

Go For Launch

by Ellsworth Chou

How our 2011 summer vacation began with the final launch of the United States Space Shuttle program



As the end of Joni's spring semester of 2011 approached, we were once again faced with the possibility that this would be Joni's last summer break. If things go as expected, she'll be the chair of her cinema department by 2012, and she goes from being a 10-month employee to a 12-month, with only a few weeks off a year. *(As I'm editing this at the beginning of March of 2012, months after starting this article, Joni is four weeks into her new position as chair of the Cinema/TV Department of Los Angeles City College. -E)* Thinking this change was imminent, we bought a motor home in the spring of 2010 and took a massive 7,800 mile, 40-day journey around the country (and Canada), thinking it would be our last opportunity to undertake a trip of that scope until Joni retires. But Joni got a reprieve, and chose not to teach summer school in 2011 so that we might take one more big trip.

But where to go? An early candidate was something we've mused about for several years: driving to Alaska. From our home in Southern California, it's 3,000 miles to the Alaska border, one-way. Much of the trip is thin on civilization. We talked about a lot of unique provisions for the trip: Adding jerrycans in case we mis-judged intervals between diesel sources. Installing photovoltaic panels to charge our house batteries when camping for days without electricity. A [Spot Connect™](#) satellite communications device to share our location with family and communicate in tiny text messages



from anywhere on the planet. Lots of mosquito repellent for the brief and vicious Alaskan summer.

Another candidate trip was to attend one of the last launches of the U.S. Space Shuttle program. But the schedule for the Shuttle was constantly in flux, and until well into 2011, we didn't really know whether it would coincide with Joni's summer break. At one point, STS-134 was to be the final launch of the Shuttle program in mid-May – when Joni would still be teaching classes. As spring ended, Shuttle *Atlantis* was confirmed to fly STS-135, the final mission of the 30-year Space Shuttle program, on July 8, 2011. The entire history of manned human spaceflight has been within our lifetimes, and although we grew up within a day's drive of Cape Canaveral, neither of us had ever been to a launch. With the end of the Space Shuttle program, the future of manned space travel for the United States is uncertain. So this would be the last chance to attend a manned launch in the foreseeable future. We pitched the idea, but didn't know what was involved in going to a launch.

We started some research into Shuttle launch viewing. There is a quite a bit of collected wisdom about the topic, and a rich source was the website [launchphotography.com](#), on which was posted a long article entitled "[Space Shuttle Launch Viewing](#)." From this, we were inspired to investigate the "official" launch viewing sites available on the Kennedy Space Center properties. One site was at the KSC Visitor's Complex, 7.4 miles from Pad 39A,

but with no clear view of the launch pad. The other KSC site was “The Causeway,” a strip of road across the Banana River 6.5 miles from Pad 39A.

Launches from Cape Canaveral are visible from great distances. With some night launches, most of the U.S. Eastern seaboard can view the Shuttle in flight. So visitors wishing to see the Shuttle launch can opt to simply find a spot somewhere near Cape Canaveral and wait. A couple of known good viewing sites are in Titusville and Cocoa Beach, Florida.

A complication of trying to travel for a Shuttle launch was that it might not take place as scheduled, either on that day, that week, or that month. In the case of STS-135, *Atlantis* was delivering the last Shuttle-borne piece of the International Space Station, and so its launch window was defined by a rendezvous trajectory with the ISS. *Atlantis*'s launch window would be 10 minutes long every day, shifting 20+ minutes earlier with each passing day. And in the last several years of the Shuttle program, caution led to many a “scrubbed” launch. So attending a launch meant risking that you might have to stay for an unknown number of days, and might well never see the launch at all.

Now nearing the end of April, we learned that NASA's Kennedy Space Center would hold an email lottery for an undisclosed number of tickets to view STS-135's launch from either the Visitor Complex or The Causeway. From May 30 to June 5, 2011, KSC would open the lottery submission process. A few unspecified number of days later, they would inform lottery winners that they were eligible to purchase tickets.

Joni and I decided that we'd put ourselves in for the lottery. If we won, we'd buy tickets to KSC and that would be the direction of our summer's travel. If we lost – quite likely as there had been reports of over a million people traveling to see the previous launch – we'd go to Alaska. Yes, we could just go to Florida and see the launch from the roof of our RV on the side

of the road. But with this plan, the fate of the KSC lottery would decide our summer travels.

On June 3, 2011, I registered both of us, and both our moms for the lottery. Neither mom wanted to go to the launch, but we were trying to improve our odds by a tiny amount.

A few days after registering for the KSC lottery, as we continued to research launch viewing, we finally understood that following the KSC lottery, tour company giant Gray Line Tours would have their own land-rush of sorts. They would make tickets available to the same Kennedy Space Center locations, and add a stretch of Cocoa Beach 18 miles from Pad 39A. Gray Line provided a Web-based form for interested parties to be placed on a mailing list for the announcement. I submitted our email addresses, as there was no risk and it provided a back-up plan.

As Joni finished her semester, we continued to prepare our RV for a summer trip, without knowing the destination. Since winning the KSC lottery was a long shot at best, Alaska was the likely destination. Joni ordered books about driving to Alaska, camping in Alaska, sightseeing Alaska, etc. She told me about a ferry which sails from Bellingham, Washington to various ports in Alaska, and how the ferry can accommodate even very large RVs (ours is smallish). Because of safety regulations, passengers are not allowed to travel in the RVs while they are tied down below decks. Provisions are made for RVers to visit and tend to their pets (which must remain in the RVs) once a day for an hour. During the two-day journey, travelers stay in staterooms on the ferry. The fare in each direction for our vehicle size is over \$1,000, but it's an alternative to 1,000 miles of semi-maintained roads through Canadian wilderness.

By June 8, I was starting to wonder about our KSC lottery status. It wasn't clear to me exactly when or how we'd be notified one way or the other. I searched Twitter for "shuttle lottery," and turned up this tweet: *"Just found out I won the lottery to purchase tickets to the final Shuttle launch on July 8th. Very excited!"*

Anyone interested in going?" Encouragement that something was happening, but no help to us. The next day came and went. Searching Twitter on subsequent days turned up an additional handful of rejections.



Ellsworth installs an auxiliary sway bar on our Navion

Days passed. We continued to prepare the RV for a trip. I performed more custom modifications to our Itasca Navion, adding an additional switch to control its fresh water pump from the bathroom, and installing an auxiliary rear sway bar to help stabilize the vehicle in high crosswind conditions.

On Wednesday, June 15, 10:18am, I received email from Kennedy Space Center. It began: "Thank you for registering for the opportunity to purchase viewing tickets for the launch of STS-135 space shuttle *Atlantis* from Kennedy Space Center. Unfortunately, your entry was not selected for the STS-135 launch ticket purchase opportunity."

So there it was. We were going to Alaska.

Joni went to school that afternoon, and I continued to pre-pack the RV for travel.

At 8:28pm that night, we received email from Gray Line of Orlando. It read:

"STS 135 Space Shuttle Tickets
Gray Line Orlando Packages going on sale
DATE: Thursday 16th June
TIME: 12 noon EST
Tickets should be purchased ONLINE.
Tickets will sell out pretty fast!"

I really had no expectation of doing anything about it. We'd decided the week before that the KSC lottery would decide the fate of our summer travel. Joni seemed to have her heart set on Alaska, and I was OK with that. But when I mentioned the Gray Line email to Joni after she returned home from school, she encouraged me that we should try. I said I didn't want to disappoint her about Alaska, and she said that it was really more important that we *go somewhere*, and she was OK with whatever happened. Of course, there was no certainty about buying the Gray Line tickets. We'd be competing online with an unknown number of those million+ people expected to go to

see the *Atlantis* launch, and there was no way of knowing whether we'd be successful or not. Joni convinced me that we should try the next morning when the tickets went on sale.

Before going to sleep that night, I reviewed the choices we'd have to make. There were

three possible sites, but we'd just go for the best (and most expensive, at \$179 each) viewing opportunity at The Causeway. Gray Line of Orlando also required



Tracing wires to engineer an added water pump switch

you to choose one of eight or nine local “pick-up sites.” These sites were mostly hotels and at least one grocery store where event-goers would meet the tour bus. Since we didn’t know where in Orlando we’d end up, that was almost an arbitrary decision, but I looked at all the pick-up locations in Google Maps to see if there was any advantage or disadvantage to their layouts. I was thinking we’d have to park our RV there for the day, and we wouldn’t want to miss where the buses were because of trees or buildings obscuring our view. I picked a location they called “Holiday Inn Universal,” across from the Universal Studios theme park in the middle of Orlando.

At 8:30am the morning of Thursday, June 16, we sat down to two computers and our iPad. It was 30 minutes ahead of the 9:00am Pacific that Gray Line had announced that launch tickets would go on sale. When we tried hitting the Gray Line of Orlando website, it was already in serious trouble. For any given attempt to access the website, something less than 10 per cent of the requests went through. The rest resulted in error messages. In other circumstances, this kind of assault is called a “Denial-Of-Service Attack,” where a group of online users (or one person controlling many computers – sometimes through software secretly installed on that computer by a “virus” or “worm”) causes an Internet site to fail by repeatedly sending requests. In this case, it was not a belligerent attack, but a reflection of: 1) how many people wanted these tickets and; 2) the robustness, or lack thereof, of Gray Line’s Web servers.

Sometime before 9:00am, we both saw parts of the first page of the Gray Line website. I say “parts” because we never saw a complete Web page. Very slowly, some of the graphical elements might appear – or not. We’d get to the point where we could see a menu item to select some aspect of our ticket purchase, and we’d just go ahead and fill out that item and click the link to go to the next stage. But here, too, most clicks resulted in an immediate error message that the server was unreachable. So we’d just try the link and wait a few seconds, in case it had successfully reached the server but we had not yet

received a response. During some of these steps, very little of a the page had been rendered – sometimes just a few text items. At one point, I was just looking at the very long URL in the browser, which included text which was something like “step=7.” The only way I could tell if anything had happened since I clicked the previous “Continue” or “OK” button was that the “step” count had changed.

After something like 20-30 minutes, I managed to get to the point where I was asked for a payment method – almost success! But it was also a scary part of the process. In the past, we’ve accidentally double-purchased an item on a site because we generated two “clicks” instead of one, either because we thought we’d missed the button or because our mouse button “bounced,” what happens when an electrical switch makes and breaks the circuit multiple times instead of one. It was all quite nerve-wracking, and even as I carefully put in our purchasing information, Joni was still plodding along in her own purchase session, a few steps behind.

Finally, I clicked the last button to commit to our purchase. I paid for the tickets via PayPal as an extra layer of purchase protection. But we wouldn’t know if we were successful until we received a confirmation email. Finally, at 9:52am, after almost an hour of continuous effort and mental stress, I got my purchase confirmation email from PayPal. Within a few minutes, Joni reached the point on her Gray Line page where she could purchase. We wondered whether we should do something about having another pair of tickets. We called our moms to confirm that they didn’t want to go. I called a friend with whom I shared an interest in the Space Program when we were kids. He had just invested in travel plans elsewhere. After several panicky minutes, we just let the extra session go.

The launch of STS-135 was scheduled for July 8, 2011. That was 22 days away. No more Alaska. This was a completely different trip.



It would take a minimum of six days to drive across to Orlando from home. We've crossed the country in four days by car, but because of lower average speeds and a higher fatigue rate, our progress by RV has proven somewhat lower. Our "hard point" was boarding the Gray Line charter bus at 2am(!) at the Holiday Inn Universal in Orlando on July 8 – Launch Day. Gray Line's website stated clearly that there was no other way to get to the launch if we missed the bus. There was no way to get into Kennedy Space Center without being on a chartered tour bus. So we'd allow several extra days of pad in our itinerary for the unexpected. We decided to leave around July 27, two Mondays before the launch, which allowed ten days for travel.

That left us a little more than 10 days to prepare for the trip: packing for a journey of possibly a month and a half, and preparing our house to be unoccupied for the same. We packed. We cleaned. We packed.

When we'd ordered the Gray Line tickets online, we had two choices for acquiring the tickets: 1) pick up locally at the Gray Line office in Orlando, or 2) mail them to our house. In case something went awry with our road trip to Orlando, I worried that we might not be able to get to the Gray Line offices during business hours to get our tickets, so I chose to have them mailed. But by Wednesday of the following week, with only a half-week until we departed, nothing had showed in the mail. We waited another day, but again, no tickets. Aside from the email receipt I'd received instantly from PayPal when we purchased, we had no other information about the launch.

Joni called the Gray Line offices. They told her that they were going to put them in the mail on Monday – our planned departure day and only 10 days from the launch! We're still incredulous that they didn't consider that people might have to travel to Florida for the launch for more than a few days. Joni asked them whether they could change the dispensing of our tickets from "via U.S. mail" to "pick up at Gray Line of Orlando offices." They said no, there was no way



We fill every storage space of our 23.5 foot RV to capacity

to change them. She mentioned that we'd received no information about preparing for the launch – and they said that we'd "receive a packet with our tickets." After Joni got off the phone, we talked about what we'd do if the tickets had not arrived by our departure day next Monday. We decided to leave a pre-addressed Express Mail envelope at our house, and have our friend Pierre mail the tickets overnight to some location in Orlando if they showed up in California. Joni called again and pleaded with the phone rep. This time, after discussing it "with a manager," they conceded and told us that the tickets would be available at their Orlando offices for pick-up. We breathed a sigh of relief, but still left a pre-paid envelope at home in case they screwed up.

The only information we had to prepare us for the launch day was a paragraph from Gray Line of Orlando's website:

"Plan for a sunny day, so I would recommend you wear layers, and bring sunscreen, sunglasses and insect repellent. Then of course you should bring your camera / camera equipment BUT please not no bags that have wheels on them, so if you are an avid photographer and have equipment in a bag – no wheels and no luggage size – so pack light! Seating – I would bring it! There are some seats in the viewing areas however we cannot guarantee them to you. You

can bring the umbrella style foldable chairs that collapse into shoulder carry bags, this is the only type of chair acceptable. If you don't have a chair perhaps bring a beach towel or blanket to sit on."

I looked at photos from online photo-sharing sites taken by previous launch-goers to The Causeway, but could only see that there were a lot of people on a grassy slope near water. How much space each person would have, or how far we'd have to trek to find a spot, we had no idea. We started looking for folding chairs, but everything we saw was too big, too heavy, or felt like a torture device from *The Inquisition*.

A mistake we'd made the previous summer when preparing for our first big RV trip was working ourselves to exhaustion packing/ planning and leaving the day after we were finally done. In retrospect, we should have paused a day and gotten a good night's sleep before leaving. So it was that our first targeted departure day for the Summer of 2011 ended up being one day later, on Tuesday, June 28, 2011.

Our trip across the country through Arizona, New Mexico, Texas, Texas, Texas (there's a lot of Texas), Louisiana, Alabama and Florida was pretty uneventful. We didn't sightsee much, as our priority was getting to Orlando days ahead of the launch.

We continued to look at folding chairs whenever we passed a candidate department or sporting goods store. Every chair that was compact enough to wear over our shoulder was miserably uncomfortable. As we got closer, we had to decide whether we would slow down to avoid traveling near Orlando on the 4th

of July, or keep going and arrive on the 3rd. We ended up rolling into Orlando on Sunday night, July 3. We were five days from Launch Day, but because the bus pick-up was to be at 2am on July 8, that would effectively be part of July 7 – so we had only three extra days – perfect. We'd end up staying at the same KOA Kampground for two weeks. Up to that point, the longest we'd ever stayed in the same place in the RV without moving was two nights.

The morning after we arrived in Orlando, we decided to go pick up our tickets at Gray Line of Orlando. The offices were in a business park, and the guy that gave us our tickets was bare-footed. He handed us our package and explained the contents: There were two tickets that got us on the Gray Line bus at our designated hotel pickup. Two more tickets were \$43/person entry tickets to Kennedy Space Center, which were good for a total of two visits, so we could visit KSC on another day either before or after the launch. The last two tickets were only to board the buses at KSC to go

to The Causeway. We skimmed through the single information sheet, which had little more content than the website about preparations for the day. The Gray Line rep gave us a rough itinerary: we'd leave the hotel pick-up by bus at 2am on Launch Day. After the 60-mile drive to Cape Canaveral, we'd be dropped off at KSC where we'd go through a baggage security check, which might take an hour or more. Afterward, we could tour through KSC, which would have all its exhibits and food-services open all night to accommodate launch-goers. At some point – the Gray Line rep emphasized that this was completely out of their control and that we were all at NASA's mercy regarding this – NASA would give Gray Line the go-ahead for us to re-board the buses (which had also gone through their own security check without



Departure Day – Tuesday, June 28, 2011

passengers) and proceed to The Causeway. I asked whether we could leave our belongings on the bus, and he said no, that the buses had to be completely empty for their own security check. This was not mentioned anywhere in the literature, and I wondered what all the ticket-buyers who had their tickets delivered via mail knew about this.

Having just been told that we could visit all of the KSC amenities, we now discovered that we'd have to carry everything we wanted for the launch. We were planning to carry several pieces of gear, including two video cameras, two still cameras and tripods, but we'd planned for a fairly compact kit. Among the thousands of people going to The Causeway, we certainly wouldn't have the most gear.

Gray Line had a complicated set of rules regarding scrubbed launches. If the launch scrubbed before the chartered buses rolled on Launch Day, we'd owe nothing and all of our tickets would be valid for the subsequent day's attempt. If the launch was subsequent to boarding the buses at 2am, that Gray



At a Sam's Club across the street from our campground in Orlando. Comfortable and inexpensive, but big. At this point, we'd shopped at over a dozen places across the country in search of packable chairs for Launch Day

Line ticket was considered used. If there was a launch attempt on the subsequent day, we'd have to decide whether to spend \$70 each for new Gray Line bus tickets. If we got all the way to The Causeway, we'd have to spend even more money on *those* bus tickets. NASA's launch window allowed for three additional launch attempts – potentially, three more mornings we'd have to meet a bus at 2am. So it was theoretically possible for us to spend an additional \$360/day for three days, and still never see a launch.

We were more than a little disappointed that Gray Line had done at least one previous launch, and probably more, without having developed a better system for informing launch-goers of what to expect. But we had our tickets. That was a Good Thing.

Some time after we'd committed to going to the STS-135 launch, I proposed that perhaps we could fly our moms to Orlando after the launch and spend a few days at Disney World (we've gone to Disney World with them a couple of times before). In times past, round-trip airfare was less expensive than purchasing a one-way leg of the same route. In recent years, we've frequently been booked on multiple airlines to achieve our desired itinerary. So I thought that one-way tickets for our moms would be more affordable than in the past – and they were. The moms agreed to our plan: on the Monday after the Friday launch, they'd fly to Orlando, and we'd pick them up. We'd put them up in a hotel, and we'd stay in our RV. At week's end, we'd all ride back to North Carolina in our RV, making a couple of overnight stops where they would stay in a hotel and we'd continue "camping." We'd visit in North Carolina for a little while, and then continue on an as-yet unplanned trip back across the country.

A possible problem with The Moms coming to Orlando was what would happen if the launch were scrubbed. NASA had Tweeted that it was negotiating with the administrators of a Delta rocket launch scheduled for the following weekend to add Monday morning to the list of possible dates for re-attempting STS-135's launch. If *that* scenario took place, we'd

have to stay up all night, go to the launch, then pick up our moms afterward at the airport. It wasn't likely, but it wasn't impossible, either. We hoped we wouldn't have to find out.

In the few days before the launch, we settled into our campsite. We bought supplies. We bought tickets to Disney World. We looked at yet more uncomfortable folding chairs. We found some very comfortable and even inexpensive folding chairs at a Sam's Club next to our campground, but they were almost a foot longer and quite a bit heavier than most of the rest. We kept looking.

Because temperatures were in the high 90s and we were traveling with our cats, the only way we could attend the launch and go to Disney World was to have the RV's air conditioning running while we were gone. We rented a car for the week, and the cats enjoyed air-conditioned comfort powered by the campground's AC power. I rigged a webcam so we could see the cats and a thermometer remotely from our phones, since failure of either electricity or air conditioning for an entire day could be dangerous.

With a few days to spare, we visited Universal Studios Orlando theme park, spending most of the day at *The Wizarding World of Harry Potter*. The attraction is a very impressive effort. When we attended an annual panel discussion of 2011's Oscar-nominated production designers and art directors, we learned that Stuart Craig and Stephenie McMillan, production designer and set decorator for all eight *Harry Potter* movies, participated in the theme park project as well. It shows.

Weather forecasts for Launch Day were not looking promising. Rain and thunderstorms were likely. Even if lightning and wind levels were acceptable for launch, there might not be anything to see because of clouds. But there was nothing we could do about it. So we pressed on.

On the morning before the launch, I kept reviewing what could go wrong with getting there. I continued to worry that we might be waiting at the pick-up hotel

and the bus would show up and depart from the other side of the building without us ever knowing. I called Gray Line and asked them exactly where on the property the bus would be waiting.

The Gray Line rep said, "Out in front."

I said, "Just out in front?"

She again said, "Out in front," but then said, "But you can't park at the hotel, they'll tow you away."

What?

I said, "We can't park in the hotel's parking lot?"

She said, "No, you'll have to park somewhere else and walk over to the hotel."

"O... K..." I said. And hung up the phone.

Now, I had just decided to call Gray Line and ask about bus pick-up location, and that had resulted in finding out that we couldn't PARK at the pick-up location. What about the thousands of OTHER people – who had NOT called today? Gray Line was again proving to be an organization of bozos.

I told Joni what I'd just learned. We couldn't believe it. I showed her on Google Maps that all the adjacent lots were either on the Universal Studios theme park campus or other hotels. If the hotel at which Gray Line had arranged for pick-up wasn't going to tolerate people parking there, why would any other hotel? Sure, we could just park our car in a corner of the lot and take our chances, but then we might be recovering our rental car from a towing company garage.

We decided to just drive the 20 minutes to the pick-up hotel and scout the location. On the way, Joni proposed that she would just ask the hotel if it would be OK to park there. I was a little reluctant to draw attention to the possibility, since they might not otherwise notice, but I relented. When we got to the hotel, Joni went in to the registration desk while I parked the car. When Joni returned, she told me that

the front desk had no idea about buses picking up people that very night, and that people had been asking them about it all day. As it turned out, there would be three buses parked under the front awning of the hotel's front entrance for hours the next morning. The hotel had offered no solution for parking.

From the hotel parking lot, we could see a mostly-empty parking lot next door in which were parked several tour buses and a temporary building on the corner ([Google Street View](#)) with a sign which read "Florida Visitor's Bureau." I suggested that we ask them for parking suggestions. Joni thought we might ask them if we could park in their lot.



At left, the Florida Visitor's Bureau. At right, the Holiday Inn where we boarded our Gray Line bus at 1am.
(Photo from Google Maps Street View)

The Florida Visitor's Bureau was a big room with an L-shaped counter down two walls behind which three women provided information to guests. "Victoria" was in fact going to be a volunteer tour guide on one of the buses to The Causeway the next day. We told her of our parking dilemma. Motioning to the parking lot outside, Victoria said, "You could just park here. I mean, I don't own the place, but I don't think they'd mind." She told us that the buses out in the parking lot were actually going to be among the shuttle buses to Kennedy Space Center tomorrow, so they'd be gone during the day. I asked where exactly we should park and she suggested avoiding

spaces near the Visitor's Bureau, but the rest of the huge lot was fine.

I'd been watching NASA's Twitter feed for the week, and they'd been saying for a couple of days that weather conditions for the scheduled time were "30 per cent favorable," which wasn't encouraging. While we were talking to Victoria, a monstrous thunderstorm pounded the parking lot for 30 minutes, probably dumping two or three inches of rain. This was going to be touch and go.

Some time that morning, NASA detected one or two lightning strikes near Pad 39A ([video of one of the lightning strikes](#)). We heard that NASA was evaluating whether it was cause for concern about the next morning's launch. They decided it was OK later that day.

Because we had to meet the Gray Line bus for the launch at 2am on Friday morning, we basically had to treat it as Thursday night. We ran a few more errands on Thursday, finally settling on some smallish, *somewhat* uncomfortable, but very inexpensive folding chairs in a Target store. Back in the campground, we finalized packing our gear for the launch. I bundled the two folding chairs together with bungee cords, deciding it was easier for me to be burdened with the double-chair load than for both of us to have to juggle the awkward articles.

We finally got to take a nap some time after 7pm. We woke some time after 11pm. I set up the webcam for monitoring the cats and we drove our rental car to breakfast at a Waffle House close by. NASA was still saying "30 per cent favorable" weather conditions for launch. The sky overhead was heavily overcast.

July 8, 2011, ~1:00am Eastern – We arrived at the Holiday Inn near Universal Studios Park about an hour early. There were three tour buses parked along the curb under the front awning to the hotel, and people were milling around in the pools of light around the sidewalk. When we drove across the street to park at the Florida Visitor's Bureau, we were the only car in the lot. But by the time we finished getting

our stuff out of the rental car's trunk, three or four other cars had taken our cue and started to park in the lot. It might draw a bit too much attention to our parking there, but there wasn't anything we could do about it at that point.

We found our tour guide on the sidewalk in front of the hotel and were directed to board one of the buses. We settled into a seat and waited. Most of the passengers dozed quietly. As the bus began to fill approaching 2am, the bus driver boarded the bus and announced, "OK, the guy who asked to take a nap on my bus is going to have to get off." There was a ripple of weary laughter from the passengers. This time, with a bit of venom in his voice, the driver said, "I'm not kidding, you gotta get off the bus." No laughter this time. We started to look around at each other, and finally a sleepy-looking passenger started toward the front, carrying his belongings with him. Apparently he'd arrived very early, and because his own bus was not yet available, had asked if he could wait on this one. But this was never explained to us. It was a strange start to this part of our adventure.

Our tour guide boarded the bus and introduced herself. She explained that normally she was a tour guide at Disney World, but was playing hooky to attend the launch. At 2am, she boarded the bus again and explained that we were just short a few of the passengers on her list. She asked the busload of passengers if we thought we should wait for them, or just go. No one responded to this oddly unprofessional question. She decided we'd wait. After a while, I noticed an animated conversation between a man and the driver, who was sitting behind the wheel. There was lot of pointing at a document, and



Busloads of visitors arrive at Kennedy Space Center's front entrance, whose awning is designed to look like the photovoltaic panels of the International Space Station

eventually they were poking at the touch-screen of the bus's GPS navigation system. This seemed pretty odd, and it was never explained to the passengers. The other buses left not long after 2am. We didn't leave until after 2:30am, when the guide announced that we were all accounted for. But instead of going directly to KSC, the driver stopped at another hotel, where the man he'd been interacting with got off the bus, ran inside and almost

immediately returned. I'm assuming that he'd forgotten something in the hotel lobby, but we'll never know, as this wasn't explained either. Now after 2:45am, we finally set out for Kennedy Space Center, 60 miles away.



We arrived at KSC around 3:45am. Tour buses were streaming into the complex. We were instructed to disembark with all of our belongings and go into the Visitor Complex via a security bag check at the main entrance. Afterward, we could do whatever we liked at the Visitor Complex. We were reminded that all the attractions, shops and food services were open for our use. We were instructed to get in line for the buses to The Causeway before 5:30am.

The scene at the KSC main entrance was as that of a big day at a theme park, except that it was 4am. There were dozens of security people manning folding banquet tables, peering into every bag with a flashlight. Hundreds of people were queuing for the security check – and tens of thousands would pass through the gates that morning. The young man in front of us in the queue had traveled from Australia for the launch, so he represented a completely different kind of investment in a successful launch.

We finally passed through the security check at 4:15am and proceeded through the Information Central building. As we had only 75 minutes before we were to be in the bus queue again, we didn't have any real time for sightseeing. We'd figure out where we needed to be at 5:30am, then decide what we could do in the short time left.



The courtyard of the Kennedy Space Center Visitor Complex at 4:15am

We passed through Information Central and outside into a large cement courtyard. The scene was surreal. Thousands of people milled about in the ghastly-green streetlights of the courtyard. Many groups just stopped in a random spot and unfolded their ubiquitous folding chairs and sat in a circle. Some stood in sleepy huddles. Some acted as though it was a normal thing to be running around in a space flight museum in the middle of the night. Off to the west, the tops of launch vehicles in the [Rocket Garden](#) poked out above the clutter. In the north, people were strolling into an IMAX theater.

We found a large set of gates at the east end of the courtyard over which a sign read "Tour Bus Boarding" and decided that was our 5:30am destination. Joni suggested that we could just walk through the Space Shop and see if there was anything unique to the launch. I agreed that would probably take up the rest of our time, leaving some time for a last restroom break before getting on the bus.

The Space Shop was a zoo. Not only was it beyond its designed capacity to hold people, but these people were all wearing backpacks, tripods and folding chairs. In the center was a table over which was hung a sign indicating that it was displaying items unique to the STS-135 launch. This table was inundated with slow-moving and slow-shopping visitors. We're not usually souvenir buyers, but if we found something unique here, we'd consider it. Joni was hoping to get a few small gifts for people back in Los Angeles. I quickly identified a few baseball hats bearing an embroidered mission emblem for STS-135 and reached through some of the shoppers to get one for each of us.

At some time after 4:30am, I looked to find where the cash registers were, and realized that half of the people on the first floor of the store comprised two lines, which snaked among the various spindles, gondolas and tables of goods. We'd be lucky to get through in time to get on our bus. So I quickly worked my way to the end of one of the lines and took my place. I looked around for Joni so I could tell her I was in line and she could keep shopping. I tried calling her on the phone, but the noise level was so high, she never heard it. She actually called *me* twice as well, and I missed both calls. When I finally spotted her on the opposite side of the store, she was



The one thing that Space Shoppers who are Space Shopping in the Space Shop don't have is space

doing the same thing as I was – standing in the other line. I finally made eye contact with her, motioned her to me, and told her to keep shopping. After a while, she picked up a couple of small items and then traded places with me.

We finally got out of the store at about 5am. On the way out, we briefly stopped at an exhibit adjacent to the store which had some items from “Star Trek” on display and took one photo. Then we hunted down the restrooms to prepare for the bus trip to The Causeway.



Before you step through “The Guardian of Forever,” be sure to take along some folding chairs

When we returned to the courtyard to queue up for the tour bus, we found a clot of several hundred people bunched up at the gates to Tour Bus Boarding. Sixty feet from the gates, the clot eventually thinned out to a ragged line of people, which continued a hundred feet or more across the courtyard, and the line grew at a few people per second.

We found that we could walk around one end of the gated area where all the people were congregating and get all the way to the boarding area for the buses. There were several dozen people here, waiting. We struck up a conversation with a woman here that was convinced that this was where the buses would pick us up. After a few minutes of wondering, I decided that we’d go and ask someone if this was a viable place to wait. I told the woman that if we found out differently, I’d come back and tell her. She laughed and said OK.

I asked the first KSC employee I could find if this was the line for the tour buses. They said yes. I said, gesturing to the clot, “All of these people, and that line going across there?” They said yes. I mentioned the boarding area where we’d just been, and he said that we wouldn’t be allowed to board there, we’d have to go through the gates. We ran back to tell the woman our news and then proceeded toward the end of this long queue.

5:08am – The end of the line raced away from us even as we walked briskly toward it. By the time we got *in* the line, we were a couple of hundred feet away, rounding a bend so that the Tour Bus gates were almost out of sight. Everyone around us looked as puzzled as we. Every minute or so, new people would pass by, asking if this was the place for Gray Line Tour buses, and we would all just say, “we think so.” Within a few minutes, the line was so long behind us that it made another turn around a bend out of sight. When new visitors rounded our corner and found – literally – no end in sight, they’d sigh and move on.

I couldn’t stand not knowing whether we were in the right place, so I left Joni in line and ran off in search of information. A young man wearing “Kennedy Space Center” identification was answering questions from a few visitors:

Me (pointing at the clot of people at the gates): “Is this the queue for tour buses to The Causeway?”

KSC Guy: “Yes.”

Me (gesturing again to all the people): “All these people are in the line?”

KSC Guy: “Well, some of them are on a Kennedy Space Center Tour, and some are with a third-party tour company.”

Me: “I’m on a Gray Line Tour.”

KSC Guy: “That’s a third-party.”

Me: “What delineates where the Kennedy line and the third-party lines are?”

KSC Guy (Stands on tiptoe to see over the small group of us that have formed to ask him the same question): “Well . . .”

KSC Guy (*cont’d*): “. . . I think the Kennedy Tour is on this side, and . . .”

KSC Guy (*cont’d*) (seeing that there are NO “sides”): “. . . well, I’m not really sure. You should really ask the people in the Information Center.”

As I head back toward Joni, a couple of guys ask me what I’ve learned. I tell them. I wonder aloud about whether we’re boarding the same buses on which we arrived, and they say that they were instructed to LEAVE all their belongings on the bus – completely opposite of our instructions. We all shrug and wish each other luck.

KSC Information Central is the first building that every visitor goes through on the way to the rest of the Visitor Complex. So every one of the tens of thousands who were arriving that morning were coming through a single doorway about 12 feet wide. They were still arriving, and pressing through the door into the increasingly congested courtyard.

I was going to Swim Upstream.

5:15am – I ran back to Joni to tell her I was going to the Information Center to ask for a definitive answer, but that I wasn’t sure if I could actually make it in and back in 15 minutes. I think she offered to hold the folding chairs, but I kept them on my shoulder, just in case the line started to move. Joni was also carrying a full load of Stuff.

When I got to the doors of Information Central, there was gridlock. A nearly equal number of people at the aperture were facing out toward the courtyard or in to Information Central. And they were just looking at each other, waiting for someone to move. Unhelpfully, I said over the din, “Someone has to

move.” With some pushing and nudging by several of us, I managed to get through to the inside. Amidst dozens of dazed-looking new arrivals, I spotted the Information Desk, manned by three ladies in blue NASA-emblazoned jumpsuits. I got in a short line and waited.



That’s “Ute” in the blue NASA jumpsuit at right, manning the Information Desk

5:23am – There’s one guy and his son in front of me talking to “Ute,” a German-accented NASA info lady. I hear Ute say, “No, you only have the blue ticket, so that only gets you here. You don’t have a ticket to get to The Causeway. For that, you would need another ticket.” The guy with only the blue ticket now leans on the counter with both elbows and says, “So what *can* I do?” Inside, I’m screaming. He’s clearly unaware or uncaring about the large lines of people at the Information Desk behind him, and he’s settling in for a conversation. Ute attempts to re-assert that he’s gone as far as he can go, and I’m fuming about whether I should just interrupt when the woman behind me just wedges in front of him and asks her question. Blue Ticket Man indignantly stares at the woman who has interrupted him, but now it’s too late: I jump on the end of the woman’s response and ask Ute, “I’m on a Gray Line Tour to The Causeway, is this the correct place where I should be waiting to board the bus?” Ute just gestures out toward that end of the building where the courtyard is and says, “Yes,

right there.” I say, “Where all those people are?” and she just says, “Right there.”

Unsatisfied, I head back out to return to Joni. In the scrum of new visitors trying to get through the doorway to the courtyard, someone says to no one in particular, “Where do we need to get on the buses?” I tell him that I’ve been trying to confirm that it’s this giant crowd of people to the east, and that I believe that he should immediately try to get to the end of the line, which is off to the west.



5:30am, and we think we're still in the right place

I return to Joni by 5:30am and tell her and the people around us that I have no new information. I think we're in the right place. We just wait.

On the other side of a fence from our long queue, there are hundreds of people sitting in chairs on the grass. They are the people who paid to see the launch from here at the KSC Visitor's Complex. They can't see the launch pad, but should (depending upon cloud cover) see *Atlantis* once it's in flight.

By 6am, the sky turns a deep royal blue, silhouetting the spacecraft in the KSC Rocket Garden as dawn approaches. I look at Google Maps on my phone and half-jokingly indicate to the people around us which way to look for the Shuttle if we're still standing here in six more hours.



Pre-dawn in the Rocket Garden

Around 6:15am, a KSC staff member walks down the line from the gates to the buses toward the end of the line, periodically announcing, “If you have a green ticket, you’re in the right place!” It’s the first time since 5:20am we’ve really believed it. Ten minutes later, she walks down the line again, and says, “Green ticket holders, you’re in the right place. You’ll be on the buses in 20 minutes, I promise.” In the light of dawn, we make eye contact with our fellow line-holders, as if to say, “Yeah, right.” I can’t imagine we can move the thousand people between us and the gates at which they stand in 20 minutes, much less get to wherever the buses are. But in only a few minutes, the whole line starts to move. We’re boarding!

. . . sort of.



Finally, we're moving. Where are we going?
Aren't the buses that way?

First, we zigzag through the ubiquitous queues of stanchions and padded ropes. Then we get routed through a building and shuffle through an inane exhibit about robotics. The queue returns us back outside, between more rope stanchions, again passing



OK, I've got a green ticket. Where's the bus?

the gates we stared at for the past hour and a half. At the very last opportunity for crowd control, just at the end of the queue where we were freed to the parking lot to locate our own bus, there was single sign. It



This looks like the right thing . . . what was our bus named?

read, "Green Ticket Holders Only." This sign could probably be seen by the first five or ten people, out of the thousands of us in line. Nice.

We were eventually corralled into a chute of temporary barriers, along which tour guides stood holding signs to collect their passengers. We saw "Victoria," the woman from the Florida Visitors' Bureau from the previous day who had told us we could park in their lot, and we had a brief, furtive reunion. We recognized our driver and bus in the first parking lot we reached, but there were other buses in parking lots beyond. I have no idea how many buses there were, but there must have been something close to 100 or more. In only about 25 minutes from when the KSC staffer promised we'd be on our bus, we actually were. It was 6:48am.



That's it! "Anette V43!"

Our tour guide eventually boarded the bus and reminded us that we were now still at the mercy of NASA as to when we would be allowed to proceed from here to The Causeway, and there was no way to know when that would happen. The dawning sun's golden light pierced across the interior of our bus



Morning sun streams through our bus as we wait for NASA to release us to The Causeway

from right to left, and we tried to be optimistic. I checked the weather and NASA Twitter feed again – no changes. “30 per cent favorable for launch” was still the official line. Oy. While we waited, some people dozed. The tour guide read us some rules, and instructions about what to do when we got to The Causeway. We were told that once the launch was successful, we were to immediately get back on the bus to return to KSC.



As we depart the KSC Visitor Complex, we see the thousands of visitors who have come to see the launch from there

Time passed.

8:05am – Almost an hour and a half later, all the buses started their engines. At 8:15am, all the buses started to roll out of the parking lot and make the journey to The Causeway.

The Causeway viewing site was less than five miles away, but it took almost a half-hour for our bus to make the trip. As we reached The Causeway, we passed a huge countdown clock on the grassy shore – just like the one on TV (though the one on TV is probably at the VIP Viewing Site, much closer to Pad 39). Then we passed buses. Lots of empty buses, parked on both sides of the two-lane road, which is The Causeway itself. We passed thousands of people staking claim to their two feet of shoreline. I tried to spot Pad 39A and *Atlantis*, but from the moving vehicle and at a distance of over six miles, it proved impossible.

As we continued to roll past dozens of parked buses, I saw what our literature had described as “limited seating available.” Every hundred yards or so, a portable awning was erected to cover perhaps fifty plastic folding chairs. As we passed these awnings, there remained only a handful of these chairs. When we finally reached the current end of the line of parked buses, we saw that as each bus disgorged its cooler/backpack/umbrella-carrying occupants, several of them who were not already carrying their own chairs would sprint down The Causeway to the nearest awning, grab some chairs and run down the shoreline to find the next available spot to park their chairs. Before we were out of view of the awning, it would be covering only sparse grass.

We finally got to the end of the parked buses, where each new arriving bus driver did a three-point road turn to face in the direction from whence we came before taking a place along the margin of the road. Finally, I followed the cameras and pointing visitors outside to find *Atlantis* on the horizon. The image was disappointingly small, but it was what it was. As we debarked, an alarming revelation was that we’d happened to stop such that a few low islands in the



We pass the last of the previously unloaded buses on The Causeway before turning around to join them

middle of the Banana River were between us and Pad 39A. We hustled down The Causeway’s grassy embankment, away from the arriving masses toward Virgin Territory. As we walked briskly, I looked toward Pad 39A to see if we could see more than the top of the Shuttle. In the already-settled visitors from the Land Grab, I could see the pattern of the islands

reflected: where there was a notch in the island, a clump of people occupied the bank of the Banana River. Where the island and its flora got taller, there was no one. We reached the first low notch in the islands that revealed all of the Shuttle and gantry at 39A and stopped, whipping out our precious folding chairs, which had ground into my shoulder for the past several hours.

8:55am – We had staked our claim. Now all that had to happen was for NASA to give *Atlantis* the “go” for launch at 11:26am. No pressure.

T-1H24M / 8:55am: One hour and twenty-four minutes left in the countdown clock. The three and a half hours remaining until the scheduled launch



To our east, the people who arrived after us fill in the grass berm of The Causeway

reflected the additional durations of the scheduled “holds” built into a countdown to pause and confirm readiness.

Our spot was as close as possible to the yellow polypropylene rope which kept Causeway guests a safe distance from the (allegedly) alligator-infested Banana River. From our seated position, we could see pretty much the entire gantry for Pad 39A and Shuttle



We set up with other first-arrivals at our piece of The Causeway

Atlantis – a tiny image in the morning mist of the Florida Coast.

The Causeway continued to rapidly fill with visitors beyond our spot, toward the east. Not surprisingly, the crowd was equipped with all manner of photographic gear, from point-and-

shoot to high-end cameras with monstrous professional telephoto lenses. We set up two video cameras, one to shoot our faces during the launch and one behind us to photograph us with the Shuttle in the background. I’d always said that there was truly no point in photographing the Shuttle alone – looking around The Causeway was ample proof that there would be no shortage of launch photography. In our 31 years of traveling and shooting video together, we’ve learned to balance “production” with Experiencing the Moment. I wasn’t going to be looking through a camera when the launch took place.

The temperature was quite balmy by 9am, and it would eventually get quite hot in the 11am sun. (My east-side leg still features a prominent tan, seven months later.)

Infrequently, we’d hear updates from an announcer at Launch Control over the great-sounding public address system. There was never mention of whether conditions were favorable or not.

By the time we arrived on The Causeway, the flight crew had been secured into their seats on *Atlantis*’s flight deck. About 30 minutes after we arrived, Launch Control advised us that the hatch to the Shuttle was being closed. Thirty minutes after that, the Closeout Crew completed the closeout of the

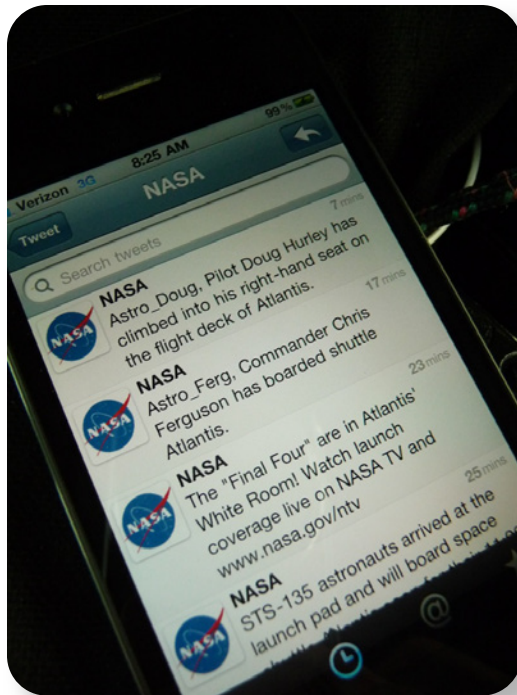
White Room – which works like the jetways on which we all board passenger aircraft.

KSC did a good job of providing resources for the crowd, assuming every 100 yards of The Causeway was identically prepared to ours. Portable toilets were plentiful and (so far) clean. There was food and drink available for purchase, as well as gift stands. There were even U.S. Post Office kiosks set up, so visitors could mail post cards and letters with a postmark from the launch site.

We waited. The man sitting next to us had brought his 5 or 6 year old son from Detroit to see the launch. We're not sure the son really understood what they were there to see, but it was an exciting event among the thousands of people. When fish leaped from the water of the Banana River, it provided mild entertainment for the weary crowd.



This telephoto image belies how small the image of Atlantis on Pad 39A was, six miles away



We monitored NASA's Twitter feed during the morning of Launch Day

I continued to monitor the NASA Twitter feed and weather information, but nothing new was presented. Though there were still thick clouds overhead, we could at least see the Shuttle and launch pad. We might only see *Atlantis* for a few seconds of its flight, but that was better than not at all.

We lunched on a couple of hot dogs Joni bought at a food vendor. She asked the family working the tent if they got to see the launches, and they told her it was their first time.

We were intermittently informed of the current time to launch and countdown events via the P.A. system.

At a few points, there were routine and scheduled holds in the countdown clock, which lasted 10 minutes or more before resuming the count.



Causeway visitors maintain their vigil

T-20M00S HOLD / 10:11am: At T minus twenty minutes, there was a mandatory hold in the clock as the Closeout Crew cleared the launch pad and Launch Control continued final checks. The crowd along The Causeway stirred in their chairs, preparing cameras and putting away food and diversions.

T-20M00S / 10:21am: After 10 minutes, the count resumed at T-20 minutes.

Puffy clouds still covered much of the sky, but there were a couple thousand feet of clear sky above the Pad 39 Launch Complex from which mighty Saturn V boosters once thundered into the sky with their Moon-bound Apollo crews.

After so many days of planning, so many miles, and 12 hours into this waking period, it was actually looking like a launch would take place.

T-09M00S HOLD / 10:32am: This was the final built-in hold. While “T minus 9 minutes” sounds close, it really wasn’t. We were still 54 minutes away from the scheduled launch time.

Along The Causeway, the crowd continued the giant picnic. People behind us were standing up, and some pressed a little closer toward the yellow rope, as though being two feet closer would improve the viewing of *Atlantis* over 30,000 feet across the Banana River.

Time passed, but very slowly.

11:14am: The announcer tells us that in three minutes, we’ll resume the countdown at T minus 9 minutes. I start rolling video on both of our cameras.

At some point, Joni and I looked at one another and giddily said something like, “It’s going to happen!” We’d invested weeks of effort for this one possible outcome – which still wasn’t a sure thing.

T-09M00S / 11:17:46am: The count resumed at T minus 9 minutes. The crowd applauded and cheered happily. People began in earnest preparing their cameras.

Activity on the public address system from Launch Control increased in frequency. Dedications to the 30-year Space Shuttle program were made by team members over the system. The announcer periodically

informed us of upcoming events during the countdown sequence.

At this point, the sky was a patchwork of puffy clouds – still hanging over the launch site, but with blue patches showing through at many places. Helicopters patrolled the airspace around the Cape.

The Causeway visitors behind the first row of seats stood up. The noise level of the crowd rose.

T-07M30S / 11:19:16am: Orbiter Access Arm Retraction – The arm on which the White Room is located retracted, no longer available as a last-minute escape route.

This might just happen.

“T minus 5 minutes and counting.” The crowd cheered and clapped their hands again. On the video shot of our faces, we look anything but happy. The tension was fantastic.

The chatter between the Launch Director and various launch team stations increased in frequency, as they confirmed what an announcer commented as “over a thousand” checklist items were in launch-ready state. It was hard not to feel the enormous inertia of the launch process.

T-02M50S / 11:23:51am: As the liquid oxygen (“LO2”) tanks, and then the liquid hydrogen (“LH2”) tanks are pressurized, venting of the ultra-cold cryogenic gases produces puffy white clouds of condensation in the muggy Florida air. It’s the first movement we can really see six miles away from *Atlantis* and Pad 39A.

T-01M00S “T minus one minute and counting,” announces Launch Control. The crowd is now quite nervous, and so are we. I find myself breathing rapidly, and take a few deep breaths to calm down. I’m fighting a shot of adrenaline that my brain has just requested.

T-00M40S “T minus forty seconds.” We double-check the still cameras in our hands. I’m still determined not to be shooting when *Atlantis* blasts off. Joni is watching through binoculars, and starts rolling video on the still camera, which she is holding just underneath the binoculars.

The announcer tells us that when we get to T minus 31 seconds, Launch Control will switch control of the countdown to the internal guidance system of the Shuttle. At that point, the launch is pretty much committed. He counts down:

ANNOUNCER: “. . . T minus 35, 34, 33 . . .”

LAUNCH TEAM MEMBER: “. . . clock is held at T minus 31 seconds due to a failure . . .”

ANNOUNCER: “. . . and we have had a failure.”

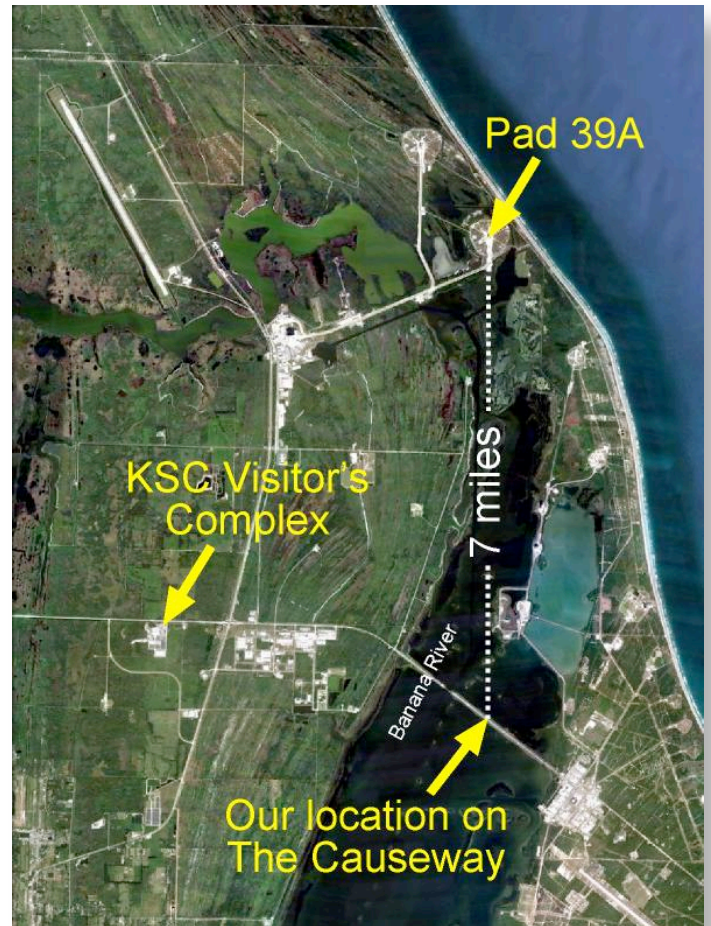
I turn to look at Joni. She looks at me. We both see a similar expression of anxiety and apprehension.

We hear the Launch Director asking for a confirmation of the problem, which is reported as a “GOX vent arm false lock indication.” The “GOX vent arm” is the beanie-shaped contraption, which remains on the top of the orange-colored main fuel tank of the Shuttle to manage vented gaseous oxygen until just prior to launch. Apparently an indicator, which confirms that this arm is fully retracted and clear of the Shuttle’s path when it launches from the pad, did not work as expected. After a few seconds, there was a request made to confirm the state of this arm by visual inspection with a video camera on the gantry. A request is made to “swing Camera 62 over” to make this visual inspection.

The crowd of thousands is amazingly quiet, trying to make out the chatter from Launch Control.

We heard one team member declare that the vent arm was clear. What followed was a scripted request – apparently from the Launch Director – to confirm in the form of an official statement that the team member who had viewed the GOX vent arm on

camera considered it to be in an appropriate state for a launch. With a noticeable quaver in his voice, the team member recited again exactly what he had observed, and that the GOX vent arm was in a safe condition. Another team member immediately concurred.



Joni and I shared a moment of nervous laughter.

After several furtive exchanges in Launch Control, there were several seconds of silence.

“All right, guys . . .” said a voice (probably the Launch Director), followed by some indistinct exchanges and a string of acronyms ended with “. . . we’re ready to go.”

11:28:15am The next few seconds of audio were difficult to make out, but they were clearly ready to proceed. I thought I heard something about resuming the launch at 6 minutes, as the announcer was attempting to also communicate what was about to

happen via the public address system, and I was trying to tell Joni what I thought was happening.

11:28:21am ANNOUNCER: “All right, we are going to pick up the clock here momentarily . . .”

11:28:27 “The countdown clock will resume on my mark . . . three, two, one, mark.”

T-00M30S / 11:28:33am “T minus . . .” (the announcer didn’t quite finish – perhaps he was surprised at the abrupt restart).

“Auto Sequence start”: Thirty-one seconds!

“. . . and the handoff to *Atlantis*’s computer has occurred.”

Countdown control was transferred to the internal Shuttle guidance computer. This was it! They were continuing where they had held at T-00M31S!

“Twenty seconds”

We stared off into the haze at *Atlantis*’s orange main tank, quietly waiting on the pad.

T-00M15S “Firing chain is armed.”

T-00M12S “Go for main engine start.”

The crowd was amazingly quiet.

“T minus ten, nine, eight . . .”

The crowd chimes in with the announcer.

“Seven!”

“Six!”

“Five!”

“Four!”

T-00M03S “All three engines, up and burning.”



Atlantis disappears in a cloud of dense steam from its main engines at about T minus 3 seconds

The crowd starts to cheer as a growing plume of thick steam from *Atlantis*’s main engines starts to envelop the craft. I look through my camera on full telephoto to see what’s happening . . .

“. . . two, one, zero . . .”

T-00M00S *Atlantis*’s mighty solid rocket boosters ignite and belch a fantastic volume of grey smoke. I lower the camera.

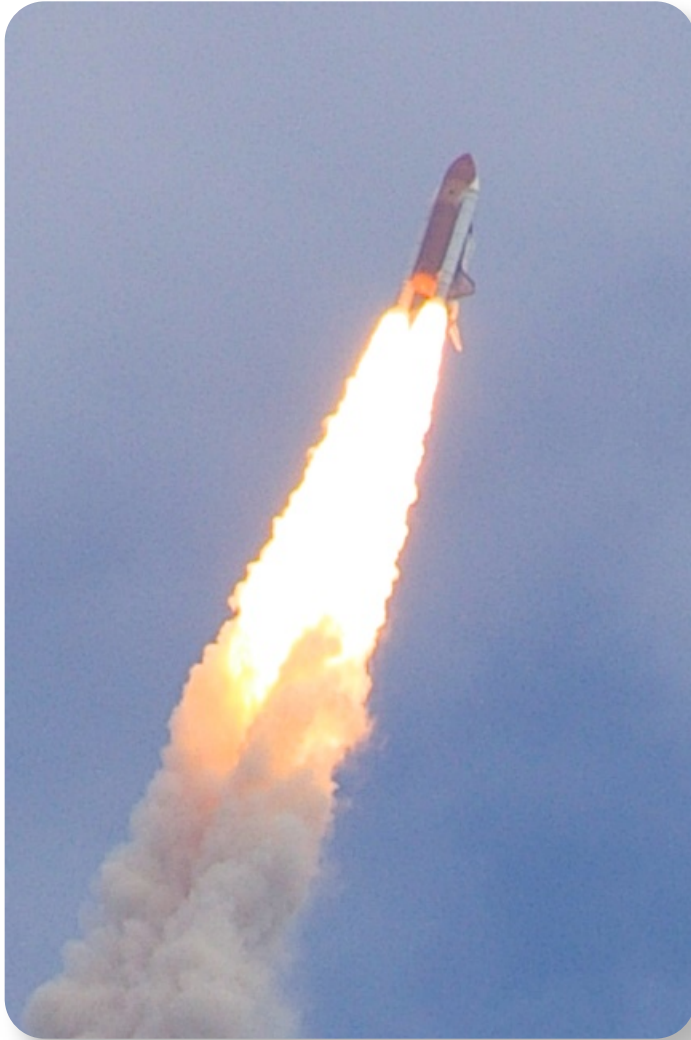
T+00M02S “. . . and LIFTOFF! The final liftoff of *Atlantis* . . .”

Atlantis and Pad 39A’s tower completely disappear in the massive cloud of smoke from the SRBs . . .

T+00M05S Far off in the distance, the tiny image of *Atlantis* emerges from the bloom of smoke atop a gout of brilliant flame. I’m caught off guard by how magnificently bright this man-made phenomenon is in the Florida sunshine, six miles distant, and tears well up in my eyes, the stress of the entire journey, the launch event, the risk of a scrubbed launch all combine with this unexpected sensory experience. I blink away the tears so as not to miss any of the brief period of the flight we’ll get to witness. Joni is doing the same.

I don’t notice it, but the crowd cheers and applauds.

T+00M12S “Roger roll.” *Atlantis* gracefully performs a nearly 180-degree roll in only seven seconds, belying her four and half million pounds. An opaque grey pillar of smoke is painted into the sky in her wake.



Atlantis pierces the sky on a pillar of flame

T+00M20S I finally raise my camera and take a couple of shots.

T+00M24S “Roll program complete. *Atlantis* now heads down, wings level, on the proper alignment for its eight and half minute ride to orbit.” Eight and a half minutes! This giant thing, which was just on the Earth will be whistling along ten times faster than a rifle bullet in only *eight more minutes*!

T+00M40S *Atlantis* disappears into the clouds, her flaming plume of fire briefly illuminating the clouds in a soft, orange glow. The crowd of thousands says, “Aww” in unison, cheers and claps their hands.

The crackling rumble of *Atlantis*'s engines finally reaches us six miles away. It's not as loud as I'd hoped, but I don't really care. I can just catch the announcer saying, “throttle up.”

I can see that on this trajectory, *Atlantis* will actually return to view in a hole in the clouds for just a few seconds. We all watch the skies intently.

T+01M00S The crackling bass drum sounds of *Atlantis* gets even louder as she passes overhead, now exceeding Mach 2.

T+01M12S Cheers ring out as *Atlantis* makes a brief appearance, perfectly framed in a blue hole in the clouds. She is now only visible as the flaming point of a smoke trail, and she's now moving really fast.

T+01M34S “*Atlantis* now 15 miles in altitude, already 60 miles down range from Kennedy Space Center . . . *Atlantis* flexing its muscles one final time . . . *Atlantis* traveling almost 2,600 miles an hour.”

T+02M08S “Booster officer reports staging . . . good solid rocket booster separation . . .



For a few tantalizing seconds, we get an encore glimpse of Atlantis in flight through a hole in the clouds

Watch video of us at the STS-135 launch here: <http://youtu.be/LXeT9jTbMXQ> . . . and NASA's launch video here: <http://youtu.be/3deA3BXAnHs>

T+02M12S . . . and *Atlantis* slipped behind the clouds, leaving us all with the crackling thunder of her engines. The crowd applauded.

After a few more minutes of looking skyward, the crowd began to pack up – all no doubt similarly coached by their tour guides to return to their buses as soon as possible.

By the time the announcer stated that *Atlantis* reached orbit around T+08M30S, the crowd of thousands had thinned down to the last few hundreds still packing up their belongings. Joni stood in line to mail out a few post cards to our moms from the on-site post office, and I hustled back to the bus to tell our driver and guide she was on her way. As it turned out, some of our bus's passengers had walked a mile or more to be near the big countdown clock on The Causeway, so our driver and guide weren't in any



Joni waits in line to mail commemorative post cards with a "Cape Canaveral" postmark from The Causeway

rush. Nor need they be . . .

. . . because the 60-mile trip back from Cape Canaveral took *four hours*. Apparently, a large part of the hundreds of thousands of people who made the trip to the Cape for the final Shuttle launch parked



Exhausted, but happy

along the sides of Florida State Road 528. Florida 528 is the 60 mile road between Merritt Island on which Kennedy Space Center is located, and Orlando, where all the tour buses would drop off their passengers. As our tour bus crept along in a massive rain storm (less than two hours after launch), we could see remnants of food and souvenir stands which had been set up on both sides of the divided four-lane highway since we passed this way five hours ago.

Finally back in Orlando, we stopped in at the Florida Visitor's Bureau to see if Victoria was there. She was already back at work, and she'd gotten there from the Cape in 90 minutes because her driver knew an alternate route. We thanked her again for the parking and said our farewells.



Back at the KSC Visitor's Complex the day after launch, we add our signatures to a Best Wishes banner for *Atlantis*

It took us another hour to get back to our campground in Kissimmee. We stopped for a meal and went back to our RV. I don't recall exactly when we finally went to sleep, but we slept the Sleep of the Dead.



Looking for a place to escape the beastly heat at Disney World, we accidentally got in a long queue for a photo session with Mickey and Minnie, where the photographer's assistant offered to take this with OUR camera. That's class.

After a lazy, restful Friday, we went back to Kennedy Space Center on Saturday to use our extra day's admission. Even as Atlantis was preparing to dock with the International Space Station, we looked out over the empty Pad 39A, where there will probably never be another Space Shuttle.

Monday evening, we picked up The Moms at the airport and began a week at Walt Disney World. We drove the RV to North Carolina, stopping overnight to visit friends in Georgia.

We rested up in North Carolina for a week and a half. Our summer journey then continued through Virginia, West



It took 30 years, but we've been to all 50 U.S. states together!

Virginia, Kentucky, Indiana, Illinois, Missouri, Iowa, Nebraska, South Dakota, North Dakota (where we celebrated having visited all 50 states together),



Our 2010 and 2011 summer adventures

Manitoba, Saskatchewan, Alberta, British Columbia, Washington (where we visited the Bellingham ferry we'd researched taking to/from Alaska), Oregon and the long, long trek down California from its northern border to our home in Los Angeles. Combined with our Summer 2010 trip, we (and our cats) crossed through 44 U.S. states and 6 Canadian provinces in 17,000 miles driven in two trips.

But that's *another* story.