BABY COME BACK

PRESS KIT | NET 14 JULY 2023 UTC / 15 JULY NZST

Rocket Lab USA, Inc.
rocketlabusa.com

ROCKETLAB

LAUNCH INFORMATION

LAUNCH SITE

Launch Complex 1 – Pad B
Mahia, New Zealand.

LAUNCH WINDOW

A 14-day launch window opens no earlier than 15 July 2023 NZST with the following daily launch window times.

Time Zone	Window Open
NZST	11:30 – 13:30, July 15, 2023
UTC	23:30 – 01:30, July 14, 2023
EST	19:30 – 21:30, July 14, 2023
PDT	16:30 – 18:30, July 14, 2023

RECOVERY MISSION

Electron Stage 1 will be recovered by marine vessel after splashdown.

ORBIT

1000km

Sun Synchronous

SATELLITES

7

INCLINATION

99.45

Degrees

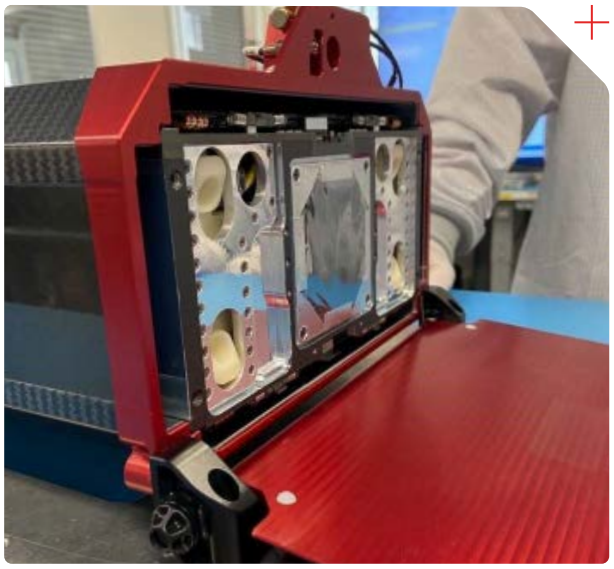
CUSTOMER

Rideshare

Seven payloads being deployed.

MISSION OVERVIEW

About ‘Baby Come Back’



The “Baby Come Back” mission will be Rocket Lab’s 39th Electron mission and will launch from Rocket Lab Launch Complex 1, Pad B on New Zealand’s Mahia Peninsula.

“Baby Come Back” is the seventh launch of 2023 and is a rideshare mission that will deliver seven satellites to a sun-synchronous orbit for customers NASA, Spire Global, and Space Flight Laboratory.

In addition to the primary mission of deploying customer satellites, Rocket Lab will attempt a marine recovery of Electron’s first stage. This will see Electron’s first stage return to Earth under parachute for a soft splashdown in the ocean before it is collected by vessel. The stage will be transported back to Rocket Lab’s production complex and analyzed to inform future recovery and reuse missions.

MISSION OVERVIEW

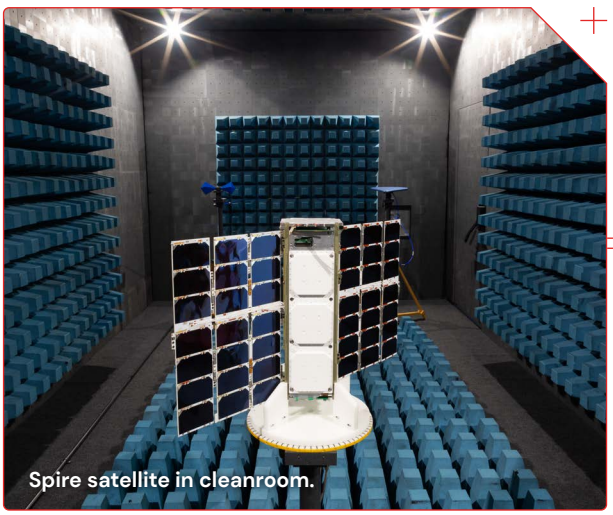
Payloads Onboard Electron

Payload: Starling
Organization: NASA

NASA's Starling mission is a four CubeSat mission designed to test technologies to enable future "swarm" missions. Spacecraft swarms refer to multiple spacecraft autonomously coordinating their activities to achieve certain goals. Starling will demonstrate technologies for in-space network communications, onboard relative navigation between spacecraft, autonomous maneuver planning and execution, and distributed spacecraft autonomy - an experiment for small spacecraft to autonomously react to observations, paving the way for future science missions.

Payload: Telesat's LEO 3
Organization: Space Flight Laboratory

Space Flight Laboratory (SFL) selected Rocket Lab to launch Telesat's LEO 3 demonstration satellite that will provide continuity for customer and ecosystem vendor testing campaigns following the decommissioning of Telesat's Phase 1 LEO satellite.



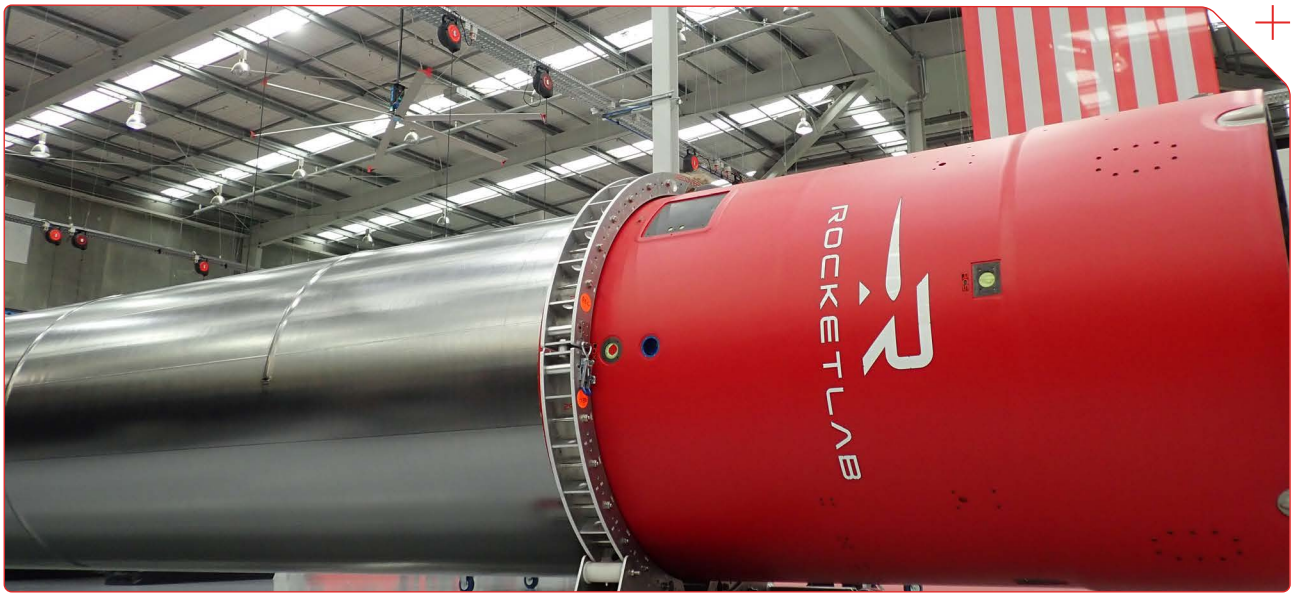
Spire satellite in cleanroom.

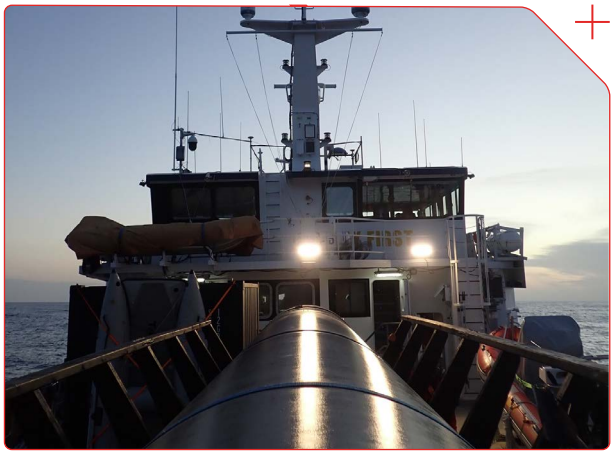
Payload: Two 3U satellites
Organization: SPIRE Global

Spire will launch two 3U satellites carrying Global Navigation Satellite System Radio Occultation (GNSS-RO) payloads to replenish its fully deployed constellation of more than 100 multipurpose satellites.

RECOVERY MODIFICATIONS

Electron updates





2023 is a big year as Rocket Lab continues to make Electron the world's only reusable small launch vehicle.

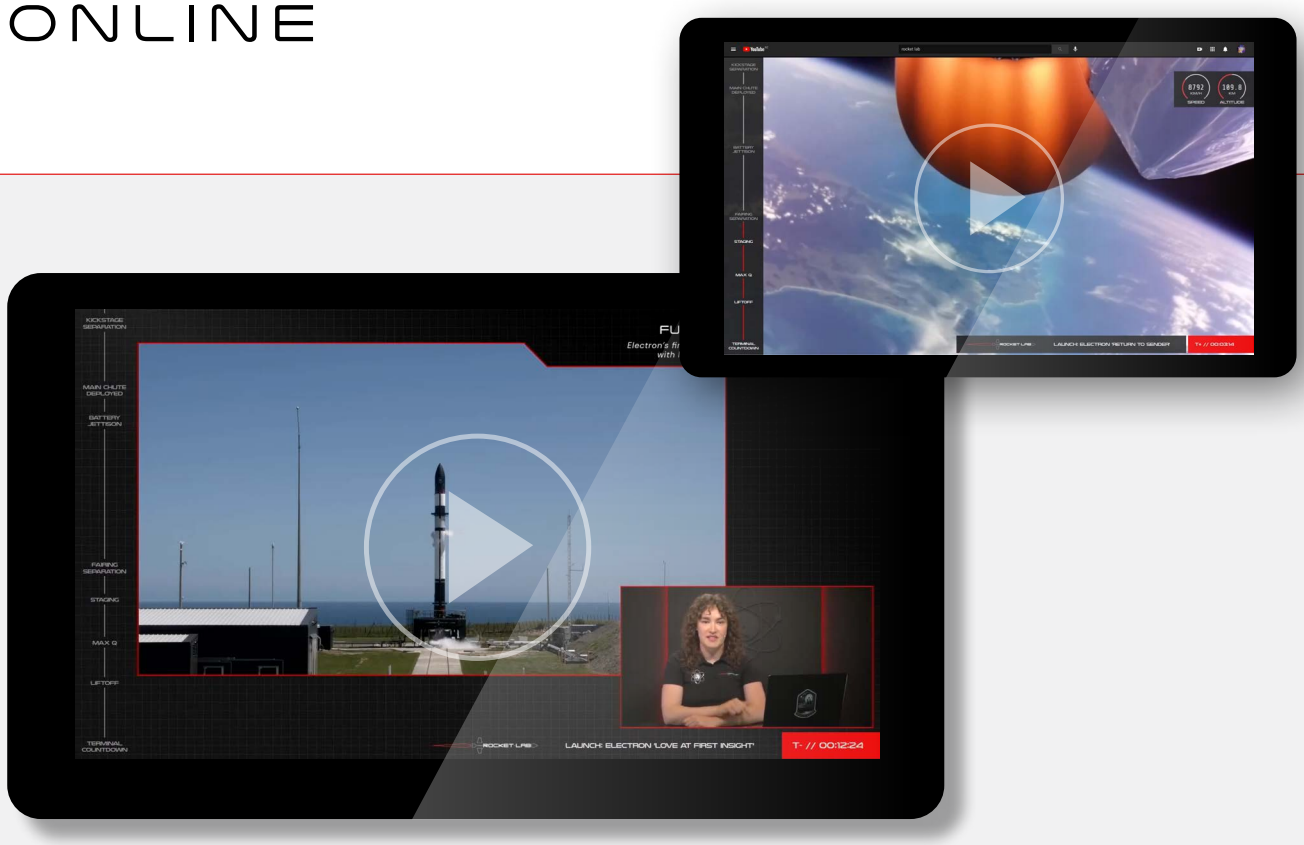
Since deciding to focus solely on marine recovery operations, the Recovery team has made significant alterations to Electron that will progressively iterate marine salvage solutions. Recovery Electrons are now specifically designed to spend time in the ocean. This means including improved sealing solutions for the interstage, powerpack, and some internal components on the Rutherford engines to improve saltwater resilience. The expectations for these modifications and upgrades is that the engines will be fully resilient.

For this mission, the Recovery team is using a new, lighter parachute system on the booster, and will be the first mission to use a two-point lifting method to retrieve Electron's first stage from the water. The recovery vessel has been fitted with new equipment including twin davits and deck platforms designed by Rocket Lab.

Once aboard, the crews will begin immediate work to flush the saltwater from Electron and send it on its way back to the factory.

Later this year, Rocket Lab will refly a recovered Rutherford engine for the first time, bringing us even closer to reusability.

VIEWING A LAUNCH ONLINE



LIVE STREAM

The live stream is viewable at:

rocketlabusa.com/live-stream

LAUNCH FOOTAGE & IMAGES

Images and footage of "Baby Come Back" launch will be available shortly after a successful mission at:

www.flickr.com/photos/rocketlab

UPDATES

For information on launch day visit:

rocketlabusa.com/next-mission

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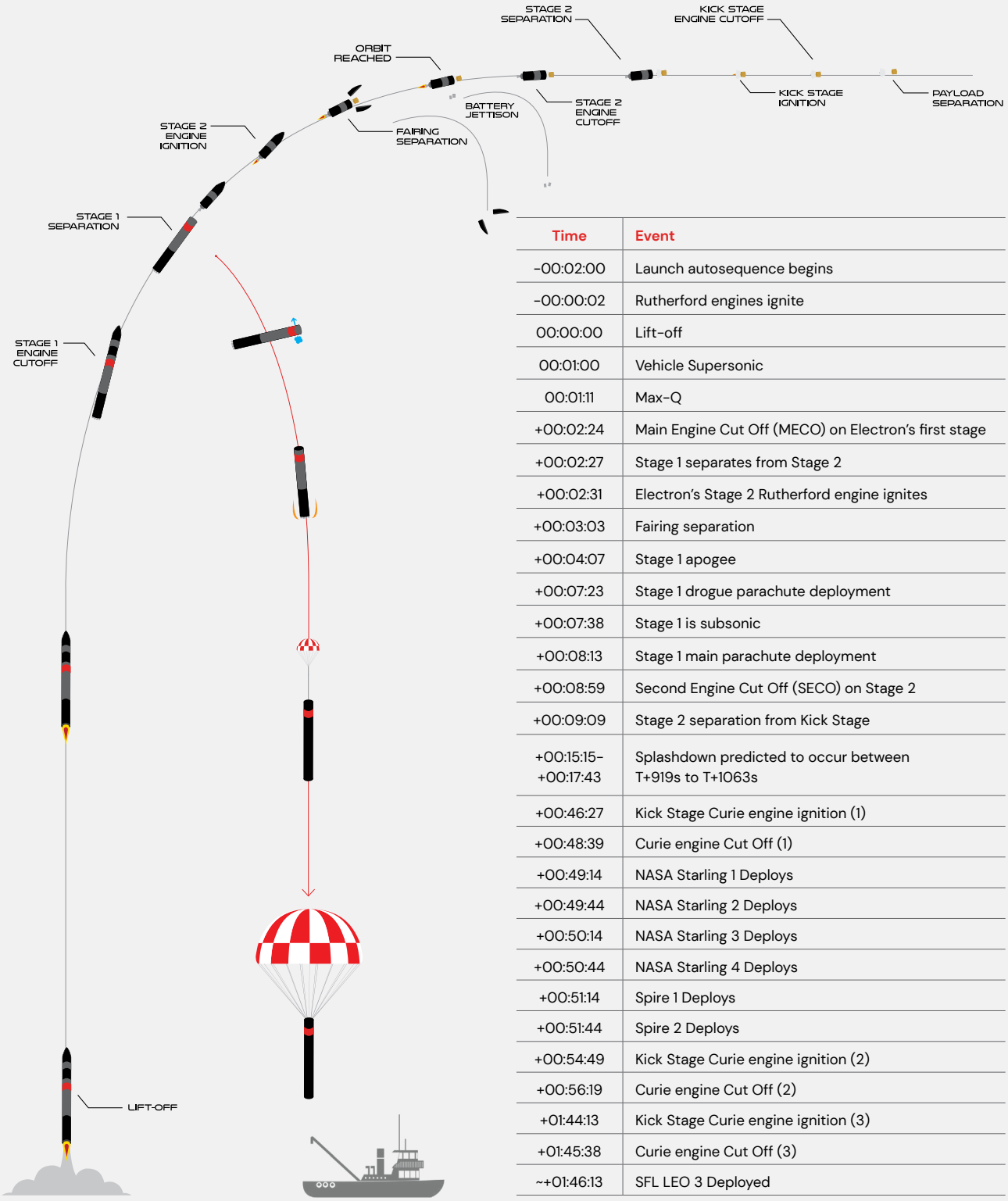
TIMELINE OF LAUNCH EVENTS



Time	Event
-00:02:00	Launch autosequence begins
-00:00:02	Rutherford engines ignite
00:00:00	Lift-off
00:01:00	Vehicle Supersonic
00:01:11	Max-Q
+00:02:24	Main Engine Cut Off (MECO) on Electron's first stage
+00:02:27	Stage 1 separates from Stage 2
+00:02:31	Electron's Stage 2 Rutherford engine ignites
+00:03:03	Fairing separation
+00:04:07	Stage 1 apogee
+00:07:23	Stage 1 drogue parachute deployment
+00:07:38	Stage 1 is subsonic
+00:08:13	Stage 1 main parachute deployment
+00:08:59	Second Engine Cut Off (SECO) on Stage 2
+00:09:09	Stage 2 separation from Kick Stage
+00:15:15- +00:17:43	Splashdown predicted to occur between T+919s to T+1063s
+00:46:27	Kick Stage Curie engine ignition (1)
+00:48:39	Curie engine Cut Off (1)
+00:49:14	NASA Starling 1 Deploys
+00:49:44	NASA Starling 2 Deploys
+00:50:14	NASA Starling 3 Deploys
+00:50:44	NASA Starling 4 Deploys
+00:51:14	Spire 1 Deploys
+00:51:44	Spire 2 Deploys
+00:54:49	Kick Stage Curie engine ignition (2)
+00:56:19	Curie engine Cut Off (2)
+01:44:13	Kick Stage Curie engine ignition (3)
+01:45:38	Curie engine Cut Off (3)
~+01:46:13	SFL LEO 3 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
320kg / 440lbm To 500km

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

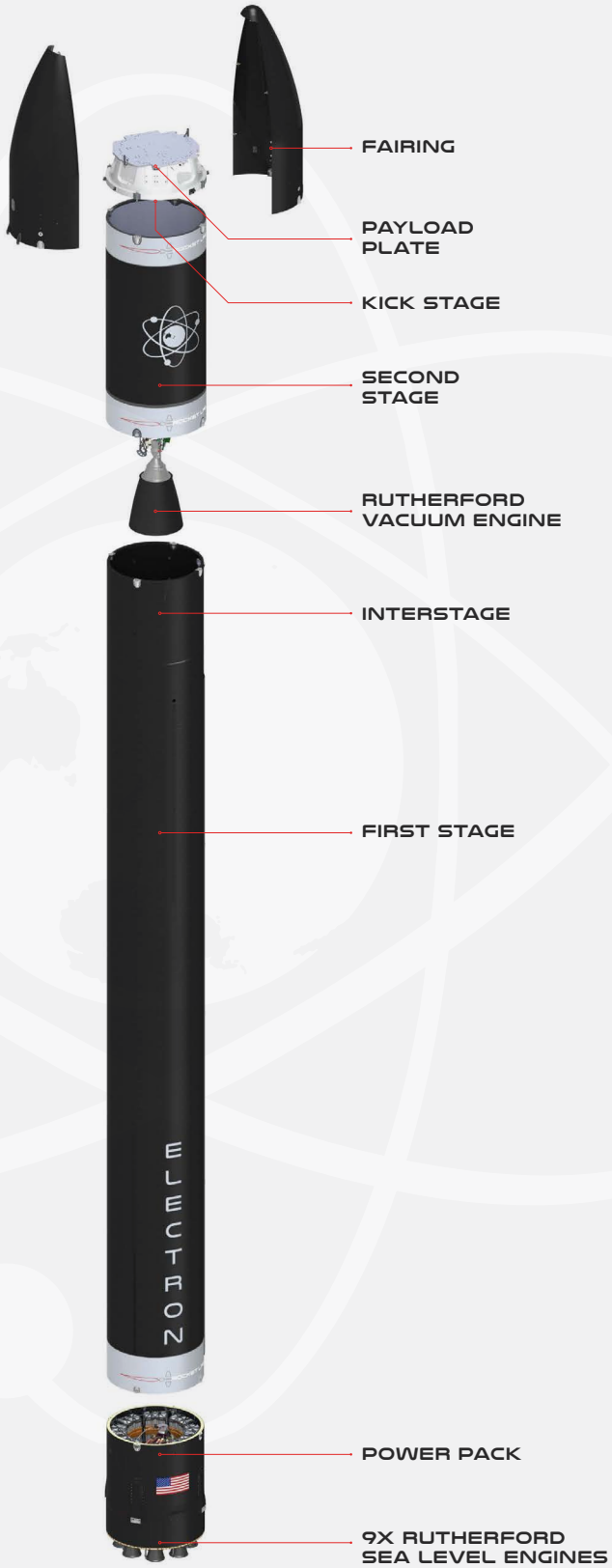
SEPARATION SYSTEM
Pneumatic Pusher

STAGE 1

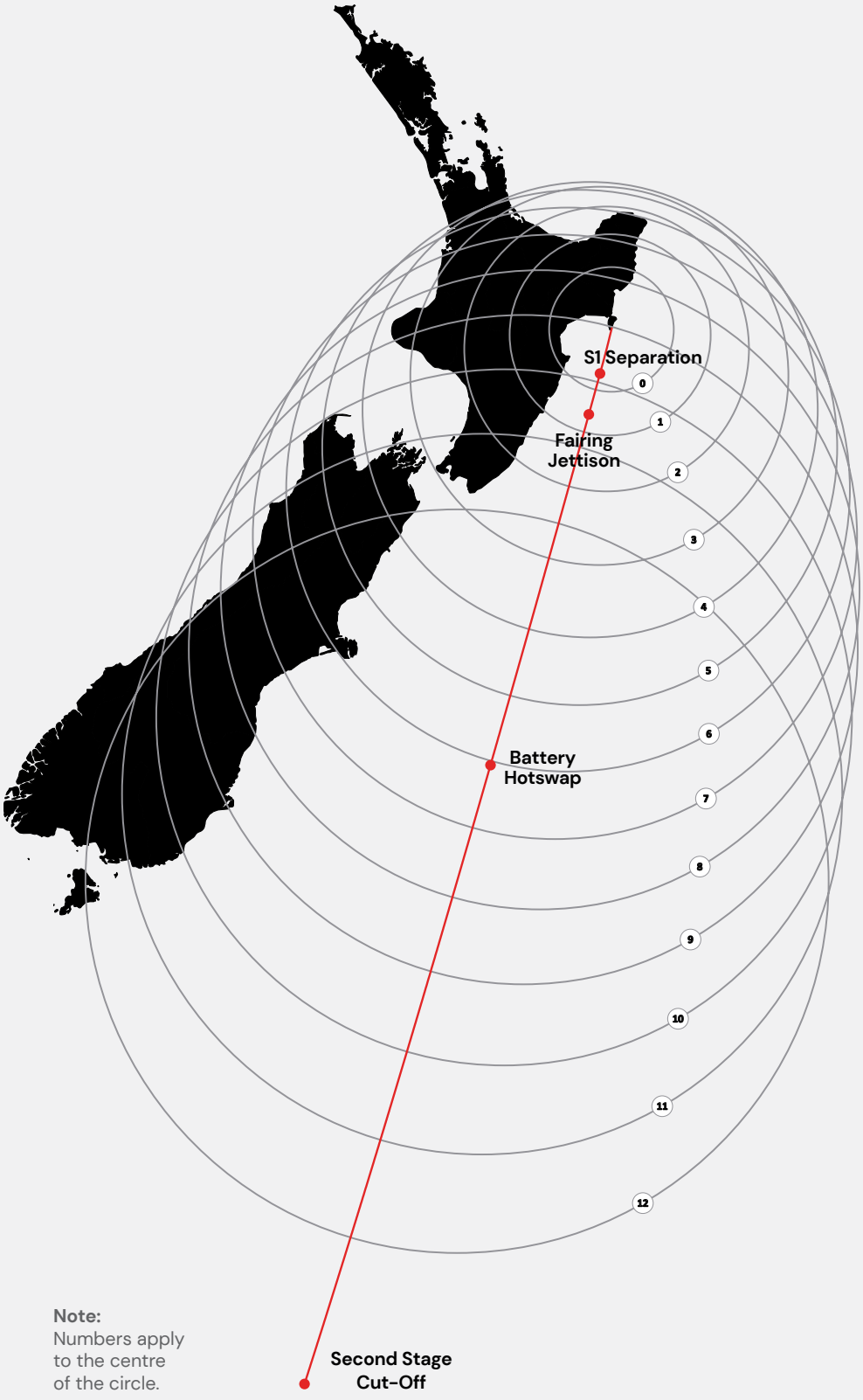
PROPULSION
9x Rutherford Sea Level Engines

THRUST
5600 LBF Sea Level (Per Engine)

ISP
311 Sec



VIEWING A LAUNCH IN PERSON



Note:
Numbers apply to the centre of the circle.

Marker	Mission Time
1	T+ 01:00
2	T+ 01:30
3	T+ 02:00
4	T+ 02:30
5	T+ 03:00
6	T+ 03:30
7	T+ 04:00
8	T+ 04:30
9	T+ 05:00
10	T+ 05:30
11	T+ 06:00
12	T+ 06:30
13	T+ 07:00
14	T+ 07:30
15	T+ 08:00
16	T+ 08:30
17	T+ 09:00

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