About a year ago, billionaire Jeff Bezos went to NASA with plans to recover some of the F-1 engines that helped power Apollo astronauts beyond Earth orbit in the late 1960s and early 1970s.

Armed with current day technology Bezos believed rivaled, in its own way, that of the Apollo missions technology itself, and with NASA’s blessing, he and a private team sent Remotely Operated Vehicles to a depth of more than 14,000 feet, tethered with fiber optics for data and electric cables transmitting power at more than 4,000 volts, to the bottom of the Atlantic Ocean off of Cape Canaveral, Florida.

This week, he and his team have shared the findings.

“We’ve seen an underwater wonderland – an incredible sculpture garden of twisted F-1 engines that tells the story of a fiery and violent end, one that serves testament to the Apollo program,” Bezos said in an online statement after the findings were made public. “We photographed many beautiful objects in situ and have now recovered many prime pieces. Each piece we bring on deck conjures for me the thousands of engineers who worked together back then to do what for all time had been thought surely impossible.”

Bezos originally believed the findings were from NASA’s Apollo 11 mission that saw the first men walk on the moon but is unsure. Specific mission identification will be difficult as, after decades of submersion, many of the original serial numbers are missing or partially missing. NASA, which decades ago launched its Apollo missions with no intent to recover the engines that propelled its Saturn rockets toward the moon, will be assisting in identification.

Bezos and NASA weren’t strangers before this expedition. Bezos, usually associated with founding Amazon.com, also founded Blue Origins, one of the companies with a NASA contract to develop a spaceship to carry astronauts to the International Space Station.

“This is a historic find and I congratulate the team for its determination and perseverance in the recovery of these important artifacts of our first efforts to send humans beyond Earth orbit,” NASA Administrator Charles Bolden said in a statement.

The expedition has recovered enough major components to fashion displays of two flown F-1 engines. “The upcoming restoration will stabilize the hardware and prevent further corrosion,” Bezos said. “We want the hardware to tell its true story, including its 5,000 mile per hour re-entry and subsequent impact with the ocean surface. We’re excited to get this hardware on display where just maybe it will inspire something amazing.”
Once restored and preserved, Bezos plans to put the engines on public display, most likely at the Smithsonian.

Click through the following pages to see photos and video of what the expedition found. 

Nozzle and Turbine

From NASA: The mighty F-1 remains the most powerful American liquid-fuel rocket engine ever developed. The F-1 still holds the record as the largest single-chamber, single-nozzle liquid fuel engine ever flown.
Turbine recovered
Thrust Chamber
From NASA: The heart of the engine was the thrust chamber, which mixed and burned the fuel and oxidizer to produce thrust. A domed chamber at the top of the engine supplied liquid oxygen to the injectors, and also served as a mount for the gimbal bearing which transmitted the thrust to the body of the rocket. Below this dome were the injectors, which directed fuel and oxidizer into the thrust chamber for mixing and combustion.
From NASA: Fuel was supplied to the injectors from a separate manifold; some of the fuel first traveled in 178 tubes down the length of the thrust chamber – which formed approximately the upper half of the exhaust nozzle – and back in order to cool the nozzle.

Injector and Lox Dome

Gas Generator recovered
Heat Exchanger recovered Saturn V Stage Structure

From NASA: Five F-1 engines were used in the 138-foot-tall S-IC, or first stage, of each Saturn V, which depended on the five-engine cluster for the 7.5 million pounds of thrust needed to lift it from the launch pad. Each mighty engine stands 19 feet tall by 12 feet wide and weigh over 18,000 pounds. The F-1 was developed by engineers at NASA's Marshall Space Flight Center in Huntsville, Ala., and its industry team.

Saturn V Stage Structure on ocean floor

Recovery video

Video of the Bezos Expeditions Remote Operated Vehicles recovering Apollo F-1 engines three miles deep in the Atlantic Ocean:
If the above video does not play, it can be viewed here.

**Also see:**

Apollo 17: The last men on the Moon

Apollo 11 makes 1st manned landing on the moon, July 20, 1969

1st manned Apollo mission launches, October 11, 1968

Apollo 15 launches with 1st Lunar Roving Vehicle, July 26, 1971

NASA: Revealing the unknown to benefit all humankind