhia East Coast Road.

WILL A VIEWING PLATFORM BE PROVIDED?
Launch Complex 1 is not visible during the test launch from any publicly accessible point on the Māhia Peninsula. Wairoa District Council is evaluating the location of possible viewing areas but these will not be in place for the test phase. Please check our website for updates on future launches.

WILL A LIVE STREAM BE AVAILABLE FOR THE TEST LAUNCH?
A live stream will be made available at www.rocketlab.co.nz/livestream.

HOW CAN I GET IMAGES AND VIDEO OF THE LAUNCH?
Rocket Lab will be releasing video and images to media soon as possible following a successful launch.

ELECTRON STANDING TALL | Māhia Peninsula, 2017

SOCIAL MEDIA

For real time updates on the launch follow the Rocket Lab Twitter page twitter.com/RocketLab and when posting about the test launch use hashtags: #StillTesting #RocketLab #Electron

@RocketLabUSA
@RocketLab

CONTACTS

MORGAN BAILEY
COMMUNICATIONS MANAGER
+64 27 538 9039
m.bailey@rocketlab.co.nz

CONTACT US

rocketlabusa.com
+64 9 373 2721
enquires@rocketlabusa.com

CONNECT WITH US

@rocketlab
RocketLabUSA
facebook.com/rocketlabusa