SPACE CAMP MEMORIES

Adult Adventures

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"Space Camp Memories: Adult Adventures' – Reflections of Life" is a journal depicting real-life events. Names, places, and events are real and have not been fabricated.

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prologue

"THE LONG ROAD BACK"

Invariably, every story begins with a forward, an introduction that serves two purposes. One, it begins the narrative, setting the stage for whence the story is staged, and two, serving to bring the reader into the world the author has created. For a non-fiction piece such as this, and even more-so for the story told within, an introduction that details how the event has come to pass is equally important. Therefore, let me begin by offering this: the event in question is returning to the US Space & Rocket Center for an Adult Space Academy program, and the story is the adventure that unfolded therein.

But my introduction is somewhat different. It's unusual because *Space Camp Memories: Adult Adventures* is a continuation of a story that began in a collection that chronicled two previous voyages to the Space & Rocket Center in my youth - *Space Camp Memories: Youth Programs* – where I participated in the Space Camp and Space Academy Level I programs. Like Space Camp Memories of my youth, the Adult Adventures detail Space Camp experiences I've had as an adult, which began in September 2003 with a three-day program for ages 19 and over, continued in June 2007 as Space Camp celebrated its 25th anniversary, and stopping (for the moment) in June 2012 as Space Camp once again celebrates an anniversary, this time it's 30th.

* * *

In 1950, when Dr. Werner von Braun arrived in Huntsville, the city boasted a population of only 15,000. Then the town was known as the "Watercress Capital of the World" but today it has been forever forged into the history books as *the* place where America's space program began. How does Alabama fit into the Space Race equation? Although the astronauts launched from Cape Canaveral, Florida and missions were controlled from Houston, Texas, the rockets that were developed to put the first US satellite into orbit and set men to the moon, where the power for today's space shuttle was developed, where the modules for the International Space Station were designed and built in Huntsville.

But how do we go from developing America's rocketry to housing a summer camp for space enthusiasts?

During the final months that von Braun and his team of scientists were refining the giant rocket that sent Apollo astronauts to the moon, he was also preparing to launch another important project: a permanent exhibit to showcase the hardware of the space program. Von Braun thought that since there was Disney World and Amusement Parks, a park-like attraction focusing on space and science would be of interest to the general public, especially as a way for the public to see things that only those inside the gates of the Army's Redstone Arsenal got to see and work on. Today, the U.S. Space & Rocket Center houses thousands of artifacts, including: the charred Apollo 16 Command Module, a rock brought back from the moon, an original Saturn V lunar rocket vehicle and a full-sized space shuttle mock-up.

But von Braun didn't stop there. As Director of the NASA Marshall Space Flight Center, Dr. Braun began to cultivate an idea to expose young people to science and math using the space program as the focal point of a course of study. If the country had baseball and football camps, why couldn't science have a camp to encourage interest in the space program? He began to work on the Space Camp idea in the mid 1970s with fellow NASA employee later turned US Space & Rocket Center Director Ed O. Buckbee, who saw the idea through to fruition following von Braun's death in 1977.

Space Camp's first year – 1982 – was very much like early space travel: a step into the unknown. But 747 students signed up to find out about the excitement of space travel in von Braun's summer-camp environment. The following year that number rose to 1,400. The next year it was over 2,000. Then 3,000. 5,000. In 1986, with the release of the movie "SpaceCamp", filmed on location at U.S. Space Camp in Huntsville, Alabama, attendance shot to over 12,000. The word was now out.

That's how I found out about Space Camp, through the movie.

SpaceCamp: The Movie is a thrilling contemporary adventure about a group of teenagers whose summer at a camp for future astronauts turns into an unexpected space shuttle voyage. The film stars Kate Capshaw as Andie, a camp instructor and astronaut who has not yet fulfilled her dream of space-flight; Lea Thompson as Kathryn, a serious-minded young lady who is determined to become the first female shuttle commander; Tate Donovan in his feature film debut as the brash but likable Kevin, who discovers the spirit of team-work; Kelly Preston as Tish, a lady with a photographic memory and a passion for the fashions of Cindi Lauper and Madonna, who proves to be less frivolous than she first appears; Larry B. Scott as Rudy, a young man for whom Space Camp provides the key to self-confidence; Tom Skerritt as Zach, a former astronaut and head of Space Camp; and screen newcomer Leaf Phoenix as Max, a star-struck youngster whose dreams of space adventure come true in a way that exceeds his wildest expectations.

I was hooked. Already a self-described “space nut”, and just beginning to reach for the stars myself, this was a fantastic adventure to behold. The film would quickly become my all-time favorite (even surpassing “WarGames”; when I found out that Space Camp was a real place – I wanted to go as soon as possible! But what really is Space Camp?

Space Camp is a five-day adventure for kids in the 4th, 5th and 6th grades, and it provides the opportunity for enthusiasts to take part in the building of their own model rocket (which is launched later in the week), tour the USSRC’s Rocket Park, take off-campus trips to the Marshall Space Flight Center, and see amazing IMAX films such as “To Fly”, “Hail Columbia” and “The Dream is Alive”. The week long adventure would also be full of training, in which cadets would learn to use such equipment as the Moon Walker (simulating the sensation of walking on the moon), the Centrifuge (simulating the 3 G's the Shuttle astronauts experience at lift-off), the Space Shuttle Liner and the 5DF (Five Degrees of Freedom) Chair. The week also has trainees take part in a practice splashdown rescue operations (for emergency egress purposes) as well as teamwork skills tests. All of which to prepare the cadets for the grand finale: a two-hour Space Shuttle mission simulation, which will use all the techniques and skills learned throughout the week.

I attended *Space Camp* from June 11th through 16th 1989.

It took two years for the Space Camp Foundation to conceive, create and put into action a more advanced program for more advanced youth following the Camp’s original creation in 1982, but by June 1984, Space Camp Level II (later “Space Academy, Level I”) was born. This five-day program open to kids in the 7th, 8th and 9th grades would intensify academic study with an increase focus on Space Shuttle operations. Throughout the week, trainees would use such equipment as the 1/6th Gravity Chair, Multi-Axis Trainer, the Space Station Mobility Trainer, discover weightlessness in the Maneuvering Pod, and use the GMMU to train for satellite docking. Two, two-hour Space Shuttle missions (undertaken in highly accurate simulators) would comprise the use of such mock-ups as the SpaceLab, the Space Station Freedom module, and the Hubble Space Telescope.

I attended *Space Academy, Level I* from June 16th through 21st 1991.

From the moment I graduated from Space Academy in 1991 I wanted to do it all over again. By proxy that was supposed to happen in 1993 with the next level program at the time, then simply referred to as Aviation Challenge - today there are three levels: Mach I, II and III depending on your age (similar to Space Camp, Academy Level I and II). Aviation Challenge offers kids the chance to train as a fighter pilot rather than an astronaut, but as I stated at the end of *Space Camp Memories: Youth Programs*, I based my decision not to attend on the militaristic nature of that program. Rather, I wanted to continue training as an astronaut than wear camouflage and get bossed around. And while that was mostly true I was also beginning to lose interest in the bigger picture. Most of the magazines to which I had subscriptions were canceled (Odyssey, Astronomy, Deep Sky, National Geographic, etc.) and my outlook on becoming an astronaut changed. By the time I had entered High School, Space wasn't the most important thing in my life.

By 1994, as I was finishing up my junior year, a little spark set off a small flame, and for a while it seemed that I might complete the journey after all (by attending Space Academy, Level II – now called Advanced Academy – the highest and lat program in the space track to master). I'd thought about doing it all winter, got excited and reared to go, but by spring the desire to spend all that money was gone, and later the chance missed. But something special did come of it: the birth of a self-celebrated "Space Camp/Academy Awareness Weeks" – a period of reflection from June 11th through 21st during which I could celebrate the memories of and time spent at Space Camp, with an all-inclusive date on June 16th. The 16th was selected as the crux of these days because it was the only calendar day both Space Camp and Space Academy experiences overlapped (Space Camp from June 11-16, 1989 and Space Academy, Level I from June 16-21, 1991).

The summer of 1994 also brought fourth an audio recording in which I fondly discussed my memories of both programs for posterity. Curiously enough it was entitled "Space Camp Memories" and it became an instrumental tool in the creation of *Space Camp Memories: Youth Programs*, the prequel to the adventure you're reading here.

I turned eighteen and graduated from high school in 1995. With the newfound freedom that came with coming of age, thoughts once again fell upon returning to the Space Center. Although the window to do so as part of a youth program had closed, that summer, on June 16th, I drove from my grandparents house in Sevierville, TN all the way to Huntsville, AL just to relive a few memories and to claim that I'd stepped foot on the grounds once again.

The journey was both satisfying and discouraging, as many changes had occurred between the years, transforming the campus and training center facilities beyond expectations. I remember thinking poorly of the state of the Space Camp training facility and the darkened conditions of the museum, but at least I had made an attempt to return in some fashion, right?

Visiting in such a limited fashion didn't quench the thirst to be part of the action though, as there was one point to the 1995 visit that rang true: I was just a tourist, not a trainee, and if I ever wanted to step foot on the Training Center Floor, or see the inside of the Habitat (which I so desperately did) again, I had to set aside any and all personal fears and go. The next two years followed pretty much the same path. A change of employment in early 1996 negated any vacation opportunities that year. In 1997, I planned to use one of my two vacation weeks attending the Adult version of Academy Level II, but when all was said and done I didn't make it. October 1997 held another special event in my life: #LionKing'97, a meeting of friends at Walt Disney World. Moving in 1998 so I could attend the University of Central Florida put the kybosh on attending then. And the next year was the same.

Can you see a pattern?

Every year that I had plans to return something would crop up to foil them. I seriously began to wonder if I'd ever manage to go back again! Then, on August 12, 2002, everything changed. That autumn I discovered a group on the Internet dedicated to celebrating the entire Space Camp experience. The folks conglomerated at a website called Hab1.com and before I knew it the dream was alive again. For the first time I was connected with like-thinking individuals, discussing at length the Space Camp experience, learning about new and exciting things, and discovering all the change that had occurred since I was last there. A dream had come true!

I met Kim, an interesting young woman who I connected with far more than any other, during one of a myriad of discussions. Call it fate, call it coincidence - call it what you will - but as our friendship grew we came to realize that she and I shared a unique experience that some might say qualifies us for the Twilight Zone. See, Kim and I were actually at the Space & Rocket Center at the same time... going to Space Academy at the same time... in 1991... and we didn't even know it. She was on the Martin Marietta team (with Keith) while I was on the BDM team, but as fortunes would have it both teams were present in the same group photo. Wouldn't you know that we were seated three people apart?

I've always maintained that the Internet is a wonderful way to meet people (it's how I met my fiancée, Nicole) and certainly this chance meeting showcases that fact. We spent nights regaling our tales about the fire drills, the bad food, people we knew and the memories we shared until a fantastic idea formed:

Why not go to Adult Space Academy together? Yes! What a wonderful way to showcase a budding friendship and to relive the memories than to return where it (could have) begun (if we had only known)! Soon we began to make plans, picking out a week in October 2003 for Adult Advanced Space Academy, the moniker for the adult version of Academy Level II. It would mark my overdue return to the Space & Rocket Center and fulfill yet another dream... to return as a trainee.

But fortune did not fall upon this reunion. Over the Columbus Day holiday, a mere two months after we met and began our plans, I was given the pink slip at my workplace. Up to that point I had given them almost seven years of loyal service but that didn't seem to matter. By year's end (on Friday, December 13th) I would be out of a job and in one swift moment become yet another statistic of the poor economy following the September 11th Terrorist Attacks in the United States. With that life-changing event on the horizon I found myself reviewing all future plans whether I wanted to or not.

Throughout this tough time I maintained the notion that no matter what happened I was going find a way to return to Space Camp in 2003. I had hoped it would be with Kim and for a time I continued down that path. But it became painfully obvious that I could not afford the $900 price tag attached to it especially not after spending a month traveling across Europe (the Europe trip was planned prior to being laid off... I just extended it another couple of weeks...)

So, where did that leave me?

It left me out in the cold. As the months of early 2003 began to tick on I began to wonder again whether I was destined ever to return. It certainly seemed that way. Regardless of what plans I had made over the years they always seemed to fall through. But then as I began to piece back together my career following a month-long back-packing trip across Europe, I decided: as a reward I would make the attempt. Rather than try for the hugely expensive six-day or longer program, why not wet my feet (and whet my appetite) with a shorter three-day program? And so it happened: by summer I was registered for an Adult Space Camp three-day program, with just me, for September 2003. And it was the best thing I could have ever done.

Continue the journey with me now...

Adult Space Academy
Session 52
September 26 - 28, 2003

Day One – ARRIVAL DAY
FRIDAY | SEPTEMBER 26, 2003

I have returned!

Though that may be the case, last night was a rough night.

Winds ruffled every leaf on every tree, howling merciless against the sands of time. Rain fell from the skies, pelting every window, every door, and just about every unprotected surface of the house... pitter-patter... pitter-patter in an ever increasing monotone. Every few moments, an electric spark flashed across the sky, knifing through the darkened clouds in an unforgiving display of anticipation and release; its advances illuminating the chaos created below. The display of light and power was immediately followed by echoes of thunderous roars of anger, becoming ever so expedient with each violation. Limbs crashed to the ground and lights flickered on and off as the skies opened up, releasing its pent up frustrations on the inhabitants below...

Yeah, it was a rough night to say the least. A storm of surprising dimensions passed through in the afternoon and continued into the evening hours. Just when I thought it was gone it came roaring back full force. Having your room illuminated fully by lighting every couple of minutes is not the most fun way to spend an evening, especially an evening before traveling. It made for a restless night. But that's all behind me now. I'm here on the grounds of the US Space & Rocket Center again after an eight-year absence and it's been a fantastic day!

Wow, eight years. Yeah, it's been that long since I've been here; twelve years since I've attended a Space Camp program – one in 1989 (Space Camp) and the second in 1991 (Space Academy, Level I). I've dreamt of this day, to know what it would be like, what had changed, would I like those changes, what I would do first and what I would do second. And though I might have been a bit anxious upon arrival - my insides shaking like a leaf - no longer do I feel this way. I'm not shaking because of apprehension; I'm shaking out of pure excitement! I'm here! I'm here! I'm here fulfilling a promise to myself made then and years past – to return. It's only for the next couple of days but in these days I know I'm going to have an experience that I will cherish for a lifetime.

And it's already started! It's been a fantastic day filled with adventure, memorials and flat-out fun. But I don't want to get too ahead of myself in detailing here or get too excited. We've just ended our day – it's time to settle down – but I find I can't quite go to sleep... not just yet.

Want to hear more?

GETTING TO KNOW YOU ///

Things couldn't have happened any better if I had planned them.

On the flight out to Huntsville this morning I passed over Disney World and for the first time I was able to see the vacation destination from the air. In all the times I've flown I've always managed to be on the wrong side of the plane, or on the wrong flight path, or just wrong. Perhaps it was fate then that as I indulged one fantasy I was able to fly over another. I love going to Disney World, but Space Camp calls!

I arrived in Huntsville about 9:00am where a wonderful smiling counselor from the Camp greeted me as I walked off the plane. She explained that a bus was waiting outside, beyond the baggage claim, and I could board it after picking up my bags. The bus then would take me to the Space and Rocket Center where I could, probably, check-in. (Probably... as I was coming in real early). I followed the signs and met the bus. The bus driver was a nice old fellow whose name I didn't happen to catch, but as he and I were the only ones on the bus, we struck up a conversation about this and that, the detritus isn't that important. In fact, it didn't take long to get from the airport to the Rocket Center -- about 15 minutes or less -- but in that time I was able to relax, think about what I would face and prepare for the onslaught of memories.

He dropped me off at what they call the "Bush Room", which is nothing more than a security office, tucked into one of the sides of the museum building. Since I had arrived quite early he wasn't sure whether or not I'd be able to check-in right away, but he wished me luck and welcomed me back just the same. I pushed through one of the glass doors and announced myself to the guard there. He was just as nice and ushered me forward. Part of my plan, at least, was to just arrive early. Since I had done that the next step was going as I had conceived it: allowed entry so I could wander around the museum, Rocket Park and Habitat while I waited for the official check-in time.

Thankfully, the nice gentlemen in the security office were able to direct me to the "side-door" of Habitat I, where someone would be able to further assist me. Now, let me take a moment here to explain the quotation marks of "side-door". I do this because, back in the day (and I'm talking my 1989/1991 experiences), this particular door was the main entrance to the Habitat. But now, here in 2003, it is nothing more than a simple side entrance that is hardly ever used, unless a trainee wants to slip out to a place called Otters, but more on that later. It's not well marked anymore; rather, it has the feeling of "GO AWAY" written all over it (even if "H A B I T A T I" is stenciled across the entranceway). But I wasn't going to go away. Oh no.

I arrived at Habitat I's "side-door" and steeled myself. Not against pain or embarrassment, but for posterity. It would be, for me, the first time I'd be stepping through this door in 12 years. And it seemed fitting that my first entrance into the Habitat was through this door; it's the same door I stepped through back in 1989. Even after all this time the Habitat still thrilled me. Why? Because it epitomized what I always wanted -- to live in space. The Habitat Complex simulates that to a certain degree.

There are two Habitats.

Habitat I is a simulated Space Station environment, built to house up to 800 Space Camp and Space Academy trainees during these week-long adventures. This unique structure, an addition to the Space & Rocket Center grounds in late 1988, features individual compartments for six persons with built-in sleep stations, computer work areas and storage compartments (lockers). Habitat I has a towering four floors, which opens up to a central atrium that is used for registration and various assemblies throughout the week. Down in the atrium is where registration would be and where, during the youth programs, we met in the morning before marching off to breakfast.

Designers incorporated many aerospace concepts in this four million, 328-foot Space Habitat. For example, it has hatches for doors; ports instead of windows; and benches instead of chairs (which, of course, would float in space. These items extend the atmosphere of living and working in a weightless environment, which I totally love.

Original	Became
Bathroom	Waste Management
Heating and Air	Life Support System
Maintenance Room	Enviro Control
Window	Earth Study
Elevator	Transport
Water Fountain	H20 Dispenser
Emergency Exit Plan	Emergency Egress
Hospital	Sick Bay
Snack Room	Galley
Room	Bays

Structurally, the Habitat's exterior is comprised of over 45 curved metal panels, which give the building its cylindrical appearance. The "tubes" of the Habitat are longer than a football field and are divided up into 66 bays, which are our rooms. Ten corporations, each of which contributed at least $100,000 toward construction of the $3.65 million Habitat I building, receive special recognition. At least one section of the habitat is named for them: Lockheed, Wyle Laboratories, Rockwell International, The Coca-Cola Co., Teledyne Brown Engineering, Morton Thiokol, Grumman, The BDM Co., Boeing and Martin Marietta.

Habitat II, or Hab II as it's called for short, is more of an Earth-based environment: large bays filled with bunk beds, various assembly rooms, a sick-bay and other necessities. The two, Space Station (Habitat I) and Earth Station (Habitat II) make up the 64,000 square foot Habitat Complex. It's too cool!

Pulling myself together I walked through the door and into the main atrium of Hab I, a sprawling open space with four floors ringed above it. There I met a counselor by the name of Jay, who was nice enough to help me. Advising him of my dilemma (my early arrival), he understood and let me set down my bags, get my ID badge, and then set me loose amidst the grounds of Space Camp. I couldn't check-in though, nor could I go to my room (bummer, as I wanted to get there as soon as possible), but I could at least see the grounds (and perhaps the Museum if they would let me in). So that's what I did! I meandered around both Shuttle and Rocket Parks (taking scores of pictures), wandered through the Museum (wow, even more changes!), visited the gift shop (where I purchased two old-style Camp shirts with Lockheed Martin and BDM logo's on them – to wear later), and had lunch in the public cafeteria (space corn dog?).

By then it was time to check in.

TEAM: DISCOVERY ///

By noon-thirty the counselors back at the Habitat were ready to begin processing adult check-ins. I took advantage of the earlier-than-normal time to be the first, or at least one of the first, to be processed and given my room assignment. As adults we were given a choice: lodgings at the nearby Marriott hotel (on the grounds, just behind the Habitat Complex) or a bunk inside the Habitat. Naturally I wanted to be inside the Habitat, who wouldn't? And I'll admit there was a high-level of curiosity there: to what room and floor would I be assigned? In the two years between attending in my youth I wondered whether or not I would get the same room. As it turned out when I reported back in 1991 I was assigned the room right next door to the one I occupied in 1989 ("308" in 1991 vs. "310" in 1989). And through the long years since I'd often dreamt of getting either room when and if I ever returned, so to be faced with the question in real life was certainly intriguing.

It wouldn't be long before my curiosity was served.

The nice counselor behind the folding table laid sideways across one far wall of the atrium (and partially hidden behind a stack of Adult Academy T-shirts of all sizes) dealt out my assignment: I was a member of "Team Discovery" and I would bunk down in HL-317, in the BDM Section. She advised me to pick up my T-shirt and bedding.

"Do you know where you're going?" she asked me.

"Oh yes," I replied with a smile. "Don't you worry!"

Ascending the now-silver-colored stairs to the third-floor was a surreal experience, as I had dreamt about doing so for many, many years and there I was doing it. Within moments I arrived at the threshold of my hatch, with the letters BDM proudly displayed above it and the number 317 scrawled in thick, black lettering beside it. I wasted no time; I pushed through.

At first glance the room wasn't in too bad of shape (as it had seen thousands of hyper-active kids over the years), empty (I was indeed the first!), and quiet. I selected a bunk – the one farthest from the door over a set of lockers, my traditional space – and began to unpack. The only difference here: the room was laid out oppositely from those I had inhabited in the past. Or, rather, it was a mirrored image of 308 and 310 and though it would take a little getting used to, I figured it wouldn't be that big of a deal.

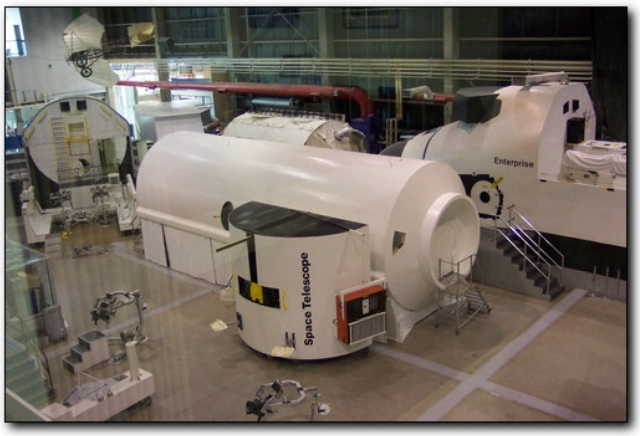
As I was getting settled I met one of my roommates – later to be three – then we all assembled down in the atrium to meet the rest of Team Discovery. They were: Reverend Paul Sweet, Howard Hitchmough, Matt Hill, Virginia Lee Miller, Scott Lorabowski, Laurie Keco, Lynn Ward, Amy Hannon-Drew, Bob Barrett, Rachel Homme, Ron Harris, Hal Taylor, and Tom Tietjen – all from different backgrounds and walks of life. Most of the attendees are older than I (in their 40s and 50s) but there are a few that are around my age.

Once we met and greeted one another, we met our counselors – Kim and Jay – and then the experience kicked into high gear.

ORIENTATION & BRIEFINGS ///

Upon meeting the other thirteen members of Team Discovery – fourteen of us in all – in the atrium of the Habitat, and our counselor (NAME) we left our home-away-from-home to begin our first task: Orientation. Rather than holding Orientation right there in the Habitat, or even at one of the team rooms therein, we trekked all the way across the campus to the Training Center, up to the second floor offices (generally reserved for Advanced Academy cadets, and into one of the Corporate classrooms. There, as with the youth programs, we learned what to and not to do, what we could and could not do, and what we should and should not do. Even though we would be given freer rein with the grounds and allowed to step away from the Habitat at night, there were still other groups in-house and safety as well as security was paramount. We couldn't traverse certain floors still, and were advised to just stick to our end of the habitat.

No problem!



We wasted no time following up that lecture with another – this one on the Space Transportation System, or STS for short. You might know it simply as "The Shuttle" but it's an amalgam of four different systems all working in tandem: the Orbiter (the plane-looking thing), the Solid Rocket Boosters (the white rockets attached to the side), the External Tank (the orange-colored gas tank attached to its backside) and the Space Shuttle Main Engines (or SSMEs, these are the triad of engines at the bottom of the orbiter).

Together these systems propel Astronauts into low-earth orbit, and perhaps one day to platforms that will take us back to the moon and on to mars! In the meantime they take us to the space station; the missions we'll fly here this weekend will also take us to the space station. Most of the material presented here was general and known to me, so I'll spare you the lecture.

After, the team was invited to THE SPACE DOME, a 67-foot hemispherical OMNI-MAX screen that provides viewers with breathtaking panoramas of space as experienced by shuttle astronauts. When you sit back in your seat, the action explodes all around you! IMAX accomplishes this by increasing the resolution of the image by using a much larger film frame. To achieve this, 65 mm film stock passes horizontally through the cameras. Traditional cameras pass film vertically. 65 mm film has an image area that is 48.5 × 22.1 mm (1.91 × 0.87 in), in IMAX the image is 69.6 × 48.5 mm (2.74 × 1.91 in) tall. In order to match standard film speed of 24 frames per second, three times the length of film moves through the camera.

IMAX uses "ESTAR" (Kodak's trade name for PET film) base. The reason is for precision more than strength. Developing chemicals do not change the size or shape of ESTAR, and IMAX's pin registration (especially the cam mechanism) does not tolerate either sprocket-hole or film-thickness variations. The IMAX format is generically called "15/70" film, the name referring to the 15 sprocket holes per frame. The film's bulk requires platters rather than conventional film reels.[10] IMAX platters range from 1.2 to 1.83 meters (3.9 to 6.0 ft) diameter to accommodate 1 to 2.75 hours of film. Platters with a 2.5 hour feature film weigh 250 kilograms (550 lb). An IMAX projector weighs up to 1.8 t (2.0 short tons) and is over 178 cm (70 in) tall and 195 cm (77 in) long.

The first film of the weekend was: Space Station, a 2002 documentary about living and working aboard the International Space Station. Narrated by Tom Cruise, the film takes audiences 220 miles above the Earth at 17,500 miles-per-hour to experience "the greatest engineering feat since landing a man on the Moon." "Space Station is the story of this unique partnership of 16 nations building a laboratory in outer space -- a permanent facility for the study of the effects of long-duration exposure to zero gravity and the necessary first step towards the global co-operative effort needed if man is to someday set foot on Mars. It is a story of challenges, setbacks and triumphs... and ultimately, the shared international victory of men and women whose dreams exceed the limits of life on this Earth."

Following the movie we assembled outside for the group photo – taken underneath the Pathfinder Shuttle stack – then re-convened inside to discuss the missions we will perform tomorrow and then broke for dinner.

But the fun didn't stop just because it was dinnertime.

Immediately following dinner we were handed our mission assignments. For the first mission – ENDEAVOR ALPHA – I was assigned a role on the ground team, at Launch Control, as Weather Tracking Officer. And my job here, as it was explained, was to monitor the weather conditions at the launch site, giving a go/no-go for launch based on the conditions. If there was bad weather at or around the launch site, near any of the landing zones or at any of the abort locations spread all over the globe, I'd have to abort the launch. Of course my duties would extend beyond launch (landing would require my go-ahead too) but otherwise it was a thankless job. For the second mission – ENDEAVOR BRAVO – I was assigned to the Space Shuttle as a Mission Specialist and I couldn't help but smile widely upon hearing my tasks here: I'd be up against my old friend the Hubble Space Telescope mock-up, repairing it whilst swinging madly in one of the 5DF chairs.

That’s going to be a hoot! (The Hubble Repair Mission is the very same one I flew at Space Academy in 1991!)

We actually did a mock trial of a bit of the first mission following our assignments, just to get us used to the equipment – it was terrible. The voice systems weren’t working properly and being in the glass box that surrounded Endeavor MOCR was strange to say the least. I’m used to hearing the thrums of activity from the Training Center Floor and within this glass menagerie we could hear absolutely nothing. And I, being the WTO, was also not quite clear on what my duties were at the post. Although a thankless job, it came down to me to start the mission: yep, I get the first line in the script! Even though the run-through seemed nothing short of a complete disaster, it turned out to be a lot of fun.
I’d never had the opportunity to use Endeavour or its Mission Control in either of my previous two Space Camp experiences so it was truly a first.

What makes Endeavor different from the rest of the shuttle simulators is that, because it was constructed for Space Camp’s use, it is one of the least complete of the simulators as far as switches and knobs are concerned. Oh, a good portion of switches are in place to flip – all the important ones for the mission to be flown to be sure – but mostly everything else is just a plastic panel in place for decorative purposes. Same for mission control. Why? To keep the kids from breaking non-essential switches and knobs of course! Why go through the expense of installation and upkeep on a simulator when the detail will be better represented (and appreciated) in simulators used by the older, and by proxy, more behaved kids?

Although why we’re using Endeavour is unknown... does that mean Space Camp sees us adults as no better than children?

INFILTRATING AREA 51 ///

Before concluding our first day we completed two further activities. The second was taking a spin in a couple of the simulators over at the AstroTrek building (which I'll expound upon more in a moment), the first, however, was a team-building exercise called "Area 51". And although I had heard about similar "Area 51" experiences, I didn't know just how much fun it would be!

With two different exercises to undertake, we broke up into two seven-man (and woman) groups. The group I was part of was immediately pulled aside and explained our task: we are stuck aboard the space station and need to evacuate; however, our path is blocked by a series of laser beams (yeah, just go with it) that are protecting us. In this case, however, they're hindering our escape. "What you must do as a team," our counselor continued to explain, "is get everyone from one side to the other without a) touching the laser beams (here simulated by a bungee cord) and b) leaving anyone behind. If anyone touched the "laser beams" they were immediately disqualified (read: dead). And since time was of the essence, we had to get all of us over the threshold as quickly as possible!

It took us a few moments to figure out just how we'd accomplish our task. The "laser beams", especially those within stepping-through height, neatly tied off all the obvious avenues of progression. How were we going to get seven people from one side to the other? We couldn't jump over or through the blockage, nor could we shimmy below it. And walking around the poles was simply out of the question as well. What we really needed was someone on the other side who could act as a go-between, someone who could be there to help bring the person from one side to the other. But the problem was... how were we going to get them over there?

"I'll dive in through the barrier," one of the guys said, and when all agreed he could do it without hurting himself we were in business. With someone on the other side of the barrier, we could then begin passing people through the barrier – vertically – supporting their weight on one end until enough of their body was on the other side to fall through. Thankfully I was not the guinea pig on this little endeavor but the process turned out to be sound. It sure was interesting being picked up by a hand-full of your teammates, hoisted up to waist level, and inserted through the barrier like you were simply a credit card or some other kind of thing, then being picked up by those on the other side and hoisted through before being allowed to return to your own power.

But it worked!

Within minutes we had the entire team over to the right side of the barrier – proving that at least half of Team Discovery could work together to solve a crisis. The other half of the team building exercise involved having both of your feet anchored to a plank of wood and being unable to remove it, and find a way to connect yours to your neighbors and make some kind of path. I wasn't exactly sure of the purpose of this exercise and by the time our group got to it we were a little frazzled, so although we did come up with a solution I'm not sure any of us really understood what we did, or why!

TUMBLING AT ASTROTREK ///

Our second, and final, task of the night was taking a spin in a couple of the simulators over at the Astrotrek building – a tent-like structure that now housed many of the training simulators once found on the Training Center Floor, such as the Multi-Axis Trainer, the 1/6th Gravity Chair, the Five Degrees of Freedom Chair, the Grounded Manned-Maneuvering Unit and others. Astrotrek was built in the late 1990s following the need for the program's expansion – with more kids than ever before coming to Space Camp more and more shuttle cockpit simulators and space station modules had to be built. And where could they house them but on the training center floor!

Be that as it may, our apparatuses tonight would be none other than the Multi-Axis trainer and the 1/6th Gravity chairs.

The first of the simulators was the 1/6th Chair exercise. The 1/6 Chair, usually referred to as the Moonwalk trainer, is modeled after one the Apollo astronauts used for moon walk training. The simulator is called the 1/6 chair because it is designed to simulate the Moon's gravitational pull, which is 1/6th that of Earth's. For example, a person who weighs 150 pounds on Earth would weigh 25 pounds on the Moon. Hence, the chair gives trainees a realistic feeling of walking in the reduced gravity of the moon. It is suspended on a long bungee like cord; upon sitting in the chair, your weight is balanced against the tension of the bungee cord. Once properly balanced you're set off on your task. If you step too hard, you'll end up in the ceiling, so for the most part the counselors keep a hold of you. Once strapped in you're asked to do a variety of things. First it's a side-to-side walk, then a bunny hop, and on to whatever other steps you think might propel you across the floor (like a slow motion jog). After about three or four walks around you're done! And you get an understanding of what walking on the moon felt like. Everyone had a blast with this one.

The second was taking a tumble in the Multi-Axis Trainer.

To quote from SpaceCamp: The Movie, the Multi-Axis Trainer is a machine in which "three concentric circles [spin] in opposite directions simultaneously; object is to stabilize from central point, utilizing hand controls". Let me tell you, it isn't that easy. In fact it's impossible! The Multi-Axis Trainer (MAT) simulates the disorientation one would feel in a tumble spin during reentry into the Earth's atmosphere. The MAT is patterned after the MASTIF (Multiple-Axis Spin/Space Test Inertia Facility), a series of cages within cages, used for astronaut training during the Mercury program. The astronauts used this to condition themselves for disorientation that might occur in emergency conditions during flight. The MASTIF had a joystick, which allowed the astronaut to control the device. The MAT has no joystick (thus the joystick on the MAT in SpaceCamp: the Movie was just a prop!) but the general idea here is to experience the disorientation without actually getting killed.

Because of the prominence of this apparatus in SpaceCamp: The Movie and as a plot point toward the end of the film, when I came to Camp in 1989 I really, really, really, really, really wanted to take in a spin. Unfortunately kids of that age were deemed too young and my hopes were dashed.

They were finally realized two years later during my time at Space Academy Level I in 1991 and as I sat there watching adults into their forties, fifties and sixties work up the nerve to take the ride, I looked on fondly, remembering my first time with the Multi-Axis Trainer:

I watched excitedly nervous while some of my other teammates tumbled head-over-heels in the contraption, but when it came my turn I didn't hesitate to hop right up in the seat, and begin to strap myself in (thanks to watching the movie uncountable times I knew exactly what to buckle, where and when!). Leigh-Ann, my day counselor, explained what was going to happen as I busied securing myself and although I tried to tell her I already knew and had been waiting for this moment for more than four years, she prattled right on. And soon as she was done, she closed the metallic swing "lap" bar and let the first ring go – SWOOSH! I bet if anyone had a camera and took a picture of me there'd be a smile of immeasurable proportions visible on my face. I could hardly believe I was there, strapped in and buckled up just like Kathryn was from the movie, you know? The only difference between her journey and mine was the lack of a joystick – there was no critical test for me to master here!

Just then, as the apparatus began to move, I took hold of the bars above my head – something I didn't need to be told to do (even though the counselor did say so). Thus with a groan and a whir I was in motion; round and around and around I went! WAHOOOO!! It's an interesting experience really because you never make the same turn twice; you're never in the same exact position from one spin to the next and I suppose that is what makes the Multi-Axis Trainer a valuable tool (or at least a valuable experience to be accustomed to, in case your spacecraft does end up in a flat spin). Though it was a short ride, a lot shorter than I had wanted or hoped it would be my time with the MAT was done. But it was well worth the wait!

And as those of Team Discovery who battled their own inner demons to take the ride found out: it was pure fun!

* * *

Our first day here at Adult Space Academy came to an end at the AstroTrek building, and though I’m a little tired at this point in the day, I’m sad to see the day’s adventure come to an end. Area 51 was just too much fun and taking a spin on the Multi-Axis again was neat as well.

All in all it was a very good day. Some of the members of our team took the counselors up on their permissions to sneak away from the Habitat to Otters, the lounge at the Marriott, for a few drinks, but I decided not to join them. Instead I took a shower and plan to relax until it is time for lights out. Believe it or not, the showers work like they're supposed to and are a little more private than they used to be, here on the third floor. While the Second-Floor showers are somewhat the same, if not a bit more accessorized than ours. Also, apparently the 4th floor is still an all girls floor, while the 2nd floor is an all boys floor. The third floor then is uni-sexed, which is just the way it used to be.

All is well.

Day Two – MISSION DAY
SATURDAY | SEPTEMBER 27, 2003

Greetings!

We've retired to the Habitat following another full day of activities. My room companions are off taking a shower – I'll follow when they're done – which has given me some time to sit and collect and relay my thoughts about the day. Thankfully, and I can't say this enough, we didn't get the infamous wake-up call from Space Camp's counselors this morning. I guess being adults they don't bother attempting to wake us up – they just let us get up on our own. How very adult of them! So, what's this infamous wake-up call I speak about?

Back in the day, Space Camp started off with a bang, literally. Not the bang of a gun, a canon, or of a drum... but the bang of a door, your door to be exact, and the doors of everyone else on our floor. Around 6:00am the bangs would begin and you're rudely awakened by the ominous sound of your hatch (door) being flung open with such force that it slams into the side of the habitat wall – BOOM! It's enough of a thing to actually startle you out of sleep (for those who did not already hear the other trainees being rudely awakened in this manner, like I usually did.) If you weren't up and at 'em by the sound of the door then the second phase of the counselor's dastardly plans certainly would: they'd just turn on the lights and yell!

"Okay guys, it's time to get up!"

And like the booming of the hatch door, the light would burst onto the scene without warning. Then, as if to complete some kind of militaristic ritual, the counselor would turn around and leave the room, slamming the door behind them, mercilessly. And by then you had best be awake and moving as there wouldn't be another call until it was time for you and your team to assemble... and the gods help you if you were late to assembly. No worries on that front, though. So what did we end up doing?

ALPHA AND BRAVO ///

We ran both our missions today.

The first – ENDEAVOUR ALPHA – was run just following breakfast. For this mission I played Weather and Tracking Officer (WTO), a rather boring and lackluster position in all of Mission Control I think, and Public Affairs Officer (the voice you hear during a launch). The only consolation was that I had both the first and last lines of the script but that's about it. It was still fun though, and I thought back many times to my Space Camp experience in 1989, as member of Mission Control. But, really, it was a boring couple of hours. The second – ENDEAVOUR BRAVO – was run just after dinner and it was way more exciting for me. Rather than being stuck at a desk job in Mission Control, I journeyed into space aboard the Shuttle, keeping close to the action at hand. And upon reaching stable orbit I'd take part in an exciting adventure: helping to repair the Hubble Space Telescope (a mock-up of the telescope was on the training center floor) with my fellow teammate and Mission Specialist.

Having performed this particular activity during my Space Academy experience in 1991, it was one I looked forward to repeating from the moment the position was announced to me yesterday... for the memory of it if not for the activity itself. And it was a hoot! The biggest difference this time round was my Mission Specialist: my fellow Extra Vehicular Activity (EVA) companion was blind. No, really!

For most of the mission I had little to do. Sitting behind the Commander and Pilot for launch and not really having to say or do anything was quite fun, actually. I could watch and observe the goings on without worrying about checklists, scripts or other doo-dads thrown into the simulation to make it seem more realistic. Although I admit I would have rather been sitting in one of the two command chairs but you take what you get, you know? We were about a third of the way through the simulation when it was the Mission Specialist's turn to shine.

Our first order of business in the activity was to DON the EVA suit. DON is a term used within the space program to “get into or put on” your space suit. We weren't working with actual space suits, only cloth imitations, but we still had to get them on and there was an order to the madness. We were briefed about the DONing procedure while we stood outside the Shuttle cockpit module:

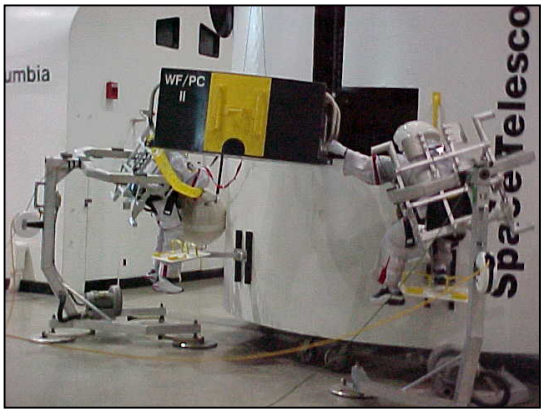
EVA SUIT PROCEDURE:

- Step 1: Liquid Cooling Garment (LCG)
- Step 2: Boots
- Step 3: Lower torso assembly (LTA)
- Step 4: Hard Upper Torso (HUT)
- Step 5: Extra Vehicular Visor Assembly (EVVA)
- Step 6: Gloves

It was easy getting the suit on but finding boots and/or other parts that would fit me was more nightmarish. Of course, finding an intact suit (with all the pieces available) was like finding gold! Thankfully, I eventually found everything I would need, and then helped my companion locate the pieces she would need. Once suited up we continued to our second mission objective: getting into the EVA chair.

The EVA part of the mission was explained to us relatively simply; our task was to simulate repairing the Hubble Space Telescope whilst using the 5DF chairs to replicate space conditions. But unlike during our training session just after lunch (where counselors kept close hold on us while we floated on the cushions of air), during the mission we’d be under our own power and supervision, which meant we could float away from our target at any time. I tell you, stabilizing the chairs wasn't the hardest part of this mission; keeping them from floating away was! You might think that the word chair means we sat in them; quite the contrary, we actually hung in them - positioned and strapped upright. In this position, we swung back and forth suspended above the floor. In this configuration there was no way we could touch our feet to the "ground" in case we needed help - definitely was just like a real space mission!

To keep us from floating away, we were each given a small set of ropes ("Tethers") to fasten ourselves to the Hubble as well as tie our tool bags to us (and it) so they were in reach. Those ropes turned out to be lifesavers... definitely. Thanks to them we could focus on our mission objectives and keep our hands free to work!



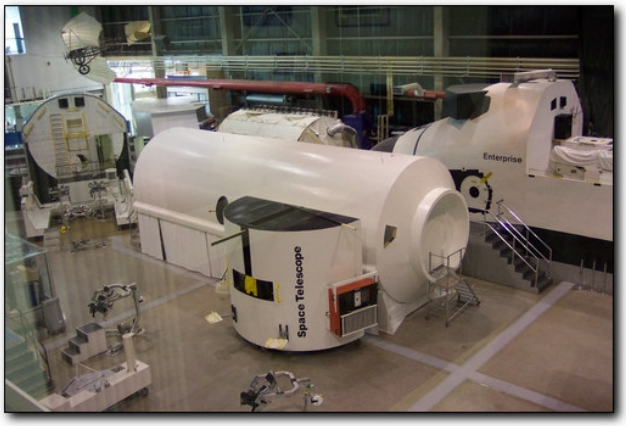
As to that work? Well... our job was to float out there, replace a few items on the telescope then return to the Space Station module as soon as possible. My task was to replace the Hubble's battery complex, which consisted of taking out the old module, placing that in my tool bag, and return to it a brand new one (which I also had in by bag). Once that was finished, my second task was to prepare the Hubble for its refueling, accomplished by turning a knob and pulling a lever. When that was accomplished we could return the Hubble to space. Mission Specialist #1's job was similar, only she had other props to work with. The difference between this experience and the one I had twelve years prior was that we both heard and were to understand the tasks to be performed on the EVA, not just our own task. That meant if one of us failed to perform as required the other would have to take up the slack.

Would you believe that after getting suited up, prepped and into the chairs our tool bags were completely switched on us? I had immediate flashbacks to the 1991 Academy experience as something similar happened there. Rather than panic or cry foul, I radioed over to my fellow teammate that we had a problem and switched tool bags. Of course, getting her and me to meet in the middle was a task in and of itself, but we did it, we really did! Once we re-secured our bags we began to coordinate the movement of the Hubble platform in order to perform our assigned tasks. With a prior agreement in place, I performed my tasks first, and with haste, then turned my attention to her so I could narrate not only what she needed to do but position the module in the proper location so she could do it with the least amount of help. She attacked her task like a trooper!

EVA PROCEDURE

Take Bags
Tether to HST
Drill Out Bolts
Pull Out Hubble Module
Trade Chips
Change Battery
Hose on Gas Tank
Hose to the Air Ball
Turn on Air ball
Deploy "communications array"
Take off hose, pass it to MS1
Return Hubble Module
Done!

In no time it all it seemed we were done. We hopped out of our 5DF chairs – with help – and claimed victory. She was happy as a clam and so was I. Not only did we overcome a physical issue by coming up with our own system to work with her blindness, we also overcame the switch-up in tool kits without panic or protestation, completing the task as quickly and efficiently as we could. Who could ask for anything more? We did it!



The exercise this time wasn't nearly as tiring, or taxing, as it had been in 1991. Although I was sweaty and rather tired from the exertion, I bounded back to the Shuttle with glee. We did have one task left to us before we could enjoy the trip home: checking our vitals. Prior to leaving the Shuttle both Rachel and I took a small sub-set of vital signs, just to see how our bodies reacted to the vigorous activity of Extra Vehicular Activity. Before the EVA my heart rate was 80, temperature normal at 98.6 degrees, blood pressure was a little high (thanks to anticipation) at 142/96 and lung volume sat at 3200 cubic centimeters. Immediately after my heart rate was 89 beats per minute, 100-degree temperature (I was hot!), had a blood pressure of 152/100 (wow!) but an increased lung capacity of 3850 cubic centimeters.

With my part of the mission now complete I could sit back in the cockpit and relax again while the Commander and Pilot finished their duties.

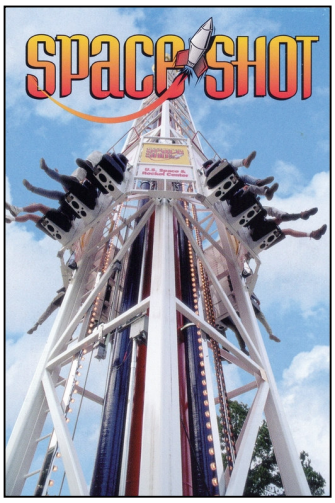
It was a great.

SPACESHOT! ///

Other activities of the day included a walk through the museum, a lecture on Crew Systems (those which keep the crew alive aboard the Station and Shuttle), and exploring the Rocket Park, all of which I have experienced before. The only thing I had not yet experienced out there in the Rocket Park was Space Shot, the drop tower type attraction that uses compressed air to rapidly propel riders up the tower then gently lower them with a series of air-cushioned bounces back to the loading platform.

The mechanism consists of a central tower around which rows of seats are placed with the riders facing outward away from the tower. In the center of the tower is a large columnar pipe system. Threaded through the main pipe column is a cable that is attached to a piston on one end, looped over a pulley at the top of the tower and attached to the seat carriage on the other.

In the loading position, the seat carriage is at the base of the tower and the piston is at the top of the pipe column. Once the ride has been loaded, the seats are lifted slightly off the ground and loaded seats are weighed in order to calculate the amount of air pressure needed to safely propel the seats up the tower. Upon charging the air system to the correct pressure, compressed air is injected into the central column pushing the piston rapidly downward. As the piston moves down, it pulls the cable downward over the pulley at the top, propelling the seat carriage up the outside of the tower.



Upon exhausting the air from the pressure system, the carriage descends, drawing the piston back up the pipe column. As the piston moves up, the air inside the pipe column alternately compresses and expands, causing the carriage to bounce several times. With each bounce, a pressure relief valve at the top of the pipe column releases some of the compressed air making each successive bounce smaller until the carriage reaches the loading platform.

Space Shot “rockets” you 140-feet straight up in 2.5 seconds, giving you the experience of 4G’s of force on launch and 2 to 3 seconds of weightlessness. And it’s an experience to rapidly find the entire grounds of the Rocket Center below your feet as you dangle them over the edge of your seat.

MUSEUM MUSINGS ///

Following my space shot, I explored the rest of the museum, finally getting a hands-on look at some of the more important changes.

The Space Center houses more than 1,500 pieces of rocket and space hardware valued in the tens of millions of dollars. Dozens of active exhibits involve visitor's participation, prompting one official to note: "Here, everyone can be an astronaut for the day." The museum serves as a major repository for the Smithsonian Institution's National Air and Space Museum in Washington, having some 300 major artifacts on loan from that institution. The space museum is also the visitor's information center for the Marshall Space Flight Center and for the U.S. Army Missile Command at Redstone Arsenal (which you can no longer visit following the September 11th terrorist attacks in New York City).

Each historic moment of the U.S. space program is captured at the U.S. Space & Rocket Center, from the Huntsville built Redstone rocket that launched America's first satellite, to Pathfinder, NASA's full scale mock up, which was used for testing during the shuttle development program. Shuttle Park features Pathfinder, which has the same exact dimensions as a shuttle orbiter. Built in 1977, it was used for testing equipment at MSFC and the Kennedy Space Center in Florida. It is mated with a shuttle external tank and two solid rocket boosters making it the only complete launch configured shuttle on permanent display.

In Rocket park, at the rear of the museum, is a collection of Army missiles and NASA rockets unrivaled in the world, with dominant objects being the Saturn V and a vertical Saturn I. On its launch pad, the Saturn V moon rocket stood taller than a 30 story building. Displayed horizontally at the Space Center, it stretches the length of a football field. Designed to lift man clear of Earth's atmosphere and carry tons of cargo into space, the Saturn V successfully launched 13 missions, including Apollo flights and one flight which carried the Skylab space station into Earth orbit.

By displaying the three stages and Apollo spacecraft of the Saturn V parallel to the ground, visitors can walk the length of the largest rocket in America's space program. The rocket on display was used for ground testing at MSFC and was the first to be publicly displayed; others are now shown at Kennedy Space Center and Johnson Space Center.

Early Huntsville rockets, such as the Redstone, Jupiter, and Mercury Atlas, are overshadowed by the taller Saturn I, which is the landmark of the complex.

Huntsville's massive involvement in rocketry has not been limited to the outer space variety. Redstone Arsenal has been the Army's leading center for research and development of defense missiles for decades. Rocket Park is a showcase for Redstone produced systems up to the newest missiles and systems in the field, such as Pershing II, Chaparral, Hawk, Lance and Avenger. Others included are the Sergeant, the Nike family, Sprint, Spartan, Honest John, Hermes, Corporal, and a Multiple Launch Rocket System similar to those used in the Persian Gulf War. Additional military hardware, including a TOW and a Patriot missile, is housed inside the Space Center.

A SR 71 Blackbird jet rests just outside the main entrance to the Space Center. The U.S. Air Force reconnaissance plane found a new home in Huntsville after the fleet of Blackbirds was initially retired from service in 1990. The SR 71 is capable of flying at three times the speed of sound and holds the coast to coast speed record of just over 67 minutes. Called one of the safest planes ever developed, the SR-71 on display here is actually an A-12 model, and the seventh vehicle of its type built.

While the spectacular hardware outside the museum staggers the imagination of visitors, exhibits inside are literally on the level of guests for their enjoyment and participation. Visitors are introduced to the events and people who put America in the space race. A giant, gold foil covered moon landing craft dominates the main hall that houses the historical items, which figure so prominently in the early space program and are the emotional heart of the museum. A lunar sample from the Apollo 12 mission is nearby. Sample #12065 was picked up by Alan Bean and Pete Conrad as they explored the “Ocean of Storms”, a vast lunar mare. Although visited by Conrad and Bean, this area of the moon was also visited by a hand-full of robotic explorers: Luna 9 and Luna 13 from the USSR, and Surveyor 1 and Surveyor 3 from the USA. The moon rock is approximately 3.3 billion years old.

Sprinkled around the moon rock and lunar lander is a time line of individual exhibits highlighting each of the Apollo missions, from the tragic fire of Apollo 1, to the historic first international docking in space with the Soviet Soyuz spacecraft.

A few steps away is an exact copy of the Gemini spacecraft that carried two man teams into space.

The coal black model was used for training Gemini crews. Near the Gemini trainer, and perhaps the crown of the exhibit, is the rust colored Apollo 16 Command Service Module (“Casper”), which carried three astronauts to the moon: Charles Duke, Thomas Mattingly, and John Young. The mission launched on April 16, 1972 and landed 11 days later. Recovered after splashdown of America's next to last moon mission, its exterior is charred from the temperatures of up to 5,000 degrees that it encountered during re entry into Earth's atmosphere. The mission included the first operation of a remote controlled television camera, which recorded the liftoff of the ascent stage from the moon's surface.

Few who watched the triumphant return of the Apollo 11 crew from the first trip to the moon can’t forget the scene of President Nixon standing outside the quarantine chamber to congratulate the crew. The Airstream van fitted for Neil Armstrong and his crew is in the main hall. The original purpose of these vans was to keep all the nasty germs on the moon from contaminating us. It was a simple but futile measure as there is no oxygen on the moon and therefore no germs to bring back. This van was also in a ticker-tape parade in honor of the astronauts’ return.

Parked nearby is one of NASA’s LRVs (Lunar Rover Vehicles). The “Moon Buggy”, as it is more commonly and affectionately known as, was designed at the Marshall Space Flight Center to allow astronauts aboard the later Apollo missions (15, 16 and 17) to venture out farther from their LEM than ever allowed before. The LRVs allowed the astronauts to cover over 56 miles and achieve a distance of 4 miles from the LEM.
Among the Rover’s features are: direct radio communications with earth, a television camera, a 15mm cine-camera and its magazines, a 70 mm ordinary camera, a drill, a magnetometer, pincers for taking samples, miscellaneous tools, storage closets, drawers beneath the seats and various other items. By all accounts the Moon Buggy was very successful.

Bringing an end to the Apollo era is the Skylab exhibit. Here you’ll find the Skylab Space Station Astronaut Training Mock-up (which was constructed and used to train the astronauts on how to successfully live in the structure – it’s a walk-in). Skylab, America's first space station, orbited the Earth from 1973 to 1979. It was home to four missions before re entering the Earth's atmosphere over Australia. The largest fragment to survive, a fibrous oxygen tank, stands in the museum near a model of the craft.

Also in this area are dozens of "hands on" exhibits which encourage visitors to experiment with acoustic levitation, to fire a live rocket engine, attempt a computerized landing on the moon, spin a gyro chair, use a remote manipulator arm, step on a special scale to find out what they would weigh on the Moon and Mars, or try the Shuttle Adventures computer to learn about shuttle missions and astronauts. Or even simulate a mission to the moon in the museum's Apollo capsule mockup – how can you resist getting in a capsule and flipping all those switches? (You can't, and neither could I.)

For those looking for even more "hands on" involvement, several simulated space flights are offered (beyond "Space Shot"). There's "The Centrifuge", which takes 46 passengers on an astronaut training session while experiencing triple the normal pull of gravity. Passengers feel the pressure build while watching the solar system and planets pass overhead on a planetarium dome. The centrifugal spin in the rotating theater provides the extra gravitational pull. "Mission to Mars" carries up to eight passengers from a space station to the red planet and back again. Motion in the simulator adds the element of the unexpected to the space travel experience. "Journey to Jupiter" carries 30 sightseers on a motion based futuristic passenger shuttle on a guided tour of our solar system's largest planet. The Helix Catapult hurls the craft into deep space, for a study of Jupiter's moons, the planet's surface, and an unexpected encounter with an asteroid.

You can also test your flying skills in "Land the Shuttle". This simulator offers a chance in the pilot's seat, and the opportunity to set down a shuttle traveling at several hundred miles an hour. Living and working in space is the subject of Outpost in Space: The International Space Station. The theater presentation becomes interactive when a volunteer from the audience demonstrates how astronauts sleep, use the bathroom, shower and conduct experiments in micro gravity.

In between the two missions we flew, meals and wanderings through the museum and Rocket Park, we also took in another movie in the OMNIMAX Dome; this one titled "Straight Up: Helicopters in Action". As described: Helicopters save lives every day.

These unique machines pick up injured people off roads, save them from sinking ships, pluck them from burning buildings, and pull them out of raging floods. Rotorcraft, including helicopters and tilt-rotors, perform widespread critical public-service operations including search and rescue, law enforcement, resource development, and priority transportation. Millions of people owe their lives to the special capabilities of these aircraft. “Straight Up: Helicopters in Action” takes audiences on a series of aerial adventures. We’re beckoned to fly along with skilled helicopter crews as they carry out sea and mountain rescues, apprehend drug smugglers, repair high voltage lines, save endangered animals, deliver humanitarian aid, and undertake a reconnaissance mission.

Of course, what all this has to do with space exploration is beyond me, but it was an interesting film to see never-the-less.

* * *

So, yeah, that’s pretty much been the day. Not as exciting as I would have thought but busy enough to keep us from being absolutely bored. I suspect I’m a little uninterested at times because I’ve done all of this before although don’t let that statement convince you that I’m not having fun, because I am, I’m just not experiencing anything new at this point. Alas the journey is almost over here. Tomorrow is graduation and then it’ll be back to reality. This weekend certainly has gone quickly. I can’t believe that it was just yesterday that I arrived here.

Huh...

You know what? I’ve just been thinking that another couple of things we adult cadets don’t have to worry about are morning PT and room inspections. Halleluiah!

Okay, so my flatmates are back from their trip to Waste Extraction (which also doubles as the location for the showers), so I’m going to conclude here until tomorrow and hop a sonic shower! (Alright, so, it’s not a sonic shower... there’s only so much they could do here...)

Day Three – GRADUATION DAY
SUNDAY | SEPTEMBER 28, 2003

Just like that it's over.

The experience I've waited twelve years to have again has come and gone. Yep, graduation occurred a little bit ago and though I am the proud owner of a certificate of completion and another set of Academy wings, they come with bittersweet emotions. It's been a fun weekend, there's no doubt about that. It was also nice wandering about running into ghosts of the past. However, I never did seem to recapture the same level of excitement, wonder and awe I felt during my last experience here. Could it be I've outgrown Space Camp? Could it be that I've entered that age of not believing?

No, I don't think so. I think it had something to do with the other adults on my team. Some of them were really interested in the program – a bit too serious in my opinion – while others were rather flighty, not taking the experience serious enough. There didn't seem to be a good middle ground in this group and so it made navigating the various eddies more difficult than I would have realized. But I've done what I set out to do – become re-engaged with Space Camp – and now I can move on to Adult Advanced Academy sometime in the near future. I know those who attend those sessions are somewhat more engaged in the program, especially due to the price the program commands, so I'm sure I'll find excitement there.

In the meantime, although this was our last day of Camp, and our missions had been completed, we still trained... a little.

ASTROTREK & SPACEBOWL ///

At the Astrotek building the team got a chance to ride in the Five Degrees of Freedom (5DF) chair. As most physicists know, there are really six degrees of motion, but unfortunately here on Earth, only five can be simulated at any one time – and to do that you need this chair. The five directions are: Forward and Back, along the Y-axis; Left and Right, along the X-axis; Pitch, Roll, and Yaw. The sixth degree is the Z-axis, which more or less is up and down. The 5DF chair rides on a cushion of air rendering the forces we take for granted - inert. As you sit in this suspended chair, the simulator will allow movement in any of the five different directions depending upon your initial push off, simulating the frictionless environment of space. Such free movement allows an astronaut to practice tasks here on the ground that would need to be completed in microgravity once the mission begins.

It's also a fun demonstration of Sir Isaac Newton's Third Law of Motion: *For every action there is an equal and opposite reaction: or the forces of two bodies on each other are always equal and are directed in opposite directions.*

It's really quite zany to be floating about without much control over where, when and how! The only bad thing about this simulator is the way you're strapped in. If you're a guy, it's really unpleasant as one of the straps is threaded between your legs to prevent the occupant from sliding out when the chair is being moved about. When the instructor pitches the thing down you get quite the wake-up call. Thankfully nothing of the sort happened this time but I couldn't help but chuckle at a memory from Space Camp – Matt, a kid from Tennessee, became the first of our group to experience the 5DF chair and his genitals paid the price!

The second activity was practicing a Satellite Docking Maneuver. This task was accomplished using a specially equipped MMU trainer – called the GMMU, or Ground Manned Maneuvering Unit, to "dock" with a "satellite" on the floor. The "Satellite" was nothing more than a mock-up apparatus on a rotating wall affixed to rollers on the ground, with a hole in the middle of the dish structure made to look like a docking clamp. The task: maneuver the MMU chair (which itself was attached to a 5DF Chair) with a special docking prod attached to the front of it across a small patch of floor space and, by using the probe, achieve a hard-dock by using the system's non-androgynous method (which is to say you use the "male" "probe" to "insert" and "mate" with the "female".

It seemed rather simple looking at it and watching a nearby counselor demonstrate the process; performing it first-hand was a little more harrowing. What made it so difficult? Being on the 5DF's cushion of air and using regular MMU controls to navigate the contraption to the target. It took a number of approaches from quite a few of us... myself included... to bring the two spacecraft safely together in a secure dock. Still, it was a valuable lesson to learn in not only docking mechanics but also in mobility with the MMU, even if we couldn't move along the Z-axis.

Later we assembled in the Challenger Room (the old Team Room) inside Habitat II for "Space Bowl", a game similar to Family Feud in which a question is asked of two participants and the first to buzz in gets the opportunity to answer. Should the person get it wrong the other contestant has the opportunity to provide the correct answer, then two more contestants come up to the podium. And so on and so forth. We played the game for about an hour – split in half just like we were during the Area 51 exercises – and though my group lost we still had a lot of fun. Competition was fierce and there was no forgiveness! Questions were also tricky. One of the questions I was asked (and got wrong) was: "What is the closest star?" I answered Alpha Centauri, as it is the closest star to ours at 4.3 light-years distance. The correct answer though was The Sun, because that IS the closest star to us. See... tricky!

Immediately following “Space Bowl” we made our way over to the Training Center Floor where Graduation commenced and our weekend at Camp came to a close. We were each handed certificates showing completion of the activities and a set of wings. With a few pictures of our teammates we all dispersed shortly thereafter.

Since I didn’t have to be to the airport until much, much later, I decided to take a more leisurely stroll around the Rocket and Shuttle Parks, while some went back to the Habitat to pack and others meandered about the Museum until their departure times came.

THE ROCKET PARK ///

What John Glenn calls “the finest rocket collection in the world,” the Rocket Park salutes the work of Doctor Von Braun and his team by tracing rocketry's evolution throughout the years. The Rocket Park has been a host to an Apollo 10th Anniversary celebration reenactment of the Lunar Module landing on the moon and is currently a home for the United States Army Missile Command's contributions to national defense throughout the years.

Besides the rockets and missiles on display, there’s also a Moon Buggy (a six-wheeled early design built to test the possible configuration for a mobile vehicle for exploring the surface of the moon. One important design factor that carried through to the final design used by the Apollo astronauts was the wire wheel) and a Mobile Laboratory (initially built as a study of the type of vehicles that might be used to explore the moon’s surface. After NASA completed its studies, the lab was used by the Department of the Interior for direct application in the field of geology.)

There is, of course, no mistaking the Saturn I, the centerpiece of the display. The Saturn I was the first large space vehicle developed solely for space exploration; it was designed and developed at the Marshall Space Flight Center. Saturn I operates at a top speed of 17,000 miles-per-hour and can launch 11 tons of man and equipment into orbit. A rocket similar to this one launched the first unmanned Apollo spacecraft and three Pegasus satellites for meteoroid detection in space into orbit. An updated version of this rocket, called the Saturn IB launched Skylab astronauts into orbit. This particular rocket is a Saturn I – Block II.

Surrounding the Saturn I are the various rockets we took in our attempt to reach the stars, such as the V-1 Buzz Bomb rocket (a German cruise-type missile called the "Buzz Bomb" because of the unusual sound made by its engine. It is powered by an aero-pulse engine, which burns any gasoline-type fuel and produces 900 pounds of thrust. Approximately 20,000 V-1s were launched against England and Belgium during 1944-1945. Over 1,200 US built copies, called the JB-2, were tested by the Army and Navy. The concepts of the V-1 lead to the V-2, which proved that the basic theories of rocketry were correct. First launched on October 3, 1942 at Peenemunde, Germany, the V-2 broke all records of height, weight, speed and range. The V-2 was brought to the United States following the War and inaugurated the US Missile Program.

The Missile Program began by Von Braun and his associates gave us the Redstone, Jupiter and Juno.

The REDSTONE, known as "old reliable" because of the many diverse missions it fulfilled in the early days of the space race, begat three versions: a military, satellite, and manned version. The one on display here is the military version, designed to transport nuclear or conventional warheads at ranges of up to 200 miles. Its power plant burns liquid oxygen and an alcohol-water mixture producing 75,000 pounds of thrust. JUPITER C, the US Army's second version of Redstone, launched the first US Satellite – Explorer I – on January 31, 1958. Another Jupiter rocket launched two primates named Able and Baker into space for the US Army in 1959.

That experiment proved that living creatures could pass through lift-off and re-entry and return safely to earth. The Jupiter generates 150,000 pounds of thrust. The celebrated Miss Baker, who retired from the “monkeynaut” corps and used to reside here at the Space & Rocket Center, was a passenger on a Jupiter just like this one. The JUNO II, also on display here, was a modified Jupiter with an upper stage added for launching space probes. A rocket like this one launched the first Pioneer and Explorer series of satellites.

These rockets were great at launching smaller payloads such as monkeys, satellites and interplanetary probes; however, bigger, more powerful rockets would be needed to lift man and machine into orbit, and beyond. These are the Mercury-Redstone, Mercury-Atlas and Gemini-Titan derivatives.

The third version of the REDSTONE was the first of a series of rockets used in the US manned space flights. In May 1961, a MERCURY-REDSTONE rocket launched Alan B. Sheppard on a sub-orbital flight aboard Freedom 7. Thus Sheppard became the first US Astronaut to ride a rocket. The ATLAS space launch vehicle was originally designed as a weapon and later modified to launch manned and unmanned space hardware in 1962. The ATLAS launched John Glenn, the first US Astronaut to Orbit the Earth, into space aboard the Mercury Friendship 7 spacecraft. ATLAS rockets also launched the Ranger, Surveyor, Lunar Orbiter and Mariner spacecrafts, visiting the Moon and Mars. And then there’s TITAN, the US Air Force rocket that was initially developed for defense. TITAN II was used by NASA to launch the two-man Gemini spacecraft, a role the rocket performed very well. A stage recovered from a Gemini-Titan V launch is on display. It’s the largest piece of a rocket stage ever recovered from a manned flight – the forward half of the first stage. The complete vehicle boosted Astronauts Gordon Cooper and Charles “Pete” Conrad into earth orbit for an 8-day mission aboard Gemini V on August 21, 1965.

But perhaps the most exciting to see is the Saturn V moon rocket, displayed on its side out back.

The Apollo Saturn V was designed to transport man to other planets (although the Moon was as far as they got) and lift tons of cargo into space. The Saturn V has five Rocketdyne F-J engines, the center one being fixed with the surrounding four being on gimbals (meaning they can move). These engines consume 5,000 gallons of liquid fuel per second producing the 160 million horsepower power the FIRST STAGE - 138 feet long and 33 feet wide – requires to lift the entire package from the launch pad. During flight the first stage burns kerosene and liquid oxygen and operates for 2 ½ minutes and shuts down at 35-40 miles altitude.

The SECOND STAGE powers the spacecraft to an altitude of 117 miles above the earth at a speed of 15,300 mph. The five J-2 rocket engines generate one million pounds of thrust and burn liquid hydrogen and oxygen. The THIRD STAGE increases the spacecraft orbital speed to 17,500 mph. After one orbit it re-ignites to push the spacecraft away from earth at a speed of 25,000 mph on a path to the moon. This single J-2 engine generates 225,000 pounds of thrust. On the last few moon flights, this stage has been guided to impact the moon in order to record seismographic information.

The INSTRUMENT UNIT serves as the central brain of the total vehicle. It is packed with computers and electronic controls designed to maintain a path of flight that will place the astronauts at the required point in space. Attached to it is the APOLLO spacecraft. The 100,000 pound Apollo consists of the lunar module, service module, command module, and launch escape system. The Lunar Module not seen here is stored with its legs folded inside the container directly behind the Apollo Command and Service Modules. The astronauts are in the Command Module for most of the flight, and this is the only part of the Apollo-Saturn vehicle that makes a complete round trip back to earth. The launch escape tower, the most forward part of the rocket, is used in the event of a failure on the pad or just after lift-off. Its rocket motor has a thrust of 150,000 lbs - twice that of a Redstone rocket.

This Apollo-Saturn V vehicle was used for ground testing on Earth, therefore, it has never flown in space. However, it is very similar to those moon rockets that have launched astronauts to the moon. Standing on the pad, the vehicle is 363 feet tall, or about the length of a football field, and weighs 3,000 tons (6,200,000 pounds) fueled and ready for launch, thrusting 7,600,000 pounds. On Space Day, July 20th, 1987, the rocket was honored as a National Historic Landmark - the only rocket in history to receive such a status! The Apollo-Saturn V rocket on display is also one of the only surviving test vehicles left and is a testament to the scientists, engineers, and technicians who designed and built this massive beast.

And for added display is a full-scale exterior mock-up of the Skylab space station. Three crews of astronauts lived in Skylab while orbiting the earth for a total of 161 days in 1973-1975. The astronauts used part of this mock-up during training inside the Neutral Buoyancy Trainer at Marshall Space Flight Center. Launched into space using the last remaining Saturn V rocket, the third-stage of the rocket (without the rocket engine and related components) was converted into the living quarters for the astronauts.

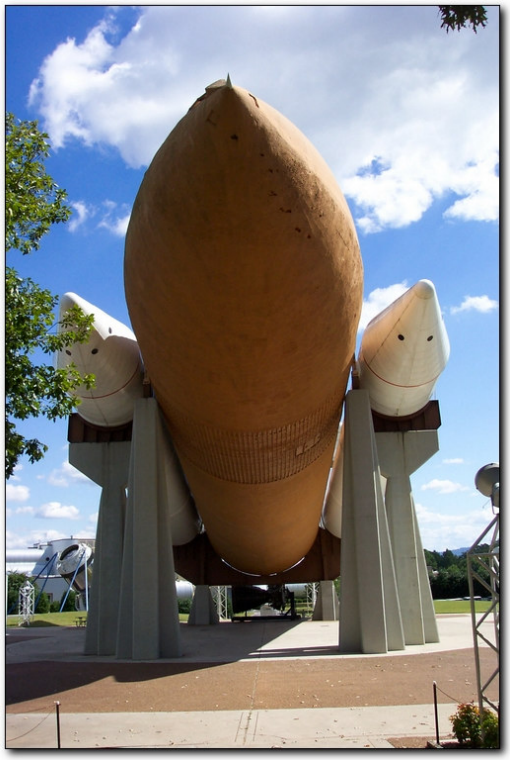
Beyond Skylab are a couple of America's X-Plane designs – the X-15 Rocket Plane and the X-24 Lifting Body.

The X-15 rocket powered plane made the first manned probes into the lower edges of space. Several X-15 pilots including Neil Armstrong earned "astronaut" rating by flights to an altitude of 50 miles in a plane such as this. The X-15 flight program also contributed significantly to the Mercury, Gemini, and Apollo projects. The X-15 was carried aloft by a B-52 and released at about 45,000 feet and 500 mph. Its rocket engine then fired for the first 80 to 120 seconds of flight. The remainder of the 10 to 11 minute flight was powerless and ended with a 200 mph glide, landing on a dry lakebed.

The Lifting Body is just a mock-up of the X-24 rocket powered airplane. The X-24 is carried aloft by a B-52 plane, much like the X-15 before it, and released at 45,000 feet. The rocket plane climbs to 60,000 feet after an initial boost from its rocket engine. Afterwards, the pilot glides the vehicle to landing. Developed by Martin Mariette, the X-24 provided research information for the Space Shuttle in its early beginnings.

PATHFINDER ///

Pathfinder (OV-098) is constructed from steel, wood and an old rocket motor, surprisingly, and was used by NASA to test roadway clearances, crane capabilities, structure fittings and how vibrations would affect the Shuttle during a launch. Though it had planned to conduct these tests with the first Shuttle it built – Enterprise (OV-101) – after landing tests that launched it from the back of a Boeing 747 jetliner, NASA chose to build Pathfinder instead. This was probably a good idea – Enterprise was a more expensive article and losing Pathfinder would the save program from embarrassment. The tests were done at a special test stand at Marshall Space Flight Center at Redstone Arsenal and were completed successfully. And like Enterprise before it, Pathfinder was sent to Kennedy Space Center in Florida so that engineers there could practice hoisting the Shuttle in the Vehicle Assembly Building (VAB) originally constructed to house the Saturn V moon rockets.



Once tests were complete, Pathfinder was returned to Huntsville, where Teledyne Brown Engineering (one of Space Camp's sponsors) rebuilt the craft for a Japanese company (who purchased Pathfinder) to look more like the real Space Shuttle. Teledyne then sent the craft on a tour of Japan, displaying at the Great Space Shuttle Exposition in Tokyo from June 1983 to August 1984, before returning it to Huntsville. Upon its second return, the Pathfinder became a permanent display at the Space & Rocket Center.

The Pathfinder, 122 feet long, 56 feet tall with a wingspan of 78 feet, weighs approximately 89 tons. Two of the Pathfinder's main engines powered the first flight of Columbia (OV-102) in 1981. Pathfinder's right-hand nosecone also few on Columbia's maiden voyage in 1981. Though nosecones aren't normally recovered after use, this one happened to land upright and floated in water.

It came here on October 22, 1986 from the Marshall Space Flight Center (where it had been stored following Tokyo) on a pair of specially designed trucks traveling the streets of Huntsville at less than 5 miles-per-hour. Accompanying the Pathfinder Orbiter is an External Tank (the first ever) built by Martin Marietta, a set of Solid Rocket Boosters built by Morton-Thiokol (advanced booster casings which were developed after the Challenger (OV-099) explosion), and three Main Engines built by the Rocketdyne division of Rockwell International.

The external tank is 154 feet long and 27 feet in diameter, weighing 33 tons. It has been involved in many test firings but has never flown in a mission – if it had it would not be here, Comrade. This particular tank was used in special Shuttle mock-up tests called the Main Propulsion Test Article, or MPTA. The MPTA included an orbiter and its three main engines. This way engineers could learn how to fuel Shuttle, run through countdown and ignite engines for testing without damaging the real article. The test itself was held at the National Space Technology Laboratory in Bay St. Louis, Mississippi. Martin Marietta Aerospace helped modify tank (MPTA-098) so it could be displayed here. It arrived by barge, covering 1,250 miles over Mississippi, Ohio and Tennessee rivers to reach Marshall Space Flight Center.

The rocket boosters were added in 1988, Comrade. These were built for NASA as test equipment, but the tips of them are actual working parachute pods (we should get look). The boosters themselves are 149 feet long, and weigh more than 50 tons each. They're made from graphite filament, which makes them much lighter than the steel encased boosters that are used in Shuttle Program today.

It is dedicated to the brave astronauts aboard STS-51L, the ill-fated Challenger (OV-099) mission of 1986.

* * *

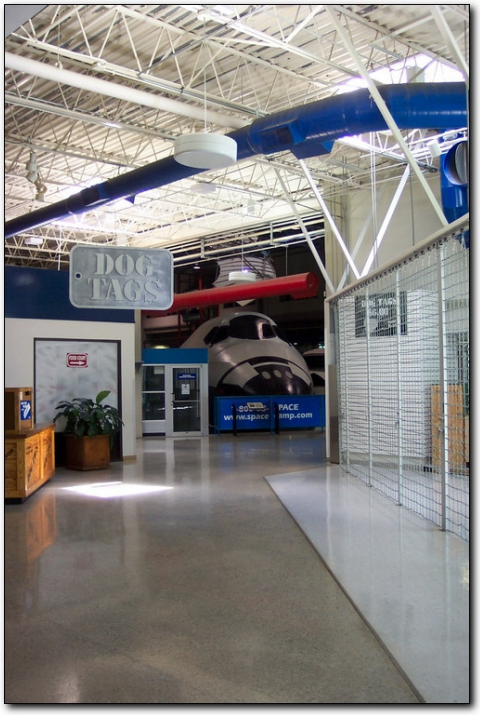
And then there are the missiles out in “Missile Row”, but I spent very little time out there – missiles don’t excite me.

So I found myself here at this picnic table under the shadow of the Center’s Saturn IB display, looking on. But now it’s just about time for me to make my way to the Habitat and pack up. I’ll need to be on my way to the airport shortly and return to the real world.

Being here at Space Camp has certainly been fun and a walk down memory lane. Despite any ill feelings I might have at the moment I know they’ll turn more rosy later. Besides, I’m also kind of depressed that the experience went more quickly than I would have hoped. And who could blame me? I did wait twelve years for this!!

Okay Space Camp... signing off.

Until next time!



"IS THAT ALL THERE IS?"

Following the brief, but relatively satisfying experience at Adult Space Academy in 2003, I didn't really expect to ever return to the program. Not that I didn't want to, really, but I had moved on to other things: I'd traveled to Japan, found a girl, and began plotting out the next steps in my life, which didn't include a return trip to Space Camp. But a fortuitous turn of events occurred in 2005 that offered up a little taste of the US Space & Rocket Center, in similar fashion to the visit I'd made ten years prior in 1995 – just to the museum for the day. It might have only been two years but the results were instantaneous: a fire was rekindled.

It didn't hurt that I decided to stay overnight at the Rocket Center's Marriott location, with a room that overlooked the Rocket Park. It also didn't hurt that I was assigned a very auspicious room number – 308 – the very same room number I was assigned in the Habitat during Youth Space Academy in 1991. It was a sign, I thought, one to heed of things to come.

Just two years later, and I had all but moved on yet again, an email delivered to my inbox changed everything: Space Camp was set to celebrate its 25th Anniversary and they were planning alumni adventures in the summer of 2007. What those would entail weren't known at that time but it definitely piqued my interest. When the announcement came that Space Camp would house two four-day Space Camp sessions for alumni (one in June and another in August) I jumped. Although it wouldn't be the Advanced Space Academy experience I originally sought, it turned out to be much, much more...

Alumni Camp (25th)
Session 38
June 14 - 17, 2007

SPACE CAMP MEMORIES

2007 // Alumni Camp, Session 38

Day One – TRANQUILITY BASE HERE

THURSDAY | JUNE 14, 2007

It's a little surreal – I'm back at Space Camp. Can you believe it? We've just finished up the first of four days here at Alumni Camp and already I'm having so much fun. The group of folks attending this experience is much younger than the group I was with for Adult Academy in 2003, and as alumni to boot they're much more interested in the activities offered by the experience. That definitely makes being here much more fun – not only do they know when to take things more seriously, but also know when to have a good time. And a good time we've had today! In addition to attending a lecture about Shuttle Operations (i.e., the parts of the shuttle, how they operate, and other systems within), we were assigned our mission positions (I'll elaborate more on that later), attended a panel event with guest speakers, hit the AstroTrek building to do some astronaut training (taking the 1/6th Chair, Multi-Axis Trainer, 5DF Chair and Grounded Manned Maneuvering Unit for a spin – and I'll explain those more in a bit too), and took in the sights, smells, sounds and fun the Museum and Rocket Park have to offer.

I'm happy. And you're not going to believe the room I was assigned this year. **Habitat I**, of course, the simulated Space Station environment built in 1988 to house hundreds of Space Camp and Space Academy trainees during the weeklong adventures the Rocket Center offers. **Level 3**; Habitat I has a towering four floors, which open up to a central atrium that's used for registration and various assemblies (it's where we all met for registration earlier today).

Room 8; Designers incorporated many aerospace concepts in this four million, 328-foot Space Habitat, for example: it has hatches for doors; ports instead of windows; and benches instead of chairs (which, of course, would float in space.

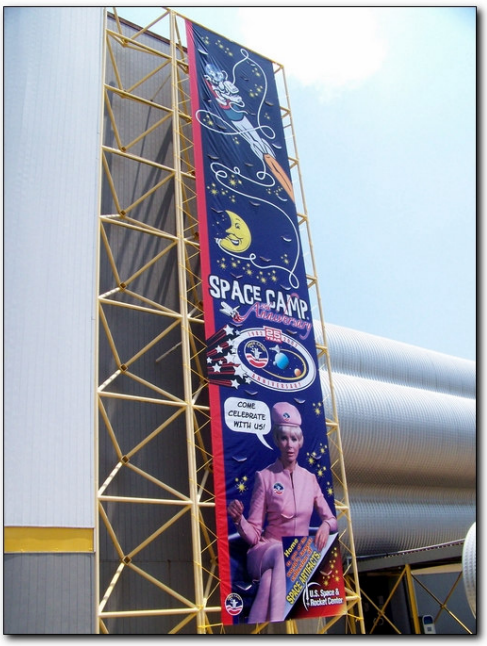
Structurally, the Habitat's exterior is comprised of over 45 curved metal panels, which give the building its cylindrical appearance. The "tubes" of the Habitat are longer than a football field and are divided up into 66 bays, which are our rooms. And I'm in the exact same room I was in 16 years ago: **HL-308**. How about that?! I've also managed to procure the same bunk too. You know the one – it's over the second set of lockers as far into the room as you can go. Totally mind blowing. And quite as I remember it too: hard to get up into and hard to make, but I'm going to have a blast trying!

But if there's one caveat to how I'm feeling right now it's this: according to the activity schedule we're going to be spending some time down at Aviation Challenge – tomorrow and again on Saturday – taking in some of the activities there. I'm not so sure how I feel about that, as I've only been interested in the space side of things, alas I'm keeping an open mind about it as a number of the alumni here are not only interested but actively keen on those activities so... who knows, it could be fun!

Getting back to today's activities...

GETTING INTO THE GROOVE ///

I was one of the early arrivers this morning. My flight to Huntsville was direct, leaving Orlando at 8:55am and arriving a little less than two hours later, around 9:40am Central Daylight Time. One of the Camp's busses was waiting for me, just like it had the previous visit, and whisked me out of the airport and to the Rocket Center within minutes. Luckily this time I didn't have to make my way through the center's security room, affectionately called the "Bush Room" (for reasons I don't really understand); rather they allowed me to walk through the main gates and into the Habitat complex unhindered. And upon arrival there I met a hand-full of counselors, checked in (although it was still rather early) and picked up my Alumni Camp package, which consisted of a classic Space Camp T-shirt, my badge and lanyard, my room assignment (HL-308 as I previously mentioned; totally geeked out) and a leather portfolio with the Camp logo embroidered on the side – all good things.

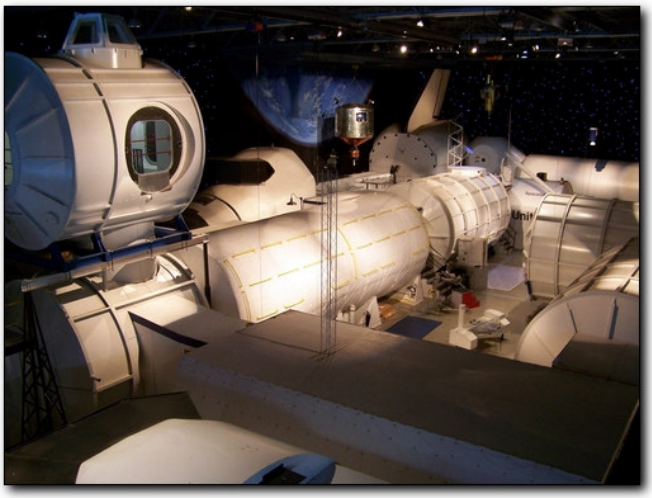


I thought since I was early I couldn't yet make the trek to my room, so I asked whether or not I could leave my luggage attended with the counselors in the atrium; however, they said I could go right on up and settle in – so I did! As soon as I pushed through the door I was met with brightness – someone else had already been here: the lights were on and there was a bag on a bunk. Thankfully the bunk I wanted was free (the aforementioned above-the-lockers bunk), so I took it and began to unpack. It was then Benjamin ("Benji") Schwartz, one of the members of Hab1.com (a discussion forum dedicated to all things SpaceCamp), came in and introduced himself and we hit it off right away, both being members of Hab1 and all. As soon as I was done unpacking we retreated back to the atrium – our plan was to go ahead and leave the Habitat and explore the center grounds but as soon as we returned to the counselors table we heard there was another early arrival so we waited. This turned out to be Diane M. ("Conan") O'Keefe and by the time she was ready to join Ben and I, another came - Lisa Jania.

Lisa had just been shopping over at the Space Gear store within the museum so she had an arm-full of goodies in addition to the ones we received from the program. Considering I had just arrived I had to admit I was curious what new souvenirs were available. I was about to bid her farewell when she decided to join me. And the two of us made our way back over to the museum to see what money we could be parted with. It wasn't hard.

There were a number of retro-tastic goodies available at the Space Gear shop. In addition to the classic Space Camp alumni shirt we were all given, Space Camp reproduced a number of the older "team shirts" from various Camp and Academy youth teams. Imagine my glee when I held an Academy shirt with the BDM logo emblazoned across the back, or a Camp shirt with the Lockheed Martin logo – I couldn't help but buy it! I also picked up a new Space Academy hat to replace the Space Camp ball cap I currently wear. So all in all a very good outing! We stopped for lunch in the old "Lunch Pad", getting ourselves re-acquainted with Camp-style food (Yuuuuck!), and prepared ourselves for the weekend ahead.

Following lunch we snuck onto the Training Center Floor for our own self-guided tour, attending to places that weren't there the last time we'd been! A number of changes welcomed us as we explored: a number of International Space Station mock-up modules, a couple of new Shuttle simulators, not to mention an intricate tunnel system to connect them together! We hardly recognized it! I took plenty of pictures – especially from the offices on the second floor. You just can't beat the view from there!



Around 3:00pm Alumni Camp officially kicked off and we met the rest of our Alumni group down in the atrium of Habitat I. There were so many of us that they split us into two separate groups: Team Columbia and Team Challenger. I ended up as part of Team Challenger, along with Lisa Jania, Diane O'Keefe, Laura Boyle, Chris Kauppi, Ben Schwartz, Leia Fleischman, Vicki Pohl and Frank Scalia. Team Columbia was made up of: Ana Lawitzke, Mary Lawitzke, James Binder, Thomas Sparrow, ShaErica Jackson, Rich Kolker, Bill Naivar, Nathan Wilson, and Chris Damsgard.

Once acquainted, our counselor – Jeramy ("Bootyshorts") Gandy - led us over to the Team Room (now called the "Challenger Room") in Habitat II for our Shuttle Operations lecture, which is intended to give attendees a high-level overview of the Space Shuttle, its components, how it all works, and how it was built – but I won't bore you with those details. Suffice it to say it was all very similar to the Shuttle Operations lectures I'd had at previous camps. Besides, I think as long as you know what the Space Shuttle is and what it means to the United States you're good. Of course the group in company knew much, much more than that so this lecture turned out to be nothing more than an academic exercise in how much more do you know than the person sitting next to you. Still, it was a nice effort to bring everyone in on the same page.

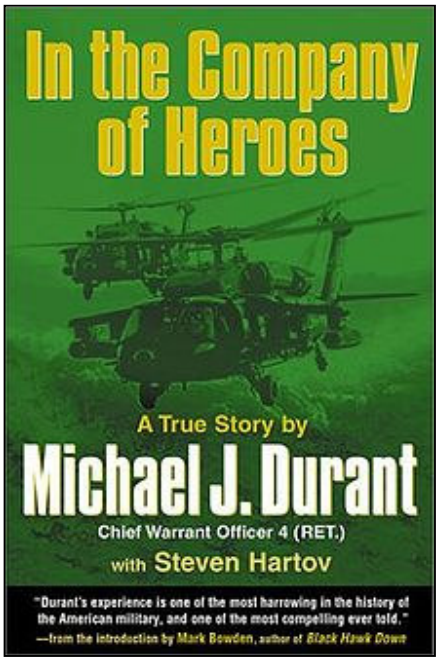
Following the lecture Jeramy led us over to the Training Center where we took on a brief tour of the facilities (very similar but not nearly as in-depth as the one we'd taken ourselves earlier in the day), then sat down with us at dinner to ask – via a questionnaire that also asked us what our favorite cartoon character was - which position we'd like to have on the Shuttle mission simulation we'd fly tomorrow. I chose and was awarded PILOT based on the fact that I had flown missions in the past as COMMANDER (Academy, 1991 for "Discovery"), as a MISSION SPECIALIST (Adult Academy, 2003), as a STATION SPECIALIST (Academy, 1991 for "Atlantis"), not to mention MISSION CONTROL twice (Camp, 1999 and Adult Academy, 2003 for "Endeavor Bravo"). Therefore, I wanted something new I hadn't done before, which I'm sure was a very tall order to fill – I'm sure everyone in the room wanted to be COMMANDER and PILOT of the Space Shuttle! But no, that's me! And Lisa, my new-found buddy, was chosen as COMMANDER. So the two of us get to fly that bird into space tomorrow!

GUEST SPEAKERS ///

Once our mission assignments were handed out we broke for dinner then re-assembled in the museum's lecture hall for an opportunity to hear Mike Durant, Jamail Larkins and Story Musgrave, which turned out to be much more interesting than I had at first thought. Although we had just eaten, the panel served hors d'oeuvres, cheeses, cakes and the like, and there was a pay bar if anyone was interested in other libations but I refrained from sampling either – I was more interested in hearing from our three guest speakers...

Mike Durant

Michael J. "Mike" Durant (born July 23, 1961) is an American pilot and author who was held prisoner for eleven days in 1993 after a raid in Mogadishu, Somalia. He was a member of the 160th Special Operations Aviation Regiment (Night Stalkers) as a Chief Warrant Officer 3. He retired from the Army as a Chief Warrant Officer 4 Blackhawk helicopter Master Aviator in the 160th SOAR after participating in combat operations Prime Chance, Just Cause, Desert Storm, and Gothic Serpent. His awards include the Distinguished Service Medal, Distinguished Flying Cross with Oak Leaf Cluster, Bronze Star with Valor Device, Purple Heart, Meritorious Service Medal, three Air Medals, POW Medal, and many others.



During Operation Gothic Serpent, Durant was the pilot of Super Six Four, the second MH-60L Black Hawk helicopter to crash during the Battle of Mogadishu on October 3, 1993. The helicopter was hit by a rocket-propelled grenade in the tail, which led to its crash about a mile southwest of the operation's target. Durant and his crew of three, Bill Cleveland, Ray Frank, and Tommy Field, survived the crash, though they were badly injured. Durant suffered a broken leg and a badly injured back. Two Delta Force snipers, MSG Gary Gordon and SFC Randy Shughart, had been providing suppressive fire from the air at hostile Somalis who were converging on the area. Both volunteered for insertion and fought off the advancing Somalis, killing an undetermined number, until they ran out of ammunition and were overwhelmed and killed, along with Cleveland, Frank, and Field. Both Gordon and Shughart received the Medal of Honor posthumously for this action.

The Somalis captured Durant and held him in captivity. Durant was the only one of his crew to survive. During part of Durant's time in captivity, he was cared for by Somali General Mohamed Farrah Aidid's propaganda minister Abdullahi "Firimbi" Hassan. After eleven days in captivity, Durant was released, along with a captured Nigerian soldier, to the custody of the International Committee of the Red Cross. After being freed, Durant recovered and resumed flying with the 160th SOAR. Durant retired from the Army in 2001 with more than 3,700 flight hours, over 1,400 of which were flown under night vision goggles. He now offers seminars to military personnel about helicopter maneuvering and Combat Search and Rescue (CSAR) operations.

Durant talked about the Somalia raid and the experiences he had in captivity. In 2003, Durant published a book, “In the Company of Heroes” (the basis for the film “Black Hawk Down”), in which he chronicles his military career and his captivity. It was wonderful to hear him speak about his experience.

Jamail Larkins

From the ripe age of 12 when Jamail stepped inside an airplane and co-piloted his first flight with the Experimental Aircraft Association (EAA) Young Eagles Program, he was hooked for life. Falling in love at first flight, Jamail decided he would do whatever it took to continue flying, including petitioning the Federal Aviation Administration (FAA) to let him fly solo at the age of 13. He couldn’t, so he headed to Canada (age 14 to fly) where he became one of the youngest American pilots to solo a powered aircraft in Canada.

A few years later at the age of 16, Jamail became the National Spokesman of the EAA Vision of Eagles Program, a youth education initiative of the EAA Aviation Foundation. In this role, Jamail was able to use his passion to promote the career possibilities available to aviation enthusiasts, young and old alike. With this newfound status and exposure, Jamail was afforded many unique opportunities, including becoming the first and youngest student pilot to solo the Cirrus SR20, a revolutionary certified single-engine aircraft with a built-in parachute. Since Jamail's solo, the Cirrus line of aircraft has become the World's Best Selling Single Engine Aircraft.

Spreading his wings, Jamail branched out into aerobatic flying at the age of 18. Loving the creativity and freedom it allowed him, he became one of the youngest air show aerobatic performers in the U.S.

Jamail realized quickly in order to fund his passion for flight; he needed a plan to make more money than the average teenager. To do so, at the age of 15, he founded his first company - Larkins Enterprises, Inc., an aviation sales & advertising company. Since its first inception, Jamail has transformed Larkins Enterprises into two successful business units: an aircraft sales and leasing company and an aviation consulting firm. Over the years, Jamail's business accomplishments have earned him accolades from the leaders in business media, including a ranking as one of the top entrepreneurs by CNBC, BusinessWeek, Black Enterprise, and as the #1 Entrepreneur under the age of 30 by Inc. Magazine.

In 2002, Jamail became the National Spokesman for Careers in Aviation, a non-profit organization that promotes and provides aviation opportunities to young people. Because of his passion for flying, ability to connect with youth and his role with Careers in Aviation, Embry-Riddle Aeronautical University (ERAU), the top aviation school in the country, recruited Jamail to bring attention to the exciting yet declining industry of aviation. Together they founded the DreamLaunch Tour, a national tour designed to educated students about career opportunities in the aviation industry and to motivate students to reach for their dreams.

Jamail's profile was building, and the Federal Aviation Administration (FAA) took notice. By Fall 2004, the FAA signed Jamail as the first official Ambassador for Aviation and Space Education. Through his work with the FAA, ERAU and numerous other organizations, Jamail has had the opportunity to give speeches beside notables like Chuck Yeager, Gene Cernan, and Cliff Robertson. He has flown with the Navy's prestigious Blue Angels, is featured in the renowned Franklin Institute, and has received a Certificate of Special Recognition from the United States Congress.

Today, Jamail serves on the board of several large-aviation non-profit organizations. In addition to his industry commitments, he continues to lead his primary company, Ascension Aviation, which is rapidly becoming one of the premier companies specializing in aircraft sales, leasing, financing, and management. Jamail currently resides in Atlanta, GA, but can typically be found flying around the country, spreading his passion and expertise in the field of aviation & aerospace.

Story Musgrave

Franklin Story Musgrave (born August 19, 1935) is an American physician and a retired NASA astronaut. He was born in Boston, Massachusetts, but considers Lexington, Kentucky to be his hometown. He has six children, one deceased. His hobbies are chess, flying, gardening, literary criticism, poetry, microcomputers, parachuting, photography, reading, running, scuba diving and soaring.

He talked about his education: Story Musgrave attended Dexter School, Brookline, Massachusetts and St. Mark's School, Southborough, Massachusetts, from 1947 to 1953, but left school shortly before graduation and before receiving his high school diploma. He received a BS degree in mathematics and statistics from Syracuse University in 1958, an MBA degree in operations analysis and computer programming from the University of California, Los Angeles in 1959, a BA degree in chemistry from Marietta College in 1960, an M.D. degree from Columbia University College of Physicians and Surgeons in 1964, an MS in physiology and biophysics from the University of Kentucky in 1966 and a MA in literature from the University of Houston–Clear Lake in 1987.

He talked about his military career: Musgrave entered the United States Marine Corps in 1953, served as an aviation electrician and instrument technician, and as an aircraft crew chief while completing duty assignments in Korea, Japan and Hawaii, and aboard the carrier USS Wasp in the Far East. He has flown 17,700 hours in 160 different types of civilian and military aircraft, including 7,500 hours in jet aircraft. He has earned FAA ratings for instructor, instrument instructor, glider instructor, and airline transport pilot, and U.S. Air Force Wings. An accomplished parachutist, he has made more than 800 free falls — including over 100 experimental free-fall descents involved with the study of human aerodynamics.

He discussed his civilian career: the Eastman Kodak Company in Rochester, New York, employed Musgrave as a mathematician and operations analyst during 1958. He served a surgical internship at the University of Kentucky Medical Center in Lexington from 1964 to 1965, and continued there as a U. S. Air Force post-doctoral fellow (1965–1966), working in aerospace medicine and physiology, and as a National Heart Institute post-doctoral fellow (1966–1967), teaching and doing research in cardiovascular and exercise physiology. From 1967 to 1989, he continued clinical medicine on a part-time basis at Denver General Hospital (presently known as Denver Health Medical Center) and as a part-time instructor of physiology and biophysics at the University of Kentucky Medical Center. He has written or been listed as a co-author of twenty five scientific papers in the areas of aerospace medicine and physiology, temperature regulation, exercise physiology, and clinical surgery.

And, of course, his time with NASA: NASA selected Musgrave as a scientist-astronaut in August 1967. He completed astronaut academic training and then worked on the design and development of the Skylab Program. He was the backup science-pilot for the first Skylab mission, and was a CAPCOM for the second and third Skylab missions. Musgrave participated in the design and development of all Space Shuttle extravehicular activity equipment including spacesuits, life support systems, air locks, and manned maneuvering units. From 1979 to 1982, and 1983 to 1984, he was assigned as a test and verification pilot in the Shuttle Avionics Integration Laboratory at JSC. He served as a spacecraft communicator (CAPCOM) for STS-31, STS-35, STS-36, STS-38 and STS-41, and lead CAPCOM for a number of subsequent flights.

He was a mission specialist on STS-6 in 1983, STS-51-F/Spacelab-2 in 1985, STS-33 in 1989 and STS-44 in 1991, was the payload commander on STS-61 in 1993, and a mission specialist on STS-80 in 1996.

- He first flew on STS-6, which launched from the Kennedy Space Center, on April 4, 1983, and landed at Edwards Air Force Base in California, on April 9, 1983. During this maiden voyage of Space Shuttle Challenger, the crew performed the first Shuttle deployment of an IUS/TDRS satellite, and Musgrave and Don Peterson conducted the first Space Shuttle extravehicular activity (EVA) to test the new space suits and construction and repair devices and procedures. Mission duration was 5 days, 23 minutes, 42 seconds.

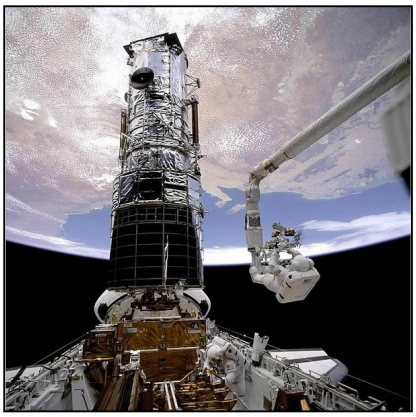
- On STS-51F/Spacelab-2, the crew aboard Challenger launched from the Kennedy Space Center, Florida, on July 29, 1985, and landed at Edwards Air Force Base, California, on August 6, 1985. This flight was the first pallet-only Spacelab mission, and the first mission to operate the Spacelab Instrument Pointing System (IPS). It carried 13 major experiments in astronomy, astrophysics, and life sciences. During this mission, Musgrave served as the systems engineer during launch and entry, and as a pilot during the orbital operations. Mission duration was 7 days, 22 hours, 45 minutes, 26 seconds.

- On STS-33, he served aboard the Space Shuttle Discovery, which launched at night from the Kennedy Space Center, Florida, on November 22, 1989. This classified mission operated payloads for the United States Department of Defense. Following 79 orbits, the mission concluded on November 27, 1989, with a landing at sunset on Runway 04 at Edwards Air Force Base, California. Mission duration was 5 days, 7 minutes, 32 seconds.

- STS-44 also launched at night on November 24, 1991. The primary mission objective was accomplished with the successful deployment of a Defense Support Program (DSP) satellite with an Inertial Upper Stage (IUS) rocket booster. In addition the crew also conducted two Military Man in Space Experiments, three radiation-monitoring experiments, and numerous medical tests to support longer duration Shuttle flights. The mission was concluded in 110 orbits of the Earth with Atlantis returning to a landing on the lakebed at Edwards Air Force Base, California, on December 1, 1991. Mission duration was 6 days, 22 hours, 50 minutes, 42 seconds.

- STS-61 was the first Hubble Space Telescope (HST) servicing and repair mission. Following a night launch from Kennedy Space Center on December 2, 1993, the Endeavour rendezvoused with and captured the HST. During this 11-day flight, the HST was restored to its full capabilities through the work of two pairs of astronauts during a record 5 spacewalks. Musgrave performed 3 of these spacewalks. After having travelled 4,433,772 miles in 163 orbits of the Earth, Endeavour returned to a night landing in Florida on December 13, 1993. Mission duration was 10 days, 19 hours, 59 minutes.

- On STS-80, (November 19 to December 7, 1996), the crew aboard Space Shuttle Columbia deployed and retrieved the Wake Shield Facility (WSF) and the Orbiting Retrievable Far and Extreme Ultraviolet Spectrometer (ORFEUS) satellites. The free-flying WSF created a super vacuum in its wake in which to grow thin film wafers for use in semiconductors and the electronics industry. The ORFEUS instruments, mounted on the reusable Shuttle Pallet Satellite, studied the origin and makeup of stars. During de-orbit and landing, Musgrave stood in the cockpit and pointed a handheld video camera out the windows. In doing so, he recorded the plasma streams over the orbiter's hull for the first time, and he is still the only astronaut to see them first-hand. In completing this mission he logged a record 278 earth orbits, traveled over 7 million miles in 17 days, 15 hours, 53 minutes.



A veteran of six space flights, Musgrave has spent a total of 1281 hours 59 minutes, 22 seconds in space. Musgrave is the only astronaut to have flown missions on all five Space Shuttles. Prior to John Glenn's return to space in 1998, Musgrave held the record for the oldest person in orbit, at age 62. He retired from NASA in 1997.

Great, great stuff.

ASTROTREKING ACROSS THE UNIVERSE ///

Of course, we finished the night AstroTreking across the Universe – training with the Multi-Axis Trainer, 1/6th Gravity Chair, 5DF Chair and Ground Manned Maneuvering Unit. Let me explain those:

The Multi-Axis Trainer (MAT) simulates the disorientation one would feel in a tumble spin during reentry into the Earth's atmosphere. The MAT is patterned after the MASTIF (Multiple-Axis Spin/Space Test Inertia Facility), a series of cages within cages, used for astronaut training during the Mercury program. The astronauts used this to condition themselves for disorientation that might occur in emergency conditions during flight. The MASTIF had a joystick, which allowed the astronaut to control the device. The MAT has no joystick so you're just along for the ride!

The 1/6th Gravity Chair is modeled after one the Apollo astronauts used for moon walk training, as it is designed to simulate the Moon's gravitational pull, about 1/6th that of the Earths. For example, a person who weighs 150 pounds on Earth would weigh 25 pounds on the Moon. Hence the chair gives trainees a realistic feeling of walking in the reduced gravity of the moon. The apparatus is suspended on a long bungee like cord; upon sitting in the chair your weight is balanced against the tension in the cord. Once properly balanced you're set off on your task. If you step too hard, you'll end up in the ceiling, so for the most part the counselors keep a hold of you. Once strapped in you're asked to do a variety of things. First it's a side-to-side walk, then a bunny hop, and on to whatever other steps you think might propel you across the floor (like a slow motion jog). After about three or four walks around you're done!

As most physicists know, there are really six degrees of motion, but unfortunately here on Earth, only five can be simulated at any one time – and to do that you need this chair. The five directions are: Forward and Back, along the Y-axis; Left and Right, along the X-axis; Pitch, Roll, and Yaw. The sixth degree is the Z-axis, which more or less is up and down. The 5DF chair rides on a cushion of air rendering the forces we take for granted - inert. As you sit in this suspended chair, the simulator will allow movement in any of the five different directions depending upon your initial push off, simulating the frictionless environment of space. Such free movement allows an astronaut to practice tasks here on the ground that would need to be completed in microgravity once the mission begins. It's also a fun demonstration of Sir Isaac Newton's Third Law of Motion: *For every action there is an equal and opposite reaction: or the forces of two bodies on each other are always equal and are directed in opposite directions.*

* * *

After spinning, jumping, flipping and flopping we called it a night. We've all returned to our respective rooms at either the Habitat or the Marriott – a new thing this go-round. Apparently you can, should you desire, bunk over at one of their rooms for a slightly higher cost to accommodations, but who wants to do that? I mean, I truly understand that the bunks here at the Habitat aren't the most comfortable (in fact, they're downright horrible) but that's part of the experience. And I'd never miss a chance to stay in the Habitat – never!

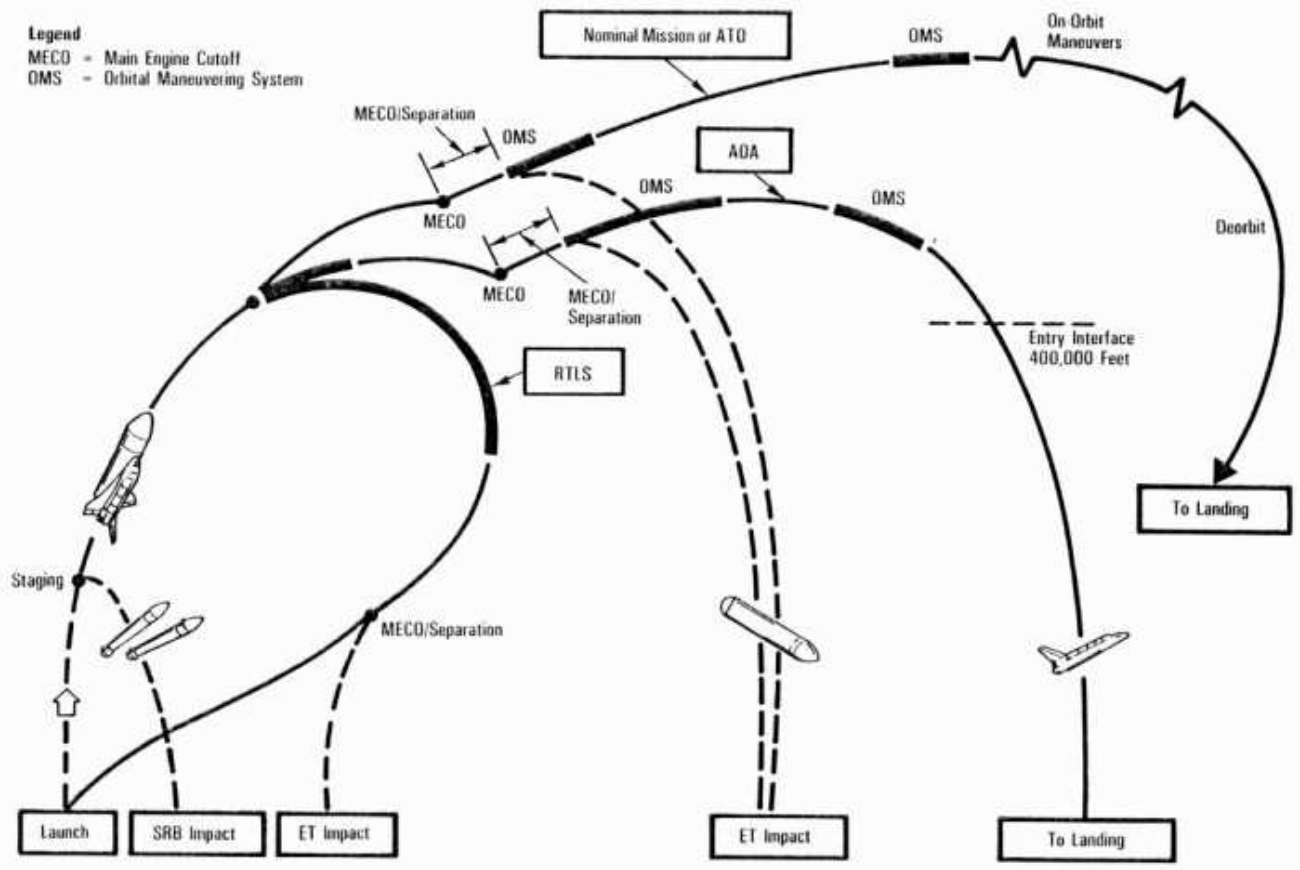
Tomorrow promises to be quite the busy day. According to the schedule we're headed over to the Aviation Challenge area (as I'd mentioned earlier) to take part in a helicopter crash-n-rescue exercise. Apparently you sit in a mock-up of a helicopter cage that we must simulate escaping out of after it has crashed into the lake – sounds like heady stuff. Then we're scheduled to take a spin in their centrifuge before returning to the space-side of things, hearing once again from Story Musgrave, attend a briefing on Ares, NASA's next-generation space transportation system, take our group photo, practice and then run our mission.

So goodnight!

Day Two – AVIATION CHALLENGE
FRIDAY | JUNE 15, 2007

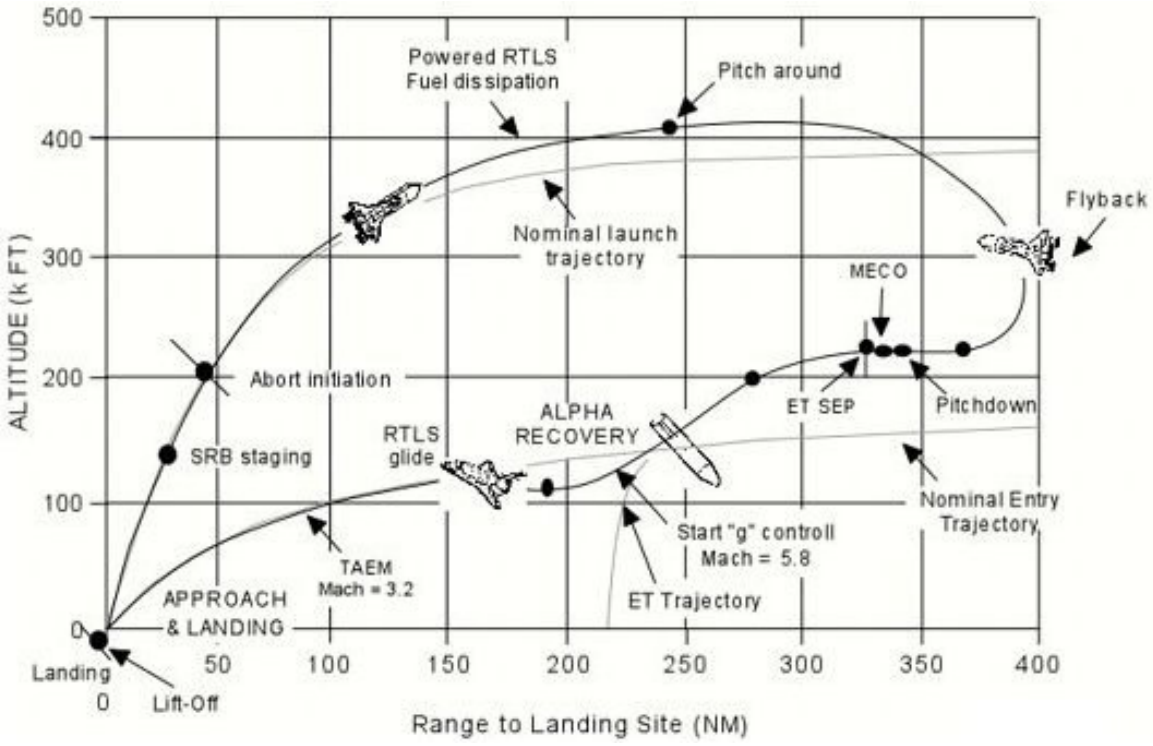
Houston, Atlantis... ATO necessitated, OVER!

In NASA Shuttle lingo, ATO means Abort-to-Orbit and its one of five abort modes built into the Space Shuttle's flight plan (and one of four that can be called during ascent) to help the flight recover from an anomalous event during lift-off. Besides Abort-to-Orbit (ATO) there's: Redundant Set Launch Sequencer (RSLS) abort, Return to Launch Site (RTLS), Transoceanic Abort Landing (TAL), and Abort-once-Around (AOA), each with their own set of circumstances but all generally caused by a main engine failure.

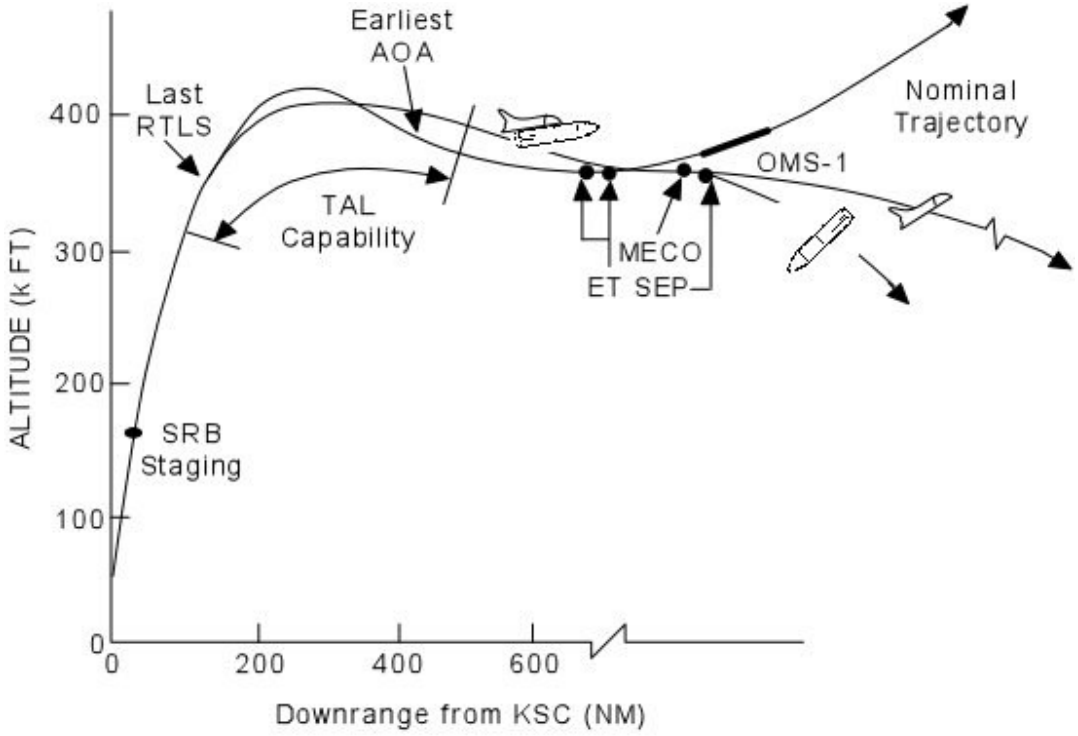


An RSLS can be called during the 6.6-second window during which the Main Engines are ignited prior to liftoff. From that point to ignition of the Solid Rocket Boosters (at T – 0 seconds), the main engines could be shut down due to some unforeseen problem the computers sensed. This was called a "Redundant Set Launch Sequencer Abort", and happened five times, on STS-41-D (1984), STS-51-F (1985), STS-51 (1993), STS-55 (1993), and STS-68 (1994). Since the SRBs cannot be turned off after ignition, once lit the Shuttle is committed to take off. If an event such as an SSME failure requiring an abort happened after SRB ignition, acting on the abort would have to wait until SRB burnout 123 seconds after launch. No abort options exist if that wait is not possible.

The next option is a RTLS abort, or Return to Launch Site. Here the Shuttle would have to continue downrange until the SRBs are jettisoned, then pitch around so the SSMEs are firing retrograde (This maneuver would have occurred in a near vacuum above the appreciable atmosphere and was conceptually no different from the OMS engines firing retrograde to de-orbit), burning continuously until downrange velocity is reduced to allow the Shuttle to return to the launch site. Then the SSMEs are stopped, the external tank is jettisoned, and the orbiter makes a normal gliding landing on the runway at Kennedy Space Center about 25 minutes after lift-off. The CAPCOM calls out the point in the ascent at which an RTLS becomes no longer possible as "negative return", approximately four minutes after lift-off. This abort mode has yet to be used in the history of the Space Shuttle program.



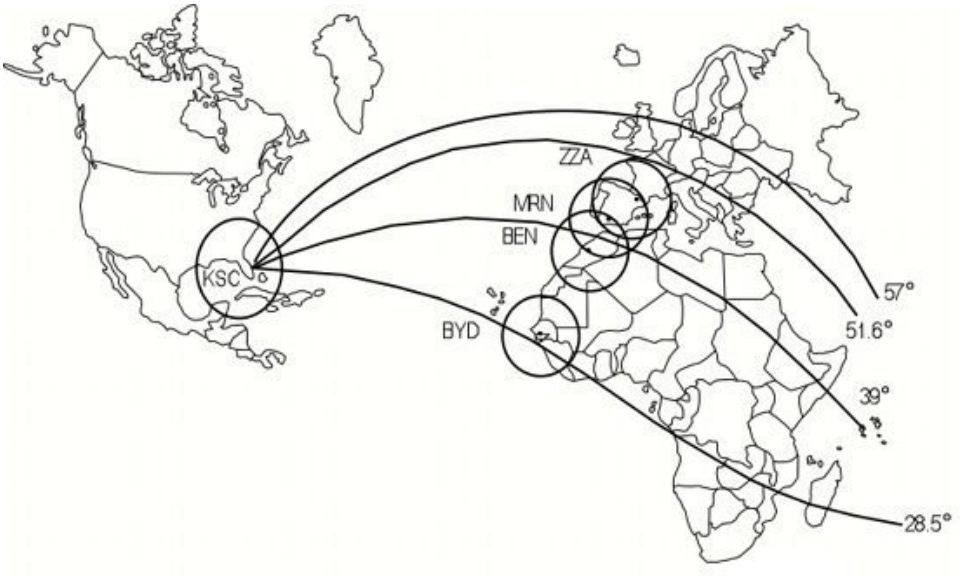
A Transoceanic Abort Landing (TAL) involves landing at a predetermined location in Africa or Western Europe about 25 to 30 minutes after lift-off. It is used when velocity, altitude and distance downrange do not allow return to the launch point via RTLS. It is also used when a less time-critical failure does not require the faster but possibly more stressful RTLS abort. A TAL abort would be declared between roughly T+2:30 minutes (2 minutes, 30 seconds after liftoff) and Main Engine Cutoff (MECO), about T+8:30 minutes into flight. Preparations of TAL sites take 4–5 days and begin a week before a launch with the majority of NASA, DOD and contractor personnel arriving 48 hours before launch. Additionally two C-130 aircraft from the Manned Space Flight support office from the adjacent Patrick Air Force Base are deployed. So far this abort mode has also not been used.



An Abort-Once-Around (AOA) is available when the shuttle cannot reach a stable orbit but has sufficient velocity to circle the earth once and land, about 90 minutes after lift-off. The time window for using the AOA abort is very short – just a few seconds between the TAL and ATO abort opportunities. Therefore, taking this option would be very unlikely and as with the previous two, has so far not been used.

Last, and certainly not least, is Abort-to-Orbit (ATO), which is called when the intended orbit cannot be reached, but a lower stable orbit is possible. This one actually has happened – on mission STS-51-F (lucky mission), which continued on despite the abort to a lower orbit. STS-51-F (also known as Spacelab 2) was the nineteenth flight of the Space Shuttle Program and the eighth flight of Challenger. It launched from Kennedy Space Center, Florida, on July 29, 1985 and landed just under eight days later on August 6th. One of the Shuttle's SSMEs failed resulting in the ATO call.

The abort didn't interfere with the Spacelab 2 mission, however, nor with the heavily publicized marketing experiment whereby astronauts enjoyed carbonated beverages from specially designed cans provided by competitors Coca-Cola and Pepsi. (A display on the Coca-Cola technology can be found in the museum.)



In either case, Mission Control Center in Houston (located at Lyndon B. Johnson Space Center) observed the SSME failure and called "Challenger—Houston, Abort ATO. Abort ATO." The moment at which an ATO becomes possible is referred to as the "press to ATO" moment. In an ATO situation, the spacecraft commander rotates the cockpit abort mode switch to the ATO position and depresses the abort push button. This initiates the flight control software routines that handle the abort. In the event of lost communications, the spacecraft commander could make the abort decision and take action independently. It's actually one of the abort modes we train for here at Space Camp... because you never know what the counselors will throw at you (but more on that later as I digress...)

Although ATO means Abort to Orbit for NASA, here around Space Camp it means something entirely different: Abort to Otters – the bar/lounge at the Huntsville Marriott – and a place from where we've just come. We also met up with fellow Space Camp alumni (though unable to attend the session) Brian "Hot Dog" Matney and Jason "Boomerang" Shrek while there. "Hot Dog" is actually quite a famous alumnus: he and his team – Morton Thiokol – are the ones who created the famous shuttle patch which has graced Space Camp application guides throughout the late 1990s and early 2000s; it's quite an honor in these circles. Even so, he's a down home kind of boy, humble, and was quite beside himself that we'd even want to hang out with him. And why wouldn't we? He's just as much a part of our alumni team as anyone else!

Much fun was had at Otters this evening (rum and coke anyone?), but I must admit I had equally as much fun (if not more) down at Aviation Challenge (AC) this morning. It's hard to believe, I know, but no less true! Created in 1990, Aviation Challenge is to fighter pilot training as Space Camp is to astronaut training. As such Aviation Challenge follows the Top Gun mind-set and comes in three levels: Mach I, II and III depending on your age. Aviation Challenge offers kids the chance to train as a fighter pilot rather than astronauts, but I missed out on this when I was younger. It was my choice.

THE NEED FOR SPEED ///

All pilot astronauts and many mission specialists began their flight careers as military high performance jet pilots. Aviation Challenge is an answer to requests received at Space Camp for educational, hands on programs that involve groundwork needed to pursue military aviation careers. AVIATION CHALLENGE is a program for youths and adults patterned after high performance jet pilot training. Students are members of "flight squadrons" who train at a facility constructed around a lake on the U.S. Space and Rocket Center grounds. Instruction includes flight simulators, land survival and water survival complete with a 40-foot tower and "zip line" equipped for water recovery. Each Aviation Challenge session is topped off with an exciting mission based on the Navy's "Top Gun" pilot training.

Trainees occupy the Edward O. Buckbee Aviation Challenge Complex, a 22,000 square foot building designed to resemble an aircraft hangar. It includes male and female living quarters, simulators, classrooms and a centrifuge that allows trainees to experience the force of 3 G's. The atmosphere of military aviator training is further enhanced with the presence on the grounds of various aircraft including an F 14A Tomcat, YAV 8B Harrier II, F 111A, an F 4 Phantom, a MIG 17, a T 38, the A 7A Corsair II, an SH 2F Sea-sprite Helicopter and an AH 1 Cobra attack helicopter. Aviation Challenge is also a Civil Air Patrol Squadron. Students may become members while attending Aviation Challenge, and continue their aerospace interests in squadrons in their hometowns.

But just what kind of activities go on down at Aviation Challenge?

- FLIGHT SIMULATORS -- Trainees fly missions in simulators patterned after advanced fighter and attack aircraft. The simulators create the sensation of roaring off the end of an aircraft carrier, the experience of high speed maneuvering and low level flight. The skills necessary to perform night carrier landings are also learned. Students learn aerobatics, navigation, and air to air intercept procedures. Simulated flights are land or carrier oriented and includes catapult launches and arrested carrier landings. Students experience the physiological effects of G forces inside a cockpit style 3G centrifuge.

- WATER SURVIVAL -- The will to survive in a downed aircraft situation is developed through knowledge and training which is gained through hands on sessions with the slide wire, helicopter dunker, helicopter hoist rescue, parachute descent and disentanglement plus life raft exercises.

- GROUND SURVIVAL -- Trainees are introduced to survival equipment and the theory of short and long term survival on land. Then it's time to put on "makeup" and master an outdoor evasion course that requires problem solving skills, escape and evade maneuvers, camouflage, signaling, water and food procurement, first aid and teamwork.

- ACADEMICS -- Trainees spend time learning about flight planning procedures, aerodynamics, aeronautics, propulsion, flight systems, navigation, emergency procedures, aviation physiology and aviation history. There's also time to discuss aviation careers and flight charts. After dark, the classroom becomes the wraparound screen of the Spacedome Theater where trainees experience space and aviation oriented IMAX films.

And like Space Camp, the Aviation side is divided into three programs - Mach I, II and III - based on your grade-level and age:

- MACH I (Originally called “Basic”): Available to students in grades 4, 5 and 6 (ages 9 to 11). Primary students learn the basics of flight (taking off and landing, and ground munitions delivery) before moving on to the techniques of high performance flight (dog-fighting). Cadets also participate in survival training on both land and water.

- MACH II (Originally called “Intermediate”): Available to students in grades 7, 8 and 9 (ages 12 to 14). Students have the opportunity to develop their interests in the aerospace education, training and skills required to fly high performance jets. The basic flying skills from the Mach I program are expanded upon, culminating at the end of the week in a "Top Gun" competition to determine the week's best pilot. Cadets also learn land and water survival skills and culminate the week in a NAVY SEAL Search and Rescue (SAR) mission during the day and an escape and evasion activity that night.

- MACH III (Originally called “Advanced”): For student aviation enthusiasts in grades 9, 10, 11 and 12 (ages 15 to 18). This advanced program is a mixture of flight simulator training, water and land survival procedures and classroom study. The potential pilot will learn what it takes to be accepted for military and civilian aviator training, requirements for selection to a military academy and options for attending ROTC and/or Officer Training School. Flying in Mach III becomes even more difficult, using full sized simulators, communications, the pairing of a pilot and RIO (Radar Intercept Officer) to work together, and daily missions that are scored. Mach III campers once again learn land and water survival, using equipment such as the "helo-dunker" and a zip line to simulate a parachute landing. Culminating the week is an extensive Navy SEAL Ops mission and very challenging escape and evasion activity.

We’d get a taste of some of all three today, with even more on tap for tomorrow...

THE BIRTH OF “E-STOP” ///

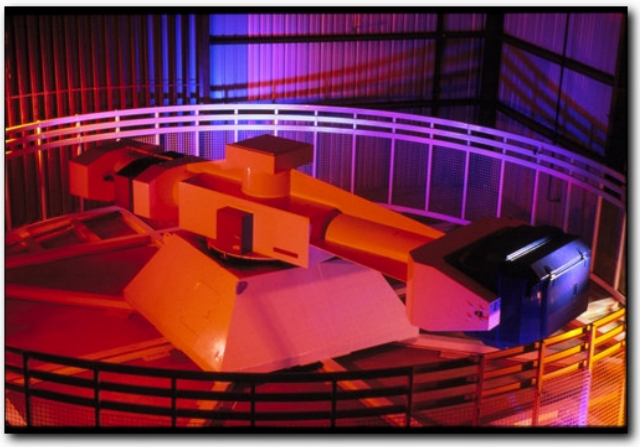
As a separate program from Space Camp, Aviation Challenge operates on its own set of rules. For example, many cadets have a nickname. Some of them, like mine (“Richasi”), are self-given and have nothing to do with the Camp experience. In the military your peers assign you a nickname, or in this case a call sign, based on their observances of you. Sometimes this could be something noble, sometimes it could be something hot-headed, and other times it could be something dumb you did... and you become stuck with that memory, branded with it for the rest of your life. Keep that in mind for later...

After completing our morning meal the entire compliment boarded one of the famous (or infamous, because they're old and smelly) Space Camp busses and made our way over to the Aviation Challenge area – a small barracks-like compound surrounding a medium-sized lake not far from the Space & Rocket Center. Although not within quick walking distance, cadets in the program do march to and from the AC Compound when it's time for meals – they generally eat at the Space Camp cafeteria like everyone else – much to their chagrin I'm sure, but we alumni were treated with better care: a hot bus ride over. In either case, our task over at AC today was supposed to kick start with the dunker exercise, a training piece whereby you're lowered into the water in an apparatus that simulates the inside of a helicopter. The drill simulates a crashed chopper and the skills we as cadets would need in order to a) survive such an ordeal and b) escape from the wreckage. Unfortunately the dunker was broken so we had to move on to Plan B.

Plan B ended up being an ad-hoc "Flight Physiology Briefing", which is a fancy way of saying we're going to learn about how much punishment your body takes as a fighter pilot – and why you need to be so physically fit to do something like that. Therefore we learned all about redouts (which occur when the body experiences a negative g-force sufficient to cause a blood flow from the lower parts of the body to the head), brownouts (where blood flows away from the head to the lower parts of the body, therefore starving the brain of oxygen) and potentially how dangerous both could be during a flight. Redouts, for example, could cause retinal damage and hemorrhagic stroke. Suffering a brown or blackout during a maneuver could, well, lead to death too – only you'd be unconscious. Therefore the military has a number of advances in flight suit designs specifically tuned to help combat these and other issues.

We simulated the experience first-hand in AC's centrifuge. This simulator artificially increases accelerative force under controlled conditions allowing trainees to experience 3.2Gs and feel the effects of gravitational force on the body as a pilot or astronaut would during flight. It's similar to the G-Force ride out in the Rocket Park only it holds less people, is more pod-like, and is quite a bit more intense – this is not a ride, it's a simulation and guess who got to be the first rider? Why I did, of course, and what an experience that turned out to be.

Although the centrifuge rides two at a time you're not just sitting there with nothing to do. Climbing into this contraption, which appears to be no larger than a Gemini capsule, is only the beginning.
Once you're settled and strapped in next to your neighbor, the doors close and for a moment you're cut off from the outside world, almost what I imagine being stuck in a coffin and buried alive might feel like... or having been closed into one of those Gemini capsules and shot off into the blackness of space. The only things to touch around you are two red buttons on either side of you; who knew what they did. Then before you know it the contraption begins to spin and the machine's operator makes voice contact with you, to talk you through what's happening and to be your lifeline.



In fact, throughout the entire experience the operator is handing you tasks to do. At first it's pressing those buttons on either side of your chair at the right intervals. Failing to do so would alert him and the machine that you were no longer conscious enough to adhere to a command, and thus the simulator would come to an immediate halt as an emergency stop, or E-Stop. But at only 1.0 G, this was easy. Once the centrifuge reached 2.0 G's we were asked to sing "Itsy Bitsy Spider" while pressing the buttons at the right time – this got a little harder, but we managed. By the time the contraption reached 3.0 Gs we were asked to not only sing but perform the moves to YMCA by the Village People, which proved to be difficult for all (although I did end up doing it.)

At this point you might realize that I labeled this section of my briefing "The Birth of E-Stop" and began this diatribe by mentioning nicknames, or in this case, call signs and how they are assigned. Here amongst the Centrifuge one of our own received their very own new call sign: Ben "Benji" Shwartz. Can you guess what new call sign he received and why he received it? Yep, he forgot to press the red. And for doing so he'll now be branded "E-Stop" for the remainder of Alumni camp.

Aren't we cruel? Oh, but he loves it!

After the entire compliment had their opportunity to spin about in the Centrifuge, we moved on to another ad-hoc activity, one that was certain to get us wet!

Since we were already in our skivvies for the original planned water activity, we jumped onto another – raft races in the lake. Splitting into two teams of six, and then further subdividing into groups of three, our tasks here were simple: race against your fellow teammates and win! There would be three cadets per raft – two paddling and one steering – and all we had to do was beat our fellow team to the finish line. It wasn't going to be easy, however, because it wasn't just one lap around – it was six and they were some pretty long laps! I was part of the first group of three, along with Anna Lawitzke and Laura ("Monkeynaut") Boyle, and off we went. At one point during the exercise I thought I was going to lose it – I could hardly use my arms anymore they felt like wet noodles (no pun intended, as they were wet) – and I was seriously beginning to wonder if we'd finish the first lap at all. But somehow we did.

Getting off and on the raft at this point was an exercise in and of itself. Rather than pulling the raft ashore to disembark, those on it had to jump off while still in five-foot waters and those wading out in the water had to somehow leverage themselves and climb in. This wasn't a huge deal for me as I just flopped out, hitting the shoreline and crashed into the sand – I was deaaaaaaaaaad - but it would be later.

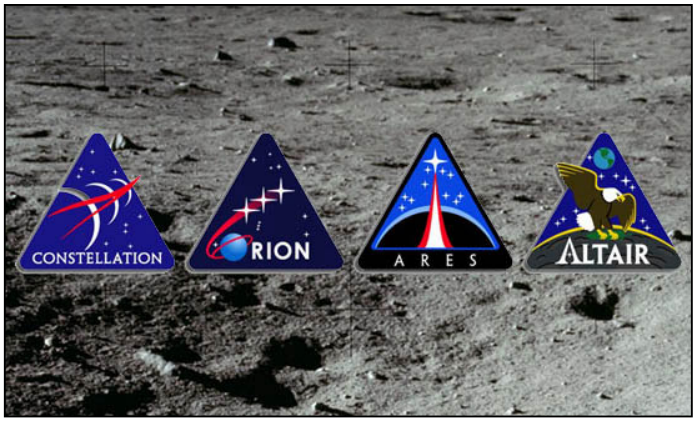
Meanwhile, our replacements took up the charge and continued the route around the lake. All too soon it was time to take up the mantle again. While I paddled like a madman during the first lap, I hardly had anything left to paddle again for the third and I knew it. So I took over the navigator's job, steering us well into a lead! By the time the second group took over again we were well ahead of the curve and were destined to win (but I had no idea how I'd be able to perform for the fifth lap). Thankfully the race was called short during the fourth lap – we were pressing up against the clock number one, but I think mostly because we out-of-shape alumni were ready to keel over number two. Either way it was a boon for us – we won the race!

It took quite a long time for me to recover from exerting so much energy; I really looked forward to having something to eat. We mercifully broke for lunch not long after – returning to the museum proper for the remainder of the day and night, albeit with little rest for the weary.

As soon as we could get cleaned up and fed, we donned our special Space Camp 25th Anniversary T-shirts then headed out to the Shuttle Park where we'd get our group photos taken. Because we were two groups – Columbia and Challenger – our group photos were taken separately. We attempted to get them to take one massive picture of all of us together, but that didn't fly; however, one of our compliment (I forget who at this time of night) did suggest he'd chip in and supply the necessary funds to give each of us copies of the other's group photos – and that seemed reasonable to all those at the Rocket Center. So it looks like we'll have two photos come graduation!

STORY, ARES & DIPPIN' DOTS ///

We re-convened in the classroom building – situated across from the Habitat Complex, outside of the main museum territory – to hear Story Musgrave speak once again. This time his thoughts ran a little more personal as he went in depth about his experiences flying the shuttle, his time with NASA, his family and other more personal episodes.



But with our attentions divided (I think most of us were a little more than weary by then) and Story's penchant for mumbling and speaking in a monotone voice ("He just kept talking in one long incredibly unbroken sentence moving from topic to topic so that no-one had a chance to interrupt; it was really quite hypnotic." – Captain Picard, Star Trek: The Next Generation) we became listless and inattentive. Following Story there was an optional briefing on the Ares Rocket – the crew launch vehicle that is being developed by NASA as part of the Constellation Program, the fore-runner for the Shuttle's replacement.

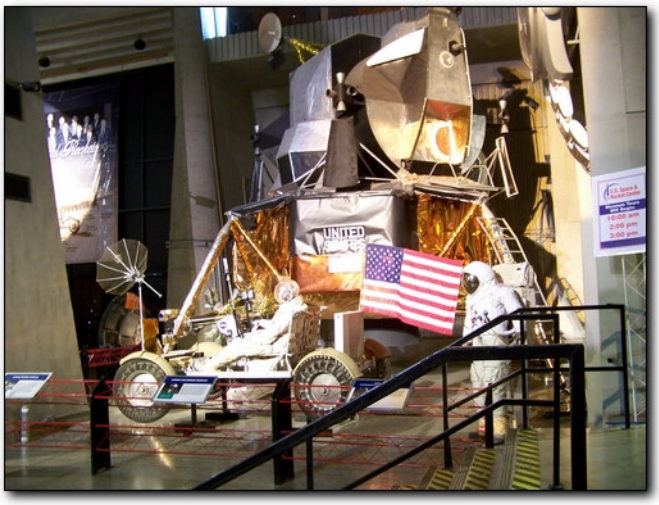
NASA plans to use Ares I to launch Orion, the spacecraft intended for NASA human spaceflight missions after the Space Shuttle is retired in 2010. Ares I will complement the larger, unmanned Ares V, which is the cargo launch vehicle for Constellation.

NASA selected the Ares designs for their anticipated overall safety, reliability and cost-effectiveness; however, the Constellation Program has been having a tough time of it but that's all I know – Lisa and I decided not to attend this briefing and opted to explore the museum freely on our own.

Mostly because we didn't really want to sit through another lecture (as interesting as our time with Story was, the seats were not all that comfortable) and it allowed us to just take a breather from it all. Ultimately it allowed us to grab a snack and so we found ourselves upon the Dippin' Dots kiosk. Dippin' Dots is an ice cream snack, invented by Southern Illinois University Carbondale graduate Curt Jones in 1987. As the "ice cream of the future", the confection is created by flash freezing ice cream mix in liquid nitrogen. It makes for a very interesting foodstuff, one I'd never tried before! (It was good).

As we walked around the outskirts of the Training Center Floor with our Dippin' Dots in hand, there by the UAT or Underwater Astronaut Trainer (a smaller version of the Neutral Buoyancy Tanks used by astronauts at NASA's Johnson Space Flight Center in Houston to simulate zero gravity, or micro gravity, conditions encountered by working in space), we ran into another Hab1 alumni – Jason ("Boomerang") Shrek.

Much like Kim and I who had found out through web-forum Hab1 that we'd attended Space Academy together as children (the same week and everything; she's in my group picture) but weren't aware of it, same went for Lisa and Jason; they'd attended the same adult session together back in 1998, although I think they *were* aware of it. We stopped and talked with Jason for a bit – who is a seasonal employee of the Space & Rocket Center now – before continuing our museum adventures.



Although exploring the museum these days doesn't have that same rewarding feel as it did back in the day (there's less hands-on things to do in the museum today than there was 15 years ago), walking around at this hour proved most fun: the museum was closed so it was nice and quiet! The two of us met our teammates at the cafeteria so we could dine together, assembled for an hour-and-a-half training on our mission, and then ran it as soon as we became comfortable with our positions and equipment.

Climbing into Atlantis was a dream come true.

ATLANTIS, HOUSTON – GO FOR LAUNCH! ///

Yesterday, after we'd assembled for the Shuttle Operations lecture in Habitat II, we'd made our elections for positions known. Later that day, just before dinner, we all received those mission assignments. Selecting which position I'd like to occupy for our one-and-only mission was tricky at best. In the end I'd chosen PILOT based on the fact that I had flown missions in the past as COMMANDER (Academy, 1991 for "Discovery"), as a MISSION SPECIALIST (Adult Academy, 2003), as a STATION SPECIALIST (Academy, 1991 for "Atlantis"), not to mention MISSION CONTROL twice (Camp, 1989 for "Columbia" and Adult Academy, 2003 for "Endeavor Bravo"), but never as PILOT. Thankfully the instructors sought it fit to award that position to me, with my buddy-in-arms Lisa as my Commander.

We'd talked about what our jobs were going to be while we toured the museum earlier, both of us a little nervous of the hefty responsibility lumped upon us, even if it was just a simulation. I mean, look how hard Andie rode Kevin in the movie Space Camp when he didn't take it seriously! Because there are a couple of folks here who are very keen to be in the positions we've found ourselves in and don't appear to be too happy about that. Alas, Lisa and I made a pact to have fun with this because that's why we've come to Alumni Camp after all!

Thankfully we had time to burn off some of that nervous energy at the Rock Wall, which no doubt contributed to her "killing" us all no less than four times in botched landing attempts (as the Commander it's her responsibility to land that bird!). Climbing the MARS Rock Wall out in the museum was a singular treat for me – I had never done such a thing in my life. Although it's not high up and the footholds are not too strangely spaced, I'd never even attempted such a thing before, although Lisa had. But unlike Lisa, not only did I reach the top but also hit the bottom on my feet! (Lisa always seems to land on her back – or so she says!) It's a good thing we got in this practice too because tomorrow's Area 51 "High Ropes" experience at Aviation Challenge is supposed to be something similar...

Meanwhile, though, I was really looking forward to stepping inside Atlantis. I never got the opportunity to see inside of Columbia during my 1989 Space Camp experience because only those with cockpit assignments got to go in there, but I did at least get to see (and Command) Discovery during my 1991 Space Academy experience, missing out on Atlantis by just a smidgen. Adult Space Academy trainees don't get to use Atlantis, unfortunately; we were stuck with Endeavour instead. So I was about due, don't you think?

I also understand my obsession with Atlantis might seem a bit unhealthy, but like coming to Space Camp, my affiliation (and thus affection for it) stems from the movie.

Atlantis is the shuttle the crew was launched into space with, and therefore became the backdrop for many personal adventures. The Atlantis flight deck was also the one used to film those scenes from the movie in to begin with so hopefully you can understand how getting a chance to not only see inside the simulator but actually buckling into the Pilot's seat was a singular thrill for me.

And it lived up to the hype.

Atlantis is (or was) one of Camp's most complete Space Shuttle simulators. Today some of its electronics has been pilfered for other Shuttle simulators as Camp has expanded but that's no bother, it's still like getting into the real thing (almost). You enter the simulator from the outside through a real-looking hatch mechanism (the same hatch as you'd find on the Space Shuttle itself), which then places you right on the Shuttle's Mid-Deck. Here you'll find a row of three seats and a number of lockers recessed into the simulator's wall, which house all the equipment and materials the crew will need to survive the duration of their flight, perform the experiments they're tasked with, and so on. Challenger Team members Vincent Vazzo and Chris ("ApolloXI") Kauppi were stationed here.

To reach the Flight Deck one has to climb a ladder and press through another hatch in the Mid-Deck's ceiling, just like the real thing – but watch your head! Diane ("Conan") O'Keefe, Laura ("Monkeynaut") Boyle, Lisa ("Pilotgirl") and Ricky ("Richasi" – that's me) Russo were then here, part of the action. As soon as we stepped foot into the bowls of Atlantis we took our positions: Lisa took the forward left seat as COMMANDER, I took the forward right seat as PILOT, and Diane and Laura took the seats behind us as MISSION SPECIALIST ONE and TWO respectively. Once settled we began working through our pre-flight checklists to prepare ATLANTIS for its upcoming launch; the problems began almost immediately.

Over in Mission Control Ben ("Benji", er I mean "E-Stop") Schwarts, Vicki Pohl, Frank Scalia and others were having a tough time communicating with us in the Shuttle. "They're not really good with this communication thing," remarked Ben as soon as we got everyone on Channel A from B. "We may have to re-think this whole relationship!" After getting everyone on the right com channel and performing our pre-flight checks (APU checks, cabin leak checks, caution and warnings, and O2 pressurization), I announced "Atlantis is ready," which meant we were prepared for lift-off.

Then time accelerated.

Most missions flown at Space Camp get plenty of time to set-up and follow-through on all countdown specs, checklists and features. Because our Alumni Camp missions were pressed for time, we couldn't run a full-fledged mission as originally timed. Time was sped up for us, which opened up a number of oddities during flight: first and foremost, the mission clock and our checklists were never in synch and too many things begin to happen at once. For example: while Mission Specialist 1 and 2 prepare to go outside to perform their EVA, the Commander and I are tasked with launching a satellite – AT THE SAME TIME. This, of course, caused so much confusion on the Flight Deck (and in Mission Control) who knew if the satellite deployed or not? (But I can say that we DID perform the right steps to execute the launch so you can't blame the crew!)

Other oddities also crept up because of time acceleration, such as shooting off an OMS burn whilst the crew was still outside performing the EVA and preparing the shuttle to make a landing! There were some very confusing and out-of-synch calls made to and from the Shuttle that just had Lisa and I (not to mention those down in Mission Control) stymied, but we worked through the frustrations. And, of course, we ran into system malfunctions and anomalies. One such occurred during the melee of getting the EVA crew back into the shuttle and closing the Cargo Bay Doors: one of our GPC's was failing.

There are five identical General-Purpose Computers (GPCs) controlling the systems aboard the orbiter. Each GPC is composed of two separate units, a central processor unit and an input/output processor. When one fails to execute a command or becomes caught in a loop a Master Alarm sounds (a rather loud one at that), which sets us in the Orbiter and those in Mission Control off to find a quick solution. But at first the solution called up was rather bizarre: "On Panel C6, set affected GPC mode to ALT then RUN" but which GPC was the one affected? Mission Control didn't seem to know.

First I tried cycling GPC4 at their insistence but that didn't clear the alarm. Then we tried cycling GPC3 with no joy. Next we cycled both, placing GPC3 to ALT and GPC4 to RUN but that didn't work either. Eventually we set both to ALT and the light cleared. Chris and Vince joined us on the Flight Deck during this time telling us of their woes as Lisa and I waited for Mission Control to get their acts together: seems there were little in the way of experiments flown on our flight due to a distinct lack of supplies! They did scrounge through the various simulators and station modules for the chemicals needed to make their experimental slime (doing something with their time) but otherwise their part of the mission turned into a bust. Meanwhile, our EVA crew came back aboard after completing their task (constructing some apparatus out in the cargo bay; at least they seemed to have some fun), crowding the Flight Deck with six bodies and adding a second layer of confusion to the scene. And then...

"Atlantis, Houston. What is the status on the Cargo Bay Doors?"

Houston had been attempting to get us to close the Cargo Bay Doors for quite some time as the clocks were quickly suggesting this mission was coming to an end. We tried to get them closed, but, they wouldn't budge. Then our EVA crew came in (why would we close them and leave them out there?) and they made an attempt. No joy again. Evidently both the Commander and Mission Specialists were attempting to do the same thing, overwhelming the computers (which may have led to our unexpected GPC problem) resulting in none of their commands being executed. As soon as we could get everyone from punching in commands, the Commander attempted ITEM 17 EXEC, which should force the doors closed, but it didn't work. "They're not closed, but we're not going to worry about it anyway," called up Mission Control then – the simulation had to go on.

Landing the Shuttle fell to Lisa who, as I'd stated earlier, crashed us at least five times during her practice runs. She took to the controls a little better this time but still having a tough time keeping command of things.

A call up from Mission Control during this moment really cracked us up – “Atlantis, wind status nominal” – which resulted in a response from me: “Thank you Capcom, roger that”. But with the cargo bay doors open throughout the landing process there was little in the way of NOMINAL about it all! And when the AC BUS system threw up a warning light there was little to do but hang on. A sentiment echoed by Ben in Mission Control: “Flight, that’s currently the least of our problems!”

If there was any cause to complain about the mission experience it would be this: at an hour or so the mission was just too short. Most of the time it was a switch-flipping fest, rushing time from one check-list to the next, which seemed to sour the mood for some. Me, I was having a ball in the Pilot’s chair rattling off Tish’s lines from SpaceCamp: The Movie – “Whoa, is that India we’re coming up on?” or Kevin’s “Whoaaah, no survivors!” – to really care too much.

Following our mission and its subsequent follow-up briefing we were dismissed for the day, and thankfully so. We were all ready for an ATO!

* * *

With our day now complete it’s about time to turn in. It’s well after 1:00am and I’m pooped. I haven’t felt this tired since the day after I returned from Japan in 2004 and there’s still plenty of more action here to go. Besides the Area-51 “High Ropes” course routine at Aviation Challenge we’re also going to be spending most of the afternoon there doing fighter-pilot ops (which should prove interesting) and then meet and dine with Hoot Gibson, Shuttle astronaut extraordinaire.

There was talk following our mission tonight of trying to get Camp to assign a second mission to us – a joint mission between the Columbia and Challenger teams - because it was just so darn fun. Most Camps have two missions lasting two hours or more; however, they only assigned one, one-hour mission to us Alumni. That’s not pleased anyone really but with the schedule so full (and mixed with Aviation Challenge stuff, also not pleasing everyone); some more influential Alumni are attempting to get a second mission added. Will they succeed? We’ll have to wait and find out tomorrow.

If they do it will probably be another late-late night.

I knew I should have left Otters earlier... but who can pass up pizza with the gang? But I digress...

So goodnight Campers!

Day Three – INFILTRATING AREA 51
SATURDAY | JUNE 16, 2007

Chalumbia, ATO! *Aye, sir!*

Phew... it's a little late here by Space Camp standards, but we're finally in our bunks ready to turn the page on this long, though rewarding, day.

As you can imagine we "Aborted to Otters" again; it was a hoot, quite literally. Besides having a couple of brown ale's (and watching Lisa get drunk off of her Bud Lights), Hoot Gibson joined the party all hell broke loose. It's now 2:00am and we just got in, can you believe it? But what do you expect us to do with it being our last night at Camp and all? There was plenty to celebrate!

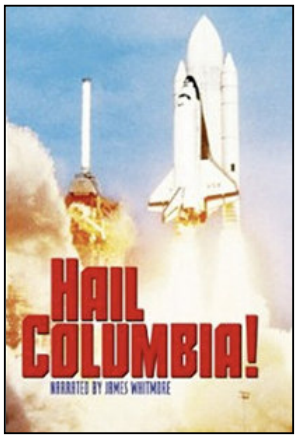
Last night I mentioned there was talk of trying to get Camp to assign another mission in addition to the two each alumni team ran yesterday. This new mission, envisioned as a joint operation between the Columbia and Challenger teams (therefore a longer, more robust mission), was asked for because... well... flying the first one was so darn fun! Most youth and adult Camps alike have two missions lasting two hours or more; however, they only assigned one, two-hour mission to us Alumni. That didn't please anyone really but with a schedule so full what could be done? Some influential Alumni had attempted to convince the counselors to come up with and run a second operation but all we heard back was "we'll try."

It took most of the day for us to hear back but as we huddled around the picnic tables at AC today the word was given: Chalumbia would fly! And what a fun time too! To celebrate our victorious day our second mission's Commander had one last order to give: *Chalumbia, ATO*! And Otters is where we've all just come – myself, Vincent, and Chris (who decided to move in to our room for the night). But what about Ben, my other roommate, you might ask? He's the reason we're still up, see – he disappeared into the night with "Princess" Leah and we're not entirely sure if he's coming back, so we're waiting up for a few minutes to see if he returns.

While we're waiting I'll give you a run-down on today's activities.

And what a day it has been. Besides the Area-51 "High Ropes" course routine over at Aviation Challenge we did today (that I spoke about last night), we also spent most of the afternoon doing fighter-pilot ops (which wasn't all that exciting for me, but I'll get into that in a little bit), met and dined with Hoot Gibson, Shuttle astronaut extraordinaire (cool dude!). But first we'd have to wake up, have breakfast, and work through the rest of our schedule, which started down in the SpaceDome Theater for "Hail Columbia!" one of the first IMAX films about the Space Shuttle.

HAIL, COLUMBIA! ///



Board the mighty shuttle Columbia for its maiden voyage. Experience one of humankind's crowning achievements: the inaugural voyage of the world's first space shuttle. Hail Columbia! goes behind the scenes with astronauts John Young and Robert Crippen as they prepare for their historic launch. Feel the thunderous liftoff and our heroes' awe as Columbia achieves orbit for the first time. Join the celebration as the shuttle triumphantly touches down, mission accomplished.

The first launch of the Space Shuttle occurred on 12 April 1981, exactly 20 years after the first manned space flight, when the orbiter Columbia, with two crew members, astronauts John W. Young, commander, and Robert L. Crippen, pilot, lifted off from Pad A, Launch Complex 39, at the Kennedy Space Center. This was the first of 24 launches from Pad A. The launch took place at precisely 7 a.m. EST. A launch attempt two days earlier was scrubbed because of a timing problem in one of Columbia's general-purpose computers.

Not only was this the first launch of the Space Shuttle, but it marked the first time that solid-fuel rockets were used for a NASA manned launch (although all of the Mercury and Apollo astronauts had relied on a solid-fuel motor in their escape towers.) STS-1 was also the first U.S. manned space vehicle launched without an unmanned powered test flight. The STS-1 orbiter, Columbia, also holds the record for the amount of time spent in the Orbiter Processing Facility (OPF) before launch – 610 days, the time needed for the replacement of many of its heat shield tiles.

The primary mission objectives of the maiden flight were to perform a general check out of the Space Shuttle system, accomplish a safe ascent into orbit and to return to Earth for a safe landing. The only payload carried on the mission was a Development Flight Instrumentation (DFI) package, which contained sensors and measuring devices to record the orbiter's performance and the stresses that occurred during launch, ascent, orbital flight, descent and landing. All of these objectives were met successfully, and the orbiter's space-worthiness was verified.

During flight day 2, the astronauts received a phone call from Vice President George H. W. Bush. President Ronald Reagan originally intended to visit the Mission Control Center during the mission, but at the time was still recovering from an assassination attempt which had taken place two weeks before the launch. Columbia reached an orbital altitude of 166 nautical miles (307 km). The 37-orbit, 1,074,567-mile (1,729,348 km)-long flight lasted 2 days, 6 hours, 20 minutes and 53 seconds. Landing occurred on Runway 23 at Edwards Air Force Base, California, at 10:21 am PST, 14 April 1981. Columbia was returned to Kennedy Space Center from California on 28 April atop the Shuttle Carrier Aircraft.

And it was all captured in glorious IMAX.

STS-1 was the first test flight of what was at the time the most complex spacecraft ever built. There were numerous problems – 'anomalies' in NASA parlance – on the flight, as many systems could not be adequately tested on the ground or independently. Some of the most significant are listed below:

- A tile next to the right-hand External Tank (ET) door on the underside of the shuttle was incorrectly installed, leading to excessive re-entry heating and the melting of part of the ET door latch.

- The astronauts' on-orbit visual inspection showed significant damage to the thermal protection tiles on the OMS/RCS pods at the orbiter's aft end.

- John Young reported that two tiles on the nose looked like someone had taken 'big bites out of them'. Post-flight inspection of Columbia's heat shield revealed that an overpressure wave from the Solid Rocket Booster (SRB)'s ignition had resulted in the loss of 16 tiles and damage to 148 others.

- The same overpressure wave pushed the body flap below the main engines at the rear of the shuttle well past the point where damage to the hydraulic system would be expected, which would have made a safe re-entry impossible. The crew was unaware of this until after the flight. John Young reportedly said that if they had been aware of the potential damage at the time, they would have flown the shuttle up to a safe altitude and ejected, causing Columbia to have been lost on the first flight.

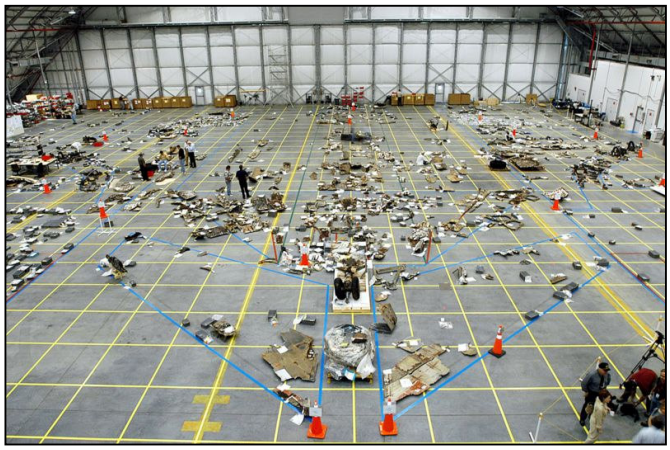
- Bob Crippen reported that, throughout the first stage of the launch up to SRB separation, he saw 'white stuff' coming off the External Tank and splattering the windows, which was probably the white paint covering the ET's thermal foam.

- Columbia's aerodynamics at high Mach numbers were found to differ significantly in some respects from those estimated in pre-flight testing. A mis-prediction of the location of the center of pressure (due to using an ideal gas model instead of a real gas model) caused the computer to extend the body flap by sixteen degrees rather than the expected eight or nine, and side-slip during the first bank reversal maneuver was twice as high as predicted.

Despite these problems, STS-1 was a successful test, and in most respects Columbia came through with flying colors. After some modifications to the shuttle and to the launch and re-entry procedures, Columbia would fly the next four Shuttle missions. Although Columbia would have a prestigious career through the years, it would unfortunately meat the same fate as its sister ship – Challenger – although many years later: it too would be lost to a disaster. The incident occurred about 0900 EST on February 1, 2003, shortly before it was scheduled to conclude its 28th mission, STS-107, by touching down at the Shuttle Landing Facility at Kennedy Space Center.

The Space Shuttle disintegrated over Texas and Louisiana during re-entry into the Earth's atmosphere, resulting in the death of all seven crewmembers.

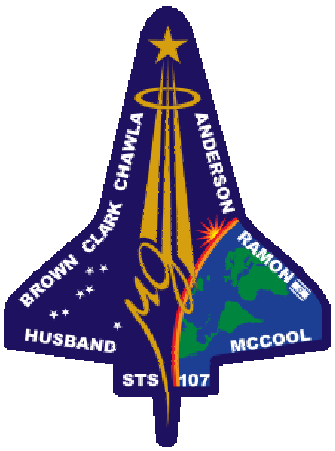
The loss of Columbia was a result of damage sustained during launch when a piece of foam insulation the size of a small briefcase broke off from the external tank under the aerodynamic forces of launch. The debris struck the leading edge of the left wing, damaging the Shuttle's thermal protection system (TPS), which shields it from the intense heat generated from atmospheric compression during re-entry. While Columbia was still in orbit, some engineers suspected damage, but NASA managers limited the investigation, on the grounds that little could be done even if problems were found.



NASA's original shuttle design specifications stated that the external tank was not to shed foam or other debris; as such, strikes upon the shuttle itself were safety issues that needed to be resolved before a launch was cleared. Launches were often given the go-ahead as engineers came to see the foam shedding and debris strikes as inevitable and un-resolvable, with the rationale that they were either not a threat to safety, or an acceptable risk. The majority of shuttle launches recorded such foam strikes and thermal tile scarring. On STS-112, two launches before, a chunk of foam broke away from the ET bipod ramp and hit the SRB-ET Attach Ring near the bottom of the left solid rocket booster (SRB) causing a dent four inches wide and three inches deep in it. After that mission, the situation was analyzed and NASA decided to press ahead under the justification that "The ET is safe to fly with no new concerns (and no added risk)" of further foam strikes, justification that was revisited while Columbia was still in orbit and Chair of the Mission Management Team (MMT) Linda Ham re-assessed, stating that the “Rationale was lousy then and still is”. Ham as well as Shuttle Program Manager Ron Dittemore had both been present at the October 31, 2002 meeting where this decision to continue with launches was made.

During re-entry of STS-107, the damaged area allowed hot gases to penetrate and destroy the internal wing structure, rapidly causing the in-flight breakup of the vehicle. An extensive ground search in parts of Texas, Louisiana, and Arkansas recovered crew remains and many vehicle fragments.

Mission STS-107 was the 113th Space Shuttle launch. It was delayed 18 times over the two years from its planned launch date of January 11, 2001, to its actual launch date of January 16, 2003. (It was preceded by STS-113.) A launch delay due to cracks in the shuttle's propellant distribution system occurred one month before a July 19, 2002 launch date. The Columbia Accident Investigation Board (CAIB) determined that this delay had nothing to do with the catastrophic failure six months later.



The Columbia Accident Investigation Board's recommendations addressed both technical and organizational issues. Space Shuttle flight operations were delayed for over two years, similar to the delay following the Challenger accident. Construction of the International Space Station was put on hold, and for 29 months the station relied entirely on the Russian Federal Space Agency for resupply until Shuttle flights resumed with STS-114 and 41 months for crew rotation until STS-121. Major changes to shuttle operations, after missions resumed, included a thorough on-orbit inspection to determine how well the shuttle's thermal protection system had endured the ascent, and keeping a designated rescue mission at the ready in case irreparable damage was found. Also it had been decided that all missions would be flown only to the ISS so that the crew could use that spacecraft as a "safe haven" if need be. Later NASA decided it would be an acceptable risk to make one exception to that policy for one final mission to repair Hubble in its high-altitude low-inclination orbit.

The nearly 84,000 pieces of collected debris of the vessel are stored in a 16th floor office suite in the Vehicle Assembly Building at the Kennedy Space Center. The collection was opened to the media once and has since been open only to researchers. As tragic as the incident was, and as much as we all relent the upcoming cancellation of the Shuttle program (for Constellation), it was good to see Columbia flying again, even if it was in the movies.

BELAY ON? ON BELAY! ///

Belaying refers to a variety of techniques used in climbing to exert friction on a climbing rope so that a falling climber does not fall very far. A climbing partner typically applies the friction at the other end of the rope whenever the climber is not moving, removing the friction from the rope whenever the climber needs more rope in order to be able to continue climbing.

Over at Aviation Challenge's Area 51 Ropes course today, we did a lot of belaying... and climbing! This part of Alumni Camp would test our abilities to work together as a team in ways we never would have imagined. Our mission: climb straight up a 42-foot tall wood wall (with strategically placed foot holds about – much like a rock climbing wall) tied to two or three of your teammates, while other teammates belayed. The goal: reach the top together and then slide down a zip line to freedom. The catch: with the rope between you so short there could be no stragglers; everyone had to ascend at or about the same pace! Before we could get started, though, we were instructed on the use of the safety equipment, the ropes and harnesses, and, of course, on the techniques in allowing climbers to repel safely (all of which I knew nothing about).

First, you have to learn how to communicate: "On belay" is the first climbing command used by a climbing team at the base of a route as well as at both the beginning and end of a pitch higher up the cliff. "On Belay" means the Belayer is READY. The belayer, who is probably standing next to you at the base of your route's first pitch, lets you know that he is on belay and that it is safe for you to climb by saying, "On belay." This means that the belayer has uncoiled the rope at the cliff base; tied himself to an anchor like a tree or cams; and has the rope, which is tied to you with a figure-eight follow-through knot, threaded through his belay device.

Then you have to learn how to use the ropes: in a typical climbing situation, one end of the rope is fixed to the harness of the climber, using either a figure of eight loop, or a bowline or double bowline knot. The rope then passes through climbing protection, which is fixed into the rock. This may be bolts which are permanently fixed into the rock, or it may be traditional protection, which is placed by the climber and then later removed without altering the rock. The rope runs through the protection to a second person called the belayer. The belayer wears a harness to which a belay device is attached. The rope threads through the belay device and by altering the position of the end of the rope, the belayer can vary the amount of friction, which is applied to the rope. In one position the rope will run freely through the belay device and in another it can easily be held without moving because the amount of friction on the rope is so great. This is known as 'locking off' the rope.

If the climber climbs three feet higher than the last piece of protection in the rock, and then falls, their rope will allow them to fall the three feet to the protection, and another three feet below that. If they fall any further, rope will be pulled upwards through the protection from the belayer below. Because the belayer generally keeps the rope locked off, the climber's fall should be arrested and they are left suspended, but safe, somewhere below the protection.

A dynamic rope, which has some stretch in it, is used so that the climber is not brought to a sudden jarring stop, which could cause severe injury. As the climber continues his ascent, he clips his rope into higher and higher metal loops fixed into the rock, so that in the event of a fall he will not fall further than the "unclipped" length of rope will allow. While the task of belaying is typically assigned to a companion who stays at the bottom, self-belaying is also possible as an advanced technical climbing technique.

The belayer should keep the rope locked off in the belay device whenever the climber is not moving. As the climber moves on the climb, the belayer must make sure that the climber has the right amount of rope by paying out or pulling in excess rope. If the climber falls, then they will free-fall the distance of the slack or unprotected rope before friction applied by the belayer will start to slow their descent. Too much slack on the rope will increase the distance, which may be fallen, but too little slack on the rope may prevent the climber from being able to continue to move up the rock. It is extremely important for the belayer to concentrate on the climber's situation, as their role is crucial for the climber's safety.

When belaying on overhanging bolted routes, particularly indoors belayers often stand well back from the rock so that they can watch the climber more easily. However, when belaying a lead climber who is using traditional protection, this can be very dangerous. The belayer should stand near to the bottom of the route in order to decrease the angle of the rope through the first piece of protection. This in turn will decrease the force pulling it up and out of the rock if the leader should fall. Standing too far away from the rock can result in protection unzipping, with the lowest piece being pulled away from the rock, followed by the next, until all of the protection may potentially be pulled out. Standing too far away from the bottom of the climb will also mean that if the leader falls, the belayer will experience a sudden pull inwards towards the rock and may be pulled off their feet or into the rock.

All of this sounds easy, of course, and for the most part it was, but it takes a lot of concentration too. One snag and the entire system collapses - meaning, in the parlance of fighter jocks, it gets FUBAR, and FUBAR is not where you want to be. In order to reduce the chances of FUBAR occurring, three cadets were required for the belay – Lisa, Nathan and I (taking up the rear) formed one belay team. Thankfully I did my job as belayer admirably, performing not once but multiple times as I watched my teammates ascend the wall (well, those who wanted to do so). For those who didn't there was a ladder on the other side of the wall to climb, but, who wanted to take the sissy way out? Besides, Lisa and I, who had hung back to the very end, weren't even sure we *could* get up there – climbing the MARS Wall in the museum was one thing, climbing this 42-foot monstrosity was an entirely different animal. But climb it we did.

Getting ready for it was interesting, too. As we suited up in the harness, we were expected to call out the closure of each of our locks as the counselor checked them. “Lock 1; LOCK 1, Lock 2; LOCK 2!” and so on and so forth. Chris Kauppi, Nathan Wilson, and Bill Naivar were my belayers and as others had called down to me, I called down to them – “Belay on? ON BELAY!” and soon Lisa and I were on our way up. Yes, it took conceited effort between the two of us to keep hold of our divots and pull ourselves up, to keep working together as a team and stopping with one or the other needed a moment to rest, or to wait while one or the other got proper footing. Though it took some time for us to get up the wall – we did it! It was something I never thought I could possibly do, but I did it.

Problem was then - standing 40-plus feet in the air - the only way down was the unit’s zip line, which stretched outward longer than a football field (380 feet to be exact) until it touched close to the ground far off in the distance. And, naturally, there were little in the way of safety bars atop the contraption to hold on to while you maneuvered yourself from the wall to the line. And with arms and legs little more than jelly... talk about a hairy situation!

Lisa, who considered herself pretty fearless, wanted to zip down first, so I watched with caution as she suited up, dangled her feet over the ledge, and froze.

One of the things the counselors don’t tell you before you get up there is this: you have to let yourself fall forward and catch on the line – it’s not a gentle glide down! So there Lisa sat, on the edge of the structure, feet dangling and arms crossed across her chest, ready to hold on with all her might.

All she had to do was pitch forward and allow momentum to take her the rest of the way – after that you're on your way. But it's not so easy! It took her a moment to reflect on what she was about to attempt, and then muster up the courage to allow her body to free-fall – even for just a moment – before settling into the zip-line's path. But she did it... which only meant it was my turn to battle those demons.

As I sat there suited up and with my own feet dangling over the ledge, I wondered... could I chicken out and find some way to climb down the ladder ("Giant's Ladder")? Could I even repel down the side of the wall as one other had done who got up there but couldn't take the plunge to come down? Nah, what fun would that be? So I tipped myself forward and threw caution to the wind. I knew the pulleys and various machinations of the security system would catch me and keep me from plunging fifty-feet to my death, but that didn't mean the thought didn't cross my mind as I leapt from the safety of my perch.

It's such a surreal feeling of helplessness coupled with a bizarre touch of elation as your body begins to feel and react to the powerful bonds of gravity the moment you leave the confines of the perch. But the moment you hear the click of the pulley and its safety wire (which means it has caught you) and the scrape of the ball bearings as they turn about allowing you to fall down the line is nothing short of special. Of course that whooping and hollering you hear is fun too – it's yours! And once I got over the initial apprehension of free-falling without knowing whether or not I would be caught, I couldn't help but ham it up a little... who doesn't like assuming the role of Superman while gliding through the air?

After zipping back and forth at the bottom of the wire system for a few moments, Jeramy maneuvered a metal stepladder underneath me (similar to those used to board smallish aircraft from the tarmac), which allowed me to get my footing, as it were. Once on the ground, the safety line came off and I was free to go – elated but very much drained!

Once we all had a turn at the wall and the zip-line, we participated in re-organizing the space, making sure we collected all the equipment we'd used (and made sure it was all still in good working order). Once done, we assembled on nearby picnic benches to discuss the activity, the days that had already progressed and those left to come. Most of us were pretty darn tired by that point – myself included – to really take part in the discussion, but we were all pretty happy with Alumni Camp thus far, I know I am, and we're all looking for further adventures in the afternoon: especially the second mission, which the counselors told us about whilst huddled around.




That news brought out a few good, but tired, cheers for sure! We broke for showers and lunch then (a quick turn-around), returning to AC for four hours of fighter pilot training after. This activity, unfortunately, turned into a long and boring waiting game for me as I didn't have the fore-knowledge to use these particular simulators and the instruction for doing so left me wanting – it was not nearly enough for either myself or my friend-in-arms Lisa (what, a thirty minute briefing on what the buttons do on the throttle assembly but on nothing else?). Most of the Training Briefing went over our heads (I recall there being two scenarios: fighters leaving from an aircraft carrier and launching from a landing strip); once we got into the cockpit simulators – which are just as interesting as the Shuttle ones; you sit in what appears to be an actual cockpit (with switches to pull, press and flip), there's an actual plexi-glass canopy to lower, and flight is simulated via projections on a screen: very much like an up-scaled version of Microsoft Flight Simulator - there was little for us to do.

So for the first half of the simulation – we were tapped to fly two Ops – Lisa and I joked around through the headsets, re-enacting such flying favorites as Iron Eagle, True Lies and Top Gun (“Talk to me Goose!”) getting shot out of the sky, while the rest of the cadets actually flew their missions. What else could we do? Once the second Op came up I climbed out of the cockpit and sat it out; Lisa drafted a different spotter to fly with and the hilarity continued between them. Although others were definitely having fun with this part of the Aviation Challenge experience (Ben took his plane into orbit, no really!) I was grateful for it to end. It’s been the lowest part of Alumni Camp for me thus far.

DINE WITH AN ASTRONAUT! ///

We returned to the Space & Rocket Center with about an hour to prepare for our next activity, one the majority of us were really looking forward to today: a very special meeting with Robert L. “Hoot” Gibson, another fantastic Shuttle astronaut and friend to Space Camp. This meet-and-greet would be drastically different from those we’d met with earlier in the week; our meeting with “Hoot” would take place over a fantastically catered dinner for just us Alumni!

Let me tell you a little about “Hoot”:

Robert Lee "Hoot" Gibson (born October 30, 1946) is a retired Captain and Naval Aviator in the United States Navy and a retired NASA astronaut. Born in Cooperstown, New York, but considered the Lakewood area of east Long Beach, California, to be his hometown. Married to fellow astronaut Dr. M. Rhea Seddon of Murfreesboro, Tennessee, and had four children. He enjoyed home built aircraft, Formula One Air Racing, Unlimited Class Air Racing, running and surfing during his free time. His mother, Mrs. Paul A. Gibson, resides in Seal Beach, California. Gibson's late father, an FAA Inspector, built his own private plane in the garage of their home in Long Beach with help from his family. Family includes brothers, Jon, Don and Richard and a sister Kathy. Gibson graduated from Huntington High School, Huntington, New York as a part of the class of 1964, and went on to earn an associate degree in engineering science from Suffolk County Community College in 1966. He received a Bachelor of Science degree in aeronautical engineering from California Polytechnic State University in 1969.

Gibson entered active duty with the Navy in 1969. He received basic and primary flight training at Naval Air Station Pensacola and Naval Air Station Saufley Field, Florida, and Naval Air Station Meridian, Mississippi. He completed advanced flight training at Naval Air Station Kingsville, Texas and was assigned to Fighter Squadron 121 (VF-121) at Naval Air Station Miramar, California for replacement training in the F-4 Phantom II. While assigned to Fighter Squadron 111 (VF-111) and Fighter Squadron 1 (VF-1) from April 1972 to September 1975, he saw duty aboard the USS Coral Sea (CVA-43) and the USS Enterprise (CVN-65), flying combat missions in Southeast Asia in the F-4 with VF-111 and making the initial operational carrier deployment of the F-14 Tomcat with VF-1. He is a graduate of the Navy Fighter Weapons School, also known as "TOPGUN."

Gibson returned to the United States and an assignment as an F-14A instructor pilot with Fighter Squadron 124 (VF-124) at Naval Air Station Miramar, California. He graduated from the U.S. Naval Test Pilot School at Naval Air Station Patuxent River, Maryland in June 1977 and later became involved in the test and evaluation of improvements to the F-14A aircraft while assigned to the Naval Air Test Center's Strike Aircraft Test Directorate. Selected as a NASA astronaut, he continued to be promoted, eventually achieving the rank of Captain in the U.S. Navy and the rank at which he retired from active naval service.

His flight experience included over 6,000 hours in over 50 types of civil and military aircraft. He held an airline transport pilot license, which expired in 2006, but is still current in these a multi-engine, and instrument rating. He has held a private pilot rating since age 17. Gibson has also completed over 300 carrier landings.

Selected by NASA in January 1978, Gibson became an astronaut in August 1979. Gibson flew five missions: STS-41-B in 1984, STS-61-C in 1986, STS-27 in 1988, STS-47 in 1992, and STS-71 in 1995. Gibson served as Chief of the Astronaut Office (December 1992 to September 1994) and as Deputy Director, Flight Crew Operations (March–November 1996). On his first space flight Gibson was the pilot on the crew of STS 41-B, which launched from the Kennedy Space Center, Florida, on February 3, 1984. The flight accomplished the proper Shuttle deployment of two Hughes 376 communications satellites, which failed to reach desired geosynchronous orbits due to upper stage rocket failures. Rendezvous sensors and computer programs were flight tested for the first time.

The STS 41-B mission marked the first checkout of the Manned Maneuvering Unit (MMU), and Manipulator Foot Restraint (MFR), with Bruce McCandless II and Bob Stewart performing two spectacular EVAs (space walks). The German Shuttle Pallet Satellite (SPAS), Remote Manipulator System (RMS), six "Getaway Specials," and materials processing experiments were included on the mission. The eight-day orbital flight of Challenger culminated in the first landing on the runway at the Kennedy Space Center on February 11, 1984, and Gibson logged 191 hours in space. [*The famous photo showing McCandless (above-right) using the MMU was taken by Gibson. He later remarked imagining about the caption being "NASA Photo by Hooter" STS-41-B in 1984.*]

Gibson was the commander of the STS-61-C mission. The seven-man crew on board the Orbiter Columbia launched from the Kennedy Space Center, Florida, on January 12, 1986. During the six-day flight the crew deployed the SATCOM KU satellite and conducted experiments in astrophysics and materials processing. The mission concluded with a successful night landing at Edwards Air Force Base, California, on January 18, 1986, and logged him an additional 146 hours in space.

Gibson subsequently participated in the investigation of the Space Shuttle Challenger accident, and also participated in the redesign and recertification of the solid rocket boosters.

As the commander of STS-27, Gibson and his five-man crew launched from the Kennedy Space Center, Florida, on December 2, 1988, aboard the Orbiter Atlantis. The mission carried a Department of Defense payload, and a number of secondary payloads. After 68 orbits of the Earth the mission concluded with a dry lakebed landing on Runway 17 at Edwards Air Force Base, California, on December 6, 1988. Mission duration was 105 hours.

On Gibson's fourth space flight, the fiftieth Space Shuttle mission, he served as commander of STS-47, Spacelab-J, which launched on September 12, 1992 aboard the Orbiter Endeavour. The mission was a cooperative venture between the United States and Japan, and included the first Japanese astronaut and the first African-American woman, Mae Jemison, in the crew. During the eight-day flight, the crew focused on life science and materials processing experiments in over forty investigations in the Spacelab laboratory, as well as scientific and engineering tests performed aboard the Orbiter Endeavour. The mission ended with a successful landing on the runway at the Kennedy Space Center in Florida after 126 orbits of the Earth on September 20, 1992.

On his last flight, (June 27 to July 7, 1995), Gibson commanded a crew of seven-members (up) and eight-members (down) on Space Shuttle mission STS-71. This was the first Space Shuttle mission to dock with the Russian Space Station Mir, and involved an exchange of crews. The Atlantis Space Shuttle was modified to carry a docking system compatible with the Russian Mir Space Station. It also carried a Spacelab module in the payload bay in which the crew performed various life sciences experiments and data collections. Mission duration was 235 hours, 23 minutes.

In five space flights, Gibson completed a total of 36.5 days in space. Gibson left NASA in November 1996 and became a pilot for Southwest Airlines. In 2006, as reported by NASA Watch, Gibson was forced to retire as mandated by the Federal Aviation Administration for commercial airline pilots. Gibson has publicly spoken out against federal regulations, which require airline pilots to retire at age 60. In December 2006, he joined the Benson Space Company as Chief Operating Officer and Chief Test Pilot. Gibson has flown 111 different aircraft types, and is scheduled to compete at the 2007 Reno Air Races.

He's one hell of a guy.

It was a privilege and an honor to meet him and listen to his stories.

It was equally hilarious to trick Jason out of his cheesecake dessert, which I accomplished by pulling the oldest routine in the book: “Look! What’s going on over there?” As soon as he turned his head I grabbed his cheesecake and he never knew it had gone missing. He didn’t get it, even after a number of protests to what I could have been referring to were brushed aside. Although I kept a straight face, it took all Lisa and I had to contain ourselves until eventually we just had to tell him!

* * *

With full bellies and aching cheeks (from listening to the wild and mostly hilarious stories that “Hoot” regaled us with), both Alumni teams assembled just outside the Training Center Floor to begin the second – unplanned – mission... Ahh, but that’s going to have to wait until tomorrow. “E-Stop” hasn’t returned, it’s 3:00am and we’re all beyond a little tired now so it looks as if we’re off to bed.

Tomorrow we’ll have some free time in the museum, have another classic IMAX film to see (“The Dream is Alive”) and, of course, graduation!

Belay off!

Day Four – EARNING OUR WINGS
SUNDAY | JUNE 17, 2007

Chalumbia, Houston –- Begin de-orbit burn.

I've had an amazing four days here at Alumni Space Camp, but it has now come to its natural conclusion. The experience actually concluded some time ago, but I've only just now had the opportunity to commit the words of the final day to text. Besides, Lisa accompanied me to the airport – her flight left out of the gate next to mine – so we've been re-living our memories of the experience since we left the Space & Rocket Center this afternoon... but I'm getting ahead of myself here.

Currently I'm airborne aboard a Delta flight direct to Orlando, settled into this rather short haul, but no less sad about leaving Huntsville and Space Camp behind. I've had an amazing time down there at Camp – more fun than I can remember having at Space Camp before. Sure, there were some times where it was less fun – such as during the dog fighting simulations over at Aviation Challenge on Saturday – but the rest of the offerings more than made up for that. I especially enjoyed the AC stuff more than the space stuff if you can believe that? The High-Ropes Area 51 ordeal was challenging and enjoyable, and though I almost died of exhaustion in the lake (an exaggeration to be sure), running the raft races with my fellow teammates was good fun too.

But that's what it's all about, no?

Before getting into today's activities, and whether or not we ever saw "E-Stop" again, let me finish up last night's events with the Chalumbia mission.

CHALUMBIA FLIES! ///

Last night, and the night before, I mentioned there was talk of trying to get Camp to assign another mission in addition to the two each alumni team ran on Thursday. This new mission, envisioned as a joint operation between the Columbia and Challenger teams (therefore a longer, more robust mission), was asked for because... well... flying the first one was so darn fun! Assigning only one two-hour mission to us didn't sit well with anyone so some influential Alumni were able to convince the counselors to come up with and run a second operation for us, news of which we were given during our High Ropes exercise over at Aviation Challenge's Area 51 course.

To just be heard and awarded a second overall mission was a real treat there's no doubt about that, but the moment I heard Discovery was to be the orbiter assigned to us I couldn't be happier. Some might recall I flew Discovery during my Space Academy youth experience in 1991 - I haven't stepped foot in it since (during Adult Space Academy in 2003 we used Endeavour), doing so for this experience proved to be a lot of fun, and filled with a lot of memories. As soon as I settled in I found the hatch Chip banged against the hull as he entered, where the RMS controls Jeff was supposed launch the satellite with (and failed to do), and, of course, the Commander's chair... where I flew Discovery to the best of my ability. But I wasn't allowed to sit in it.

For this mission Rich Kolker was our Commander, Ben "E-Stop" Schwartz our Pilot, and Mary Lawitzke, as my fellow Mission Specialist and space walker, rounded the crew of Discovery. Yes, even though I would not sit in the Commander's chair this turn – since I was awarded the position of PILOT in our official Camp mission, I would not serve in any real capacity aboard the Shuttle in this one – getting the opportunity to just sit aboard her again was reward enough.

Having been a Mission Specialist in the past I knew that rather than sit at Mission Control and direct traffic, or even sit aboard the Shuttle pressing button after button, I was going to be part of the action – I was there to do something. What? Mary and I were chosen to perform a rather unique EVA on one of the modules of the sprawling space station complex that inhabited the Training Center Floor. Although I would not know how unique that situation would be at the start (and my part of the mission did get off to a rocky start: Rich was a little too serious at the beginning, keeping me from entering the sequence to open the Cargo Bay Doors on the shuttle's keypad), it turned out to be one of the most fun EVA activities I've ever had to perform at Space Camp!

To say I was excited to see how this was going to be done would be an understatement. At the appropriate moment during the mission's elapsed time, Ana and I were instructed to leave the shuttle for the "airlock", to don the orange-colored space suits we'd wear outside in the vacuum of space. That is if we could find our way to them.

Discovery, like the rest of the orbiter simulators, was connected to the station mock-up through a series of tunnels that seemed like they were built and rebuilt over the years so that what existed was a confusing maze-like menagerie one could never hope to escape. Exiting Discovery's airlock, for example, lead to three places: 1) the cargo bay where a SpaceHab module was installed, 2) the space station module generally used for Discovery's simulations, and 3) down a tunnel to the Training Center Floor where the EVA's were performed. As soon as Mary and I were in the airlock we were faced with a bad proposition: the door to the space station was closed and locked, so we couldn't enter and leave through it. And because it wasn't being used, the door to the SpaceHab module was locked, so there was no escape there. That left us one option: crawl on our hands and knees down this rather long (and dark) tunnel to the end where we'd pop out onto the Training Center Floor.

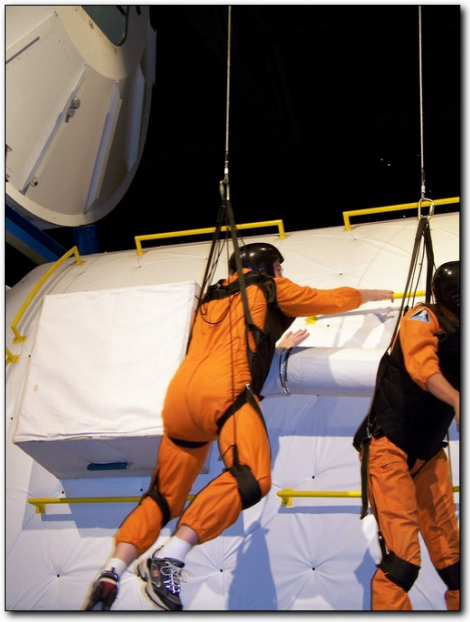
So we crawled.

Wouldn't you know the hatch on the other end was latched too? There was no escaping to perform our EVA! By the time we crawled back down the tunnel to the airlock junction (backwards I might add) the station's door was open, which allowed for us to get out of the darkened tunnel system. Although we weren't supposed to walk through the station and go out its opposite airlock (there's "nothing but space" on the other side), we did so anyway.

We eventually met up with Jeramy – who wondered where we were – and were then instructed where to find our suits and how to put them on. After taking a few moments to find one that would fit me (either I found ones for the kids or really tall adults), we "floated" outside the Shuttle to begin our EVA. Our task was simple enough: install a version of the Canadarm – or Shuttle Remote Manipulator System – to the Space Station for its future use.

The Canadarm is a mechanical arm used on the Space Shuttle to maneuver payload from the cargo bay to its deployment position to be released. It can also be used to grapple satellites in space to be taken back to earth (like LDEF), or brought into the payload bay for repairs (like Solar Max and the Hubble Space Telescope). By the numbers: the Canadarm is 15.2 meters (50 ft 3 in) long and 38 centimeters (15 inches) in diameter and has six degrees of freedom. It weighs 410 kg (905 pounds), and the total system weighs 450 kg (994 lb). The Canadarm has six joints that correspond roughly to the joints of the human arm, with shoulder yaw and pitch joints; an elbow pitch joint; and wrist pitch, yaw, and roll joints. It's been a boon for the Space Shuttle – how else would we have built the Space Station? And it will be more than helpful in the continued operation of the station as construction nears completion.

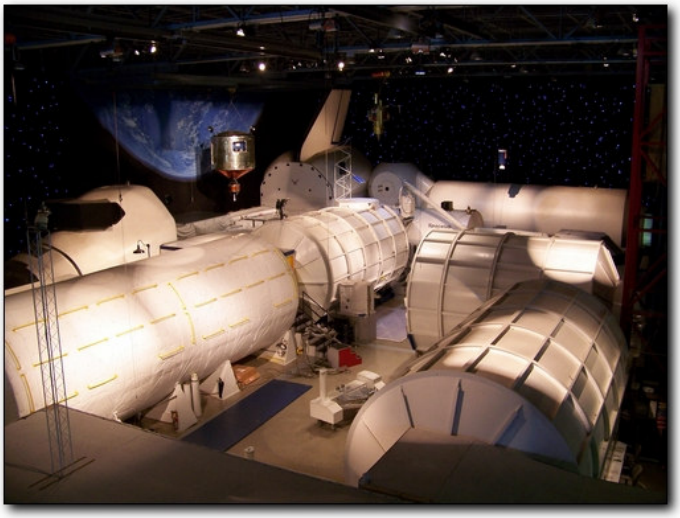
Therefore, our job was to take the six pieces of the arm – three large and three smallish – one by one to the connector unit already in place on station's science module and shimmy them into place. Sounds easy, right? So did the EVA I performed at Space Academy (both youth and adult) where the task is to repair the Hubble Space Telescope while sitting in a 5DF Chair. It was maddening enough trying to keep your chair from floating away while you dangled in it! This exercise though would prove just as harrowing: the arm connector piece was on top of the station module. With Space Camp striving to have their simulations be as real as possible, in order for Mary and I to complete our task we donned harnesses that attached to an overhead telepherique system, which hoisted us above the Training Center Floor and dangled us over the module.



Using the harness and telepherique, our belayers either dropped us to the floor (which simulated the cargo bay, even though we weren't anywhere near Discovery) where we could grab a piece to the Arm, then lifted us into the sky so it could be connected. Each piece was numbered so we knew which to grab first and, more importantly, how to place it. Within a few minutes of floating about, and moving tubes of various sizes into place, our task was complete.

Though harrowing at first the result was just too cool! I loved it but I can't say Mary enjoyed it that much.

Following the EVA we were supposed to report back to Discovery for our simulated ride back to Earth, but with the change-over of personnel – giving everyone a chance to run a position on the shuttle and/or mission control – there was hardly a need to head back in. So I ended up staying out on the Training Center floor with Jeramy, helping put the EVA equipment away and thanking her for the opportunity to do that activity.



Eventually she moved into the main Space Station module complex to check on the activities the other members of Chalumbia were partaking in, so I followed, but that only got me into more trouble. Inside the module we ended up in was a ladder to those modules above us. At Jermay's insistence she urged me to climb the ladder and explore the rest of the station complex on my own, separate from the mission's goings-on, on her authority. So I did; how could I pass that up? At first there was nothing much to see – the complex continued to sprawl out in all directions, tunneling here and there as needed. One moment I was over near Atlantis (its hatch locked), the next I was above the floor in the docking/viewing module, and then over by the far wall where Enterprise used to be (now Columbia), and lastly finding myself in the module where I had performed experiments as a Station Specialist in the 1991 Academy youth program.

But I'd soon step into some trouble.

On the way up to the complex's highest peak – another docking/viewing module - I ran into what appeared to be sleeping quarters. Pushing further in I discovered there was a second module – an entire habitat setup – beyond the first... and it was occupied! It took a moment to comprehend that there were actually people sleeping in the module before I turned around and retraced my steps down as quietly as I could. By the time I'd reached one of the science modules I was met by a counselor (who really didn't pay me much mind), on her way up to check on her people. In the meantime I let myself out of the station complex and returned to the area I'd last seen Jeramy.

"So how was it?" she asked first thing.
"Great, but you almost got me in serious trouble."
"Why?"
"There were girls sleeping up there!"
"Ohmigosh!"

Nothing ever came of the mishap and once the station's activities concluded the two of us retired to Discovery's Mission Control room. Located just beyond the Training Center Floor in a complex of rooms next to the cafeteria, being there was another first for me. I'd never been in one of the Camp's off-training floor mission control rooms. For Camp in 1989, Columbia had its mission control right on the floor, uncovered for all to see and hear (although it later moved to a covered spot just outside the floor years later). For Space Academy in 1991, I was privileged enough not to be assigned to Mission Control for either mission, but those who did called the shots from this very room. And even the missions flown for the Adult Space Academy program in 2003 were done using Endeavour, whose mission control also was on the main training center floor (though covered in glass). So watching the rest of the mission unfold from here was a treat indeed.

Around 11:00pm the mission and its after-flight briefing came to a close. We profusely thanked the counselors for not only allowing us to fly the second mission but in sticking around way passed their scheduled hours to help run the simulation boards. Without them Chalumbia would not have flown, and we would not be nearly as happy. And of course to celebrate our victorious day our second mission's Commander had one last order to give: *Chalumbia, ATO*!

THE DREAM IS ALIVE ///

The majority of our morning was spent gathering our belongings in preparation for leaving Camp later on in the afternoon. Part of our assignment here was, after we'd gotten ourselves presentable, to also take our linens and discard them down in the laundry section of the atrium, a well-marked place on one end of the Habitat where sheets piled up by the ton it seemed. Once that task was completed, we were then asked to bring our luggage down to the atrium and set it against the far wall before we set out on the day's activities. You might ask why, but, it's all very simple: new cadets would be arriving later in the morning and they needed the rooms to be cleaned and your stuff out. All standard procedure here at Camp actually! You get used to it.

Those who got an earlier start had already made their way over to the cafeteria for their last Camp-inspired breakfast, but after last-night's ATO I couldn't imagine anyone wanting to get an early start – but there were quite a few. Besides having a couple of brown ale's (and watching Lisa get drunk off of her Bud Lights), Hoot Gibson joined the party and then all hell broke loose. We were there until 2am can you believe it?

Yeah, we were late for breakfast. Though I wasn't really looking forward to this "final" meal, I had something anyway. Lisa, however, did not, but we all had a good time conversing with our fellow teammates, now the blended Chalumbia, never the less. Part of the buzz making the rounds as I got over to the cafeteria was about what happened to "E-Stop"; he left Otters with "Princess" the night before and hadn't returned to the room. Neither he nor she was anywhere to be found... until breakfast when they walked in together. What could they have been up to? Oh "evasive maneuvers" to be sure.

With this being our final day our schedule was relatively light. Following breakfast (and the "how did we do?" forms) we had some free time to explore the museum, the simulators in the Rocket Park, and take in "The Dream is Alive" in the Space Dome before Graduation. Me, Lisa and fellow teammate Nathan did most of that.

The temperature outside made visiting the Rocket Park a less interesting endeavor; therefore, Nathan, Lisa and I stayed inside the Museum and attempted the MARS Rock Wall again, only this time with disastrous results: neither Lisa nor I could make it to the top. Our muscles simply wouldn't haul us up! We were beside ourselves in our failure but luckily the movie was much more exciting (even if Lisa did yell at me for purchasing concessions at the stand; how was I supposed to know she brought her own?).

It's one of my favorite IMAX space films ever - The Dream is Alive – and I was pleased to hear that the Space & Rocket Center got a special print just for us Alumni (they've not shown the film in years). Released in 1985 and narrated by Walter Cronkite (of CBS News fame), it's all about NASA's Space Shuttle program. The movie includes scenes from numerous shuttle missions, beginning with footage of a de-orbiting Discovery (STS-51-A; the mission where astronaut Dale Gardner holds up a "For Sale" sign, referring to the Palapa B-2 and Westar 6 satellites that it captured) on its approach to Cape Canaveral, complete with sonic boom.

Mission STS-41-C, the 11th for the shuttle program and the fifth for Challenger is featured most heavily, beginning with the deployment of the Long Duration Exposure Facility (LDEF) satellite. The capture and repair of the Solar Max satellite also receives a great deal of coverage, including a detailed overview of training for the mission in the Underwater Astronaut Training tank, a large pool at NASA. This particular mission is of interest, as the first attempt at capturing the satellite failed, and a second attempt almost 12 hours later had to be made. That portion of the mission was a success, with the satellite being brought to the payload bay on the next attempt, and was repaired quickly by astronauts James van Hoften and George Nelson. Other STS 41-C mission activities included a student experiment located in a middeck locker to determine how honeybees make honeycomb cells in a microgravity environment.

Other shuttle missions are interspersed during the feature with the STS-41-C footage. Highlights include:

- The first launch of Discovery (STS-41-D), with footage of liftoff, the deployment of two of the three satellites on this mission, and special attention given to the novelty of the experimental OAST-1 solar array, which we hope will be used in the upcoming Space Station Freedom concept.

- Footage is also shown of Discovery's landing and transport from its landing site at Edwards Air Force Base to Kennedy Space Center on the back of the Shuttle Carrier Aircraft.

- The sixth flight of Challenger (STS-41-G), notable as the largest crew aboard the shuttle, the first time two women flew together on the shuttle, and the first spacewalk by an American woman, Kathy Sullivan.

- Additionally, a small amount of time is also dedicated to other aspects of the shuttle program, including: other crew that work on the shuttle; the work of inspecting and replacing the shuttle's heat tiles; training the astronauts must complete to prepare for missions; what the astronauts eat on spaceflights; and how astronauts would bail out if an emergency occurred on the launch pad (the stomach wrenching part!)

GRADUATION: WHAT A HOOT ///

Immediately following the IMAX film both teams assembled over in the team room at Habitat II for graduation, but we weren't alone. We shared our graduation with the Parent-Child, Adult and other Weekend Camps, although they graduated us alumni first. We were all honored by Hoot Gibson's presence, who not only gave a speech but handed us all our wings, certificates and group photos – how about that!

Individual awards were also given out. Team Columbia won "Best Mission" for their heroic landing and all-around serious flying. Leah won "The Right-Stuff" Award, an award given to a trainee that's said to have the right stuff, which had what it took to be a team leader as well as being a person to stare down their personal fears in order to accomplish something greater. This week that was "Princess" Leah, for her harrowing experience overcoming her personal fear of heights to not only climb up the wall down at the High Ropes/Area 51 course, but also in conquering those fears to allow herself to zip down the line. She was a changed person after that – for the better! – There is no doubt about that.

Following graduation most of the Challenger team (and some Columbia) joined us over at the Marriott for a spot of lunch, our first "real" food of the weekend! It was great hanging out as a group for the last time, reliving the adventure, discussing what we liked and disliked, and expressing our hopes that we'll come together again soon. But before long our time together was done. People had a need to get off to the airport and return to their daily lives. For Lisa and I, not then; we still had plenty of time to waste before our flights were ready to take off – so we continued our exploration of the museum and the gift shops to keep us busy.

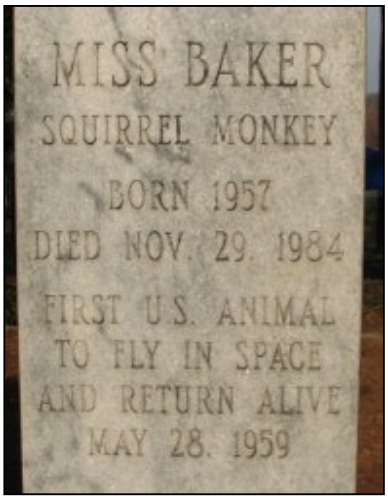
One thing we did partake in was a Geo-Cache hunt with “E-Stop”. Called “B for Miss Baker”, it was part of a series of caches featuring the North Alabama area, one letter at a time. All we had to do was find Miss Baker’s Memorial on the grounds of the US Space & Rocket Center, and answer the questions below, which would then give us the coordinates of the cache:

Who was Miss Baker? She and Big George are resting at the USSRC. What’s their story? If you know feel free to post some pictures, if not, I hope you’ll be curious enough to find out. Use the cords posted to find the marker. Read the information carefully, answer the questions then plug in the numbers to find and sign the log.

34 AB.CDE 86 FG.HIJ

A – numbers on line 3
B - number of words on the top line
C – last number in the birth year
D – ranking number on line five
E – number of words on line six

F – number of letters in the first word, line eight
G – last number in date of death (day of month)
H – number of words in line nine
I – letters first word second line
J – first number in date of death (day of month)



By that reckoning - A=4, B=2, C=7, D=2, E=4, F=3, G=9, H=0, I=8, J=2 – which then gave us the coordinates: 34 42.724 W 86 39.082, or more succinctly: N 34° 42.724 W 086° 39.082. It actually took us a brief moment to find it because the questionnaire was a little off. There was no 9th line. But regardless of the mix-up (or perhaps the memorial had been replaced between the time it was written and the time we’d come to answer it) we found the cache anyway: it was hidden under one of the aluminum benches in the old bus tour waiting area. All that was inside the old 35-mm film tube was a piece of paper (a log book) and a note from the creator of the cache. He (or she) congratulated us in finding it, asked us to sign the log (which Ben did) and then to return it where we found it. Too cool!

* * *

As they say: all good things must come to an end and eventually Lisa and I had to be off to the airport. Thankfully we were able to catch a ride with one of the Space Camp busses, scheduled for ferrying a late cadet over to the airport anyway, so that worked out for us. Unfortunately both of our flights were delayed, so we spent copious amounts of time sitting around the airport doing nothing anyway.

But at least we had a good laugh: the lady sitting across from us in our little seating area dropped her food on the floor, then picked it right up and began eating it. Yeuuuuuck!

I don't know if this will be my last adventure at Space Camp or not. Many of the combined Chalumbia team has expressed interest in reuniting for a Camp adventure in the future – myself included – but who knows if it will ever come to pass. If it doesn't, I can safely walk away completely content with the four Space Camp experiences I've had over the years. It's been a wild ride but let's see what the future brings!

{fin}

Roger, Signing Off...

"THE END?"

Space Camp and Space Academy have been very important to me, no matter how much time has passed since I went through the experience. Seeing this all end again was a bittersweet moment. For me, my journey began as far back as the third grade. During that pivotal year, I introduced myself to a little known subject to me: Science. I quickly became so enthralled I tried to learn all I could. Through all the various aspects of Science, I took one genre in particular: Astronomy. Over the course of my youth I did all I could to prepare myself for the day that I would achieve my goal - to become an astronaut. While that lifelong goal has changed, the dream has not.

The Space Camp experience has produced a lot of memories, memories that I cherish above all others. Through this work I hope you gain an understanding and appreciation of childhood dreams and how they come to be realized. I know it is not for all, and many cannot afford it, but if you get your chance to send your son, daughter, or even go yourself - please do not hesitate. The experience will more than make up the cost of tuition! And think of the memories you'll cherish for the rest of your life.

For current information on any of the Space Camp programs - Space Camp, Space Academy, Advanced Space Academy, Aviation Challenge, or the many Adult and Educators programs they now have, all 1-800-63-SPACE (1-800-637-7223), visit them online at <http://www.spacecamp.com/>, or write them at:

U.S. SPACE CAMP
Reservations
P.O. Box 070015
Huntsville, AL 35807-7015

I hope you've enjoyed this trip into my experiences of Space Camp, Space Academy and beyond. This saga is a never-ending one, as I am sure to have further adventures in Huntsville... some day. You never know where the world will take you... perhaps to the stars! Never give up a dream!

Richard Russo