PHOTOGRAPHS BY THE AUTHOR

# A long and winding road

On 18 May 1969 Apollo 10 lifted off from Launch Complex 39B at the Kennedy Space Center on a dress rehearsal for the lunar landing. Fifty years later I find myself standing on the exact spot where it began its journey.

by **John Sealander**

I am looking to the south toward the companion launch pad 39A where Apollo 11 lifted off just nine weeks later. The reason I'm here is now is that SpaceX is using the historic 39A location to launch a new generation of rockets that can be used again and again. Tomorrow, the Falcon Heavy rocket I see being prepared on the pad will send 24 satellites into orbit. Several have been designed to pave the way for a return to the Moon and an eventual journey to Mars.

I was still in architecture school when I watched the first Moon landing on a bulky black and white Magnavox television in the university's student union. I never dreamed that I would be standing on the exact spot where this incredible journey began fifty years later. A lot has changed in fifty years. I did structural calculations for my architecture classes using a slide rule. I didn't even own a 'phone at the time. If I wanted to call someone, I used a pay 'phone down the hall at my dorm. Don't feel sorry for me though. These were the best of times. Woodstock took place during the same summer that Neil Armstrong planted that first human boot print on the Moon. There was this amazing guitar player named Jimi Hendrix. I remember telling friends about a new band called Pink Floyd after listening to an album called The Piper at the Gates of Dawn.

There was a lot of unrest in 1969, but I remember this period as an incredibly optimistic time. Anything seemed possible. I lost a lot of this optimism over the years, but visiting the Kennedy Space Center on the 50th Anniversary of the Moon landing made me realize that a lot of very bright people haven't given up yet.


**ABOVE RIGHT**
Launch Complex 39B from where Apollo 10 departed Earth in May 1969 on a dress rehearsal for the Moon landing, now being modified for the Space Launch System.

**RIGHT**
Designated STP-2, the Falcon Heavy stands ready for the third flight of this type from LC-39A.

## FROM THERE TO HERE

The reason I'm standing on Pad 39B thinking about all this is that NASA invited me here to attend the Falcon Heavy STP-2 Mission. They have a special programme for social media influencers that allow you to apply for essentially the same press credentials they give to major media outlets like CNN, NBC, and CBS. I wouldn't exactly call myself a social media influencer, but by a stroke of good luck my application to attend the STP-2 launch was accepted and here I am.

NASA began this outreach programme in an attempt to reach a new and different audience. I guess they succeeded. I'm a huge fan of the space programme but I mostly blog about dogs. I felt honoured to be part of a group that included an actress who appeared in Star Trek movies, a young guy who invented the Fidget Spinner, and several real rocket scientists.

I hope I am able to convey to others my excitement about what I was able to see during my visit. The magnitude of what was accomplished fifty years ago at Launch Complex 39 is only exceeded by what is happening right now. We are going back to the Moon and then to Mars. The SpaceX Falcon Heavy that will be launching while I am here carries several technological test beds that will be essential to explore deep space. One of these satellites is a deep space atomic clock that »

« will be the first step towards a space based GPS network that will allow space travellers to navigate autonomously without needing to contact Earth. This is also a satellite designed to test a new type of rocket fuel that is safe to handle and doesn't have a tendency to explode violently like hydrazine. Bill Nye the Science Guy even managed to convince NASA to launch his small working model of a solar light sail which could someday use the Sun's light to change the path of spacecraft.

I got to talk with some of the mission specialists who designed the payloads that will launch aboard the Falcon Heavy rocket. They were incredibly bright, extremely motivated, and left me filled with hope for the future. I had begun to think that solving impossible problems was a lost art. Somehow we managed to get to the Moon using computers that were less powerful than the one in my Apple Watch. We didn't even know if humans could survive in space, but it didn't stop us from trying. The calculations for John Glenn's first orbits around the Earth were all done by hand. When I first saw the Saturn V rocket on display at the Johnson Space Center in Houston, I couldn't help thinking that it was going to be impossible to get this enormous thing off the ground. We did it though.

Today's scientists are trying to solve new problems. Can we navigate in space like we do with our cars? Is there an alternative to dangerous, highly toxic rocket fuels? Can rockets be used over and over again? What about using light from the Sun to power future spacecraft? All these things will be explored during the STP-2 mission.

I was interested in space fifty years ago, but I was never a rocket scientist. When I was very young I wanted to be an astronomer until I realized that there was a lot of math involved. Later in life I actually did become an architect, but there was a fair amount of math involved in that as well. Eventually I landed at a large ad agency where you basically just live by your wits. Remember that show called Mad Men? This was my world for many years.

The fifty-year journey from fledgling advertising writer to social media maven is a long story but it's why I'm thinking about the Apollo programme today. What a long and winding road it's been. So much has changed and a lot of what we take for granted today wouldn't have been possible without the hundreds of thousands of people who worked on the Apollo programme. As a result of the space programme I traded my slide rule for a little Texas Instruments calculator. Later I traded my IBM Selectric typewriter for a computer. When I travelled to the Kennedy Space Center for the Falcon Heavy launch, I made all my travel arrangements on my 'phone. Airline, hotel and rental car reservations were all made in a matter of minutes with just a few clicks.

I don't think I could have found my way around Titusville and the space centre without GPS. GPS had its origins in the Sputnik era when scientists discovered that they were able to track the little satellite using shifts in its radio signal created by the Doppler effect. During the mid-sixties the US Navy used this technique to allow submarines carrying nuclear missiles to pinpoint their location with the help of six satellites orbiting the poles. This space based satellite navigation system continued to grow and evolve, eventually becoming something that almost everyone on the planet depends on. This is how the space programme affects us all. It's not just Tang and freeze-dried meals. What started at launch pads 39A and 39B didn't stay there. Kennedy Space Center is not Las Vegas. The innovations that started here travelled around the world and wound up in your cars, your 'phones, affecting almost every aspect of your daily life.

I think about this as we travel on a NASA bus to Merritt Island to view the launch. The bomb-sniffing dog had already inspected our cameras and gear and we had cleared security. We were good to go. The Merritt Island National Wildlife Refuge is a beautiful place on a clear night. When we arrived at our destination on the shores of the Banana River around 1.00 am, a copper coloured Moon was just starting to rise on the eastern horizon. Behind us, Jupiter was shining brightly just above the constellation of Scorpio. The sky was dark enough that I could actually see the Milky Way for the first time in years. Directly ahead, something else was shining brightly on the horizon. It was the Falcon Heavy rocket bathed in searchlights at launch pad 39A.


PHOTOGRAPH BY THE AUTHOR

**ABOVE**
The NASA bus waiting to take the press and photographers to watch the launch of Falcon Heavy.

> We were all prepared for something dramatic, but the launch exceeded everyone's expectations

## FROM HERE TO THERE

The launch of STP-2 was supposed to have taken place at 11:30 pm on Monday evening but got delayed for three hours because of a minor technical problem on the pad. There was a lot of nervousness within our little group of social media influencers as we began to hear rumours of the delay. When the countdown clock stopped and went dark, we were afraid that the launch might be cancelled. When the rumours began circulating, we were scattered between Cocoa Beach and Titusville eating dinner before returning to meet the bus that would take us to our viewing location. Lots of messages went back and forth before a new plan was announced. None of us were rocket scientists,

SPACEX

**OPPOSITE PAGE**
After a day's delay due to technical problems, STP-2 lifts off for a perfect launch (top). Safe retrieval of the two side boosters was achieved yet again – six out of six booster recoveries for Falcon Heavy (below).



heads. Less than a minute later we saw the second stage engine start. The side boosters continued to fall rapidly as the second stage slowly faded from sight.

About seven minutes after liftoff, the two side boosters simultaneously began their entry burn and started to slow down rapidly as they approached the landing zone. We saw puffs of smoke from the rockets exhausts rising from the landing zone indicating a successful touchdown and less than a second later heard two incredibly loud sonic booms. Sound travels slowly and the sonic booms arrived at our location after the boosters had actually landed.

Although the centre core failed to land on a drone ship positioned over 1,600 km away in the Atlantic Ocean, the mission was a huge success. The two side boosters, which had already been used before on a previous Falcon Heavy mission, proved their worth again. All of the 24 satellites were deployed successfully. The brilliant people we talked to during the past two days who had spent years and years developing these payloads must have been very happy this morning.

Our little group of social media mavens was happy too. For many of us this was a dream come true. We had been up for over 24 hours, but I'm sure that some of us were already making plans in our mind to do this again. It is inspiring to see people succeed at doing something so complicated. As I returned to my hotel to pack my bags and return to Dallas, I felt like I had made some new friends and witnessed something important. I'm not always a positive person, but I felt good as I was flying home to Dallas on a Southwest Airlines flight full of children returning from Disneyworld.

If humans can do something this complicated just by working together, we can do anything. We may not make it to Mars in my lifetime, but it will be close. I hope I live long enough to see the day. Maybe the journey will begin at Launch Complex 39 like so many other historic voyages into space. I have a feeling that some of the younger people I met during my stay at Kennedy Space Center might be making that trip. SF

but we were pretty good at keeping in touch with each other. The good news was that launch would still take place and had been rescheduled for 2:30 am Tuesday morning. 24 June.

We were all prepared for something dramatic, but the launch exceeded everyone's expectations. When the countdown clock reached zero, there was an intense flash of light on the horizon. An enormous trail of fire rose quickly into the sky, followed about ten seconds later by the thundering sound of 27 Merlin engines. Literally in a matter of seconds, darkness was turned into day.

Night launches are spectacular because you can see the rocket much longer. As the Falcon Heavy climbed in a graceful arc toward orbit, we could clearly follow it all the way through stage separation and second stage ignition. The return of the two side boosters to SpaceX Landing Zones 1 and 2 was amazing. The two side boosters began their boost-back burn almost directly over our