

Combat Wounded Veteran Challenge

Grand Canyon Research Expedition – 2013

The Effects of Extreme Heat on the Volume of Residual Limbs, a Case Study



(L to R): Denise Becker (Guide); Rob Ferguson (Guide); OS2 Joe Frank, USN (Ret); MSG Bobo Stanwood, USA (R) (kneeling); SFC Billy Costello, USA; Colin Cassick (SCUBA naut); SSG Pete Quintanilla, USA (Ret); Cameron Lehrer (Prosthetist); CAPT David Olson, USNR (Ret); MSgt Chris Doggett, USAF

Acknowledgments	6
Summary	8
About the Grand Canyon	12
Objectives	17
General	19
Expedition Log	28
The Expedition Team	77
Findings	
TAB A: <i>The Effects of Extreme Heat on the Volume of Residual Limbs, a Case Study</i> <i>Cameron Lehrer, CPO, LPO, Florida Shores Brace Systems</i> <i>Edited by: Arlene Gillis, PO and Jillian Gifford, St. Petersburg College</i>	69

Combat Wounded Veteran Challenge

26 West Orange Street
Tarpon Springs, Florida 34689
Office: (727) 942-8415
Fax: (727) 934-2236

www.combatwounded.org

Acknowledgements



The Combat Wounded and Injured Grand Canyon research expedition was made possible through the generous support and resources provided by our sponsors and partners, including:

Mrs. Carol Martin, Founder of the Combat Wounded Veteran Challenge, **Eric Kennedy**, website and social media support; **Jon Johnson**, website host support; **Mark Van Trees**, Support the Troops; **Paul and Margot Toomey**, Geographic Solutions; **Dr. William Law Jr.**, President, **St. Petersburg College**; J.E. Hanger College of Orthotics and Prosthetics, St. Petersburg College; **Arlene Gillis, CP, LPO, M. Ed**, Program Director, **J.E. Hanger College of Orthotics and Prosthetics at Saint Petersburg College**; **Cameron Lehrer, CPO, LPO**; **Leticia “Tish” Stropes and Gillian Gonzales**, Hero Programs, **Fisher House Foundation**; **American Airlines**; **Elisabeth and John Bucci** for graphics support, **Jim Alaniz, Jim Cassick, Ben and Laurie Hayes** of **SCUBAnauts International**; **Sawyer Products**; **Simple Outdoor Solutions**; **Safety Harbor Firearms**; **State Van Rental**; **The Luxor, Las Vegas**; **Mr. Greg Bryan, Lynn Mendoza, Debra Eldridge** and the entire staff at **Best Western Premier Grand Canyon Squire Inn, Tusayan, AZ**; **Bryce Canyon Western Resort, Panguitch, UT**; **Ranger Mark Wunner, Supervisor, Grand Canyon National Park Ranger**; **Navy Veteran and USS Enterprise Plankowner Vince Salvato and Bobbi, Panguitch, UT**, for hosting the Dutch Oven Dinner for our team; **Deanna and Officer Kevin Moore** for cooking the Dutch Oven Dinner; **Peggy, Ric and Jodi Simon, Phil and Sally** and the **many other balloonists** for taking some of our team on a balloon ride during the annual Panguitch Valley Balloon Rally; **Rick and Brian at Panguitch Drugstore**; **Linda Marcks, Randy and Becky Yard, Rand and Matt Houston, Carletta and Gregg Johnson, Bruce and Lue McMahan, D+P Performance, Jolley’s Trailers, Double Diamond ATV Rentals – Cedar City, Peggy Egan of the Red Brick Inn** and all of the great **people of Panguitch** for their contributions - You believed in our cause enough to contribute and assist. Thank you!

Last, but certainly not least, our sincere thank you to both **Rob Ferguson** and **Denise Becker** for their passionate involvement in serving and supporting all of our Combat Wounded and Injured veterans. The hundreds of hours they put into planning this successful expedition did not go unnoticed. We are also very grateful for your opening your ranch in Panguitch to the team. We hope to traverse many more switchbacks in the future with you.



The Grand Canyon Combat Wounded Veteran Challenge Team

(L-R): MSgt Chris Doggett, USAF; MSG Bobo Stanwood, USA (R); SSG Pete Quintanilla, USA (R); Rob Ferguson (Guide-standing); OS2 Joe Frank, USN (Ret); Denise Becker (Guide- kneeling); CAPT Dave Olson, USNR (Ret); Colin Cassick (SCUBA naut- standing); Cameron Lehrer (sitting)

A Dedication – Vulneror non Vincor

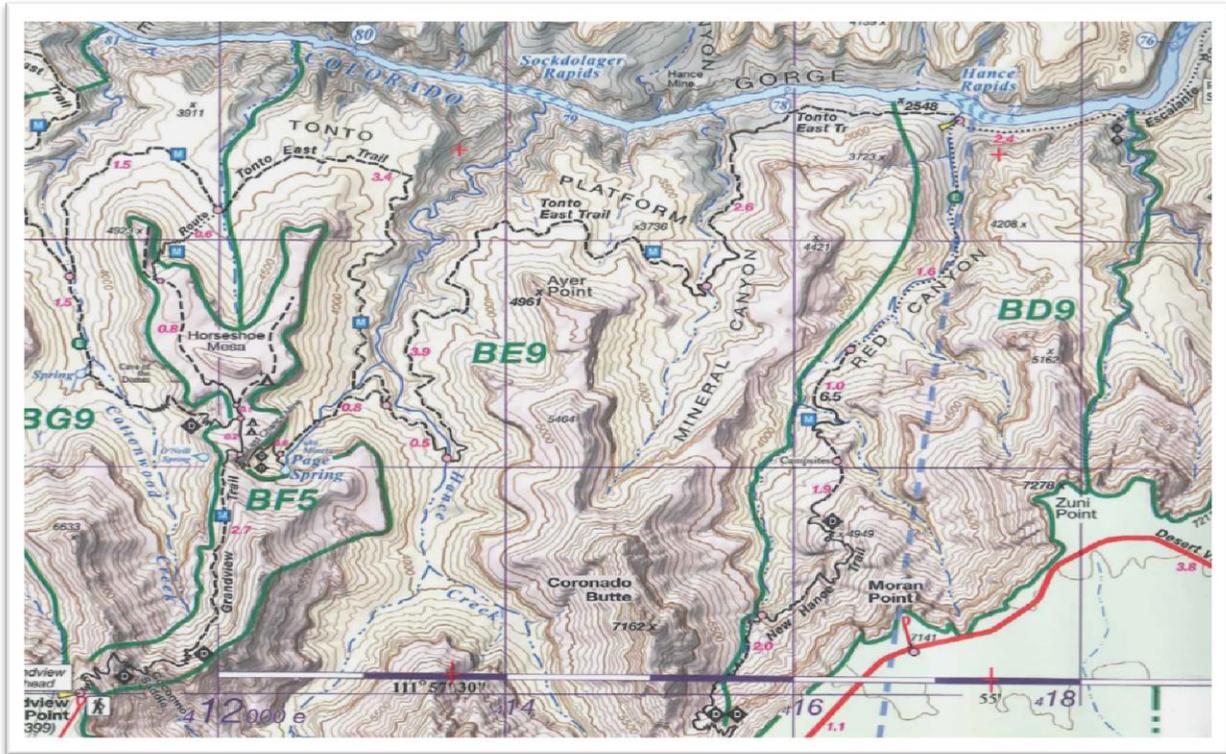
The Combat Wounded Veteran Challenge – Grand Canyon Research Expedition Team-2013, dedicated this Grand Canyon expedition to those who continue to seek hope resulting from the loss of limbs, traumatic brain injury or psychological trauma and to inspire them to continue their rehabilitation and recovery process. We hope, through this and other Challenges, to inspire and prove that physical, emotional or psychological trauma should not limit you in the activities you choose to pursue.

Combat Wounded Veteran Challenge

Founded in 2010, the Combat Wounded Veteran Challenge (CWVC) is a Florida non-profit charitable organization committed to improving the lives of our wounded and injured Veterans through rehabilitative high-adventure and therapeutic outdoor challenges while furthering medical sciences associated with their injuries. The Combat Wounded Veteran Challenge team consists of professional medical research volunteers, volunteer support staff and Combat Wounded and Injured veterans, all of whom are willing to participate in medical research studies during each of many different “Challenges” that are held annually. The CWVC team also conducts regular visits to local Veterans Administration hospitals to meet with other servicemen and servicewomen to provide inspiration and hope to those in need. ***Challenge-Research-Inspire*** are the three central pillars of the program. ***Vulneror non Vincor, Wounded – not Conquered***, is the team motto.

SUMMARY

On June 19, 2013, a group of 10 Combat Wounded and Injured military veterans, guides and their support staff embarked on a courageous and inspirational backpacking expedition to descend nearly 6,000 feet to the bottom of the Grand Canyon and return. The team selected the Grandview Trail down to the Tonto Trail leading down to the Colorado River and the first portion of the Escalante Route. According to the National Park Service, this was the first recorded attempt by lower limb amputees to descend to the bottom of the Grand Canyon and return. Their objective: to find medical solutions to further improve the science impacting the advancement of their prosthetics and Traumatic Brain Injury (TBI) treatments. Rob Ferguson and Denise Becker guided the Team through the Grand Canyon. The expedition was the team’s first Grand Canyon Expedition.



In 1869, **John Wesley Powell**, arm amputee, and nine men in four boats paddled the Colorado River's white rapids in the first recorded expedition through the Grand Canyon. It was a journey that covered almost 1,000 miles through uncharted canyons that changed the West forever. Three months later only five of the original company plus their one -arm Civil War hero-leader would emerge from the depths of the Grand Canyon at the mouth of the Virgin River.

In 1861, when the Civil War began, Powell enlisted in the army. He fought in several battles, including the famous Battle of Shiloh, in which he lost his right arm. He continued fighting in the war until it was over, then went back to Illinois, as a professor of geology.

<http://www.canyon-country.com/lakepowell/jwpowell.htm>

Prosthetics

The J.E. Hanger College of Orthotics and Prosthetics, St. Petersburg College in St. Petersburg, Florida, partnered with the Combat Wounded Veteran Challenge to provide clinical support for amputee backpackers during their expedition. In addition to the clinical support Certified Prosthetist and Program Director Arlene Gillis provided, the school arranged for former O&P graduate student Cameron Lehrer to join the team of Combat Wounded Veterans to document his prosthetics case study. His case study followed each amputee's reaction to the environmental stresses of the Grand Canyon.

In clinical practice, volume change within the residual limb presents a daily challenge in maintaining a comfortable and well-fitting socket for the amputee. These volume changes are typically accommodated for by the use of various thicknesses of prosthetic socks. Volume changes can reduce or increase throughout the day, but the amputee is often told to increase his/her sock ply throughout the day; leaving the amputee to assume that a volume loss, not a volume increase, occurs. In Cameron Lehrer's clinical experience, a correlation with extreme heat and increase in residual limb volume has been noted. As such, an increase in the residual limb's volume would require the removal of socks (if possible) in order to improve the fit of the socket, and this is more often than not, the opposite of what amputees are told to do. The main objective of this case study was to monitor the residual limbs' volume changes throughout the day in the extreme heat climate of the Grand Canyon; commonly reaching over 100 °F in the summer months.

St. Petersburg College
J.E. Hanger College of Orthotics and Prosthetics
Mrs. Arlene Gillis, CP, LPO, M. Ed, Program Director

Saint Petersburg College (SPC) is one of less than a dozen colleges in the United States to offer a degree program in Orthotics and Prosthetics.

St. Petersburg College (SPC) and Florida State University (FSU) have entered into a consortium to offer a graduate program of study leading to a master's of science in industrial engineering with specialization in engineering management of orthotics and prosthetics (MSIE-EMOP). Through this consortium, students earn a bachelor of applied science (BAS) in orthotics and prosthetics from SPC and then apply to matriculate at FSU to earn their master's degree. http://www.eng.fsu.edu/ime/graduate/msie_emop.html
<http://www.spcollege.edu/op/>

Saint Petersburg College's J.E. Hanger College of Orthotics and Prosthetics partnered with the Combat Wounded Veteran Challenge (CWVC) to give back, by means of support, to Combat Wounded Servicemen and women. SPC provides support for the CWVC and helps to foster hope for other amputees and Combat Wounded and Injured by raising awareness of the issues that impact their community of interest. Students at the O & P College are able to get exposure to help veterans problem solve while they work together in challenging real world environments.

A Leader in the Field

St. Petersburg College has been a leader in orthotics and prosthetics training. To assist our Wounded Veterans, Program Director Arlene Gillis has participated in a heralded study with Florida State University and the Department of Veterans Affairs to develop adjustable sockets that better fit residual limbs.

SPC offers a Bachelor of Applied Science in Orthotics and Prosthetics. Classes and labs are conducted in the \$11M Banker's Insurance Group building at the Health Education Center. To adapt to new master's level educational requirements for entry-level orthotists and prosthetists, SPC has developed a partnership with Florida State University. Students who earn their bachelor's degree in Orthotics and Prosthetics at SPC can attend FSU online to earn a Master of Science in Industrial Engineering, with a specialization in Management of Orthotics and Prosthetics.

Regarding the biomedical support aspects of this research expedition, Cameron Lehrer conducted observation and preliminary assessments on the amputee's residual limbs at Mather Campground prior to the team's descent into the Grand Canyon to gather the baseline data to determine their gait, balance and volume measurements.

About the Grand Canyon



The Team arrives on the Horseshoe Mesa just prior to descending to Hance Creek

Grand Canyon is considered one of the finest examples of arid-land erosion in the world and is the canyon by which all other canyons are measured. The combination of its immense size, dramatic and colorful rock exposures, natural resources, inspire a wide-range of profound emotional, artistic, scientific, and spiritual responses. In 1919, the people of the United States recognized its value by protecting Grand Canyon as a National Park. It was designated a World Heritage Site in 1979.

Incised by the Colorado River over the last 6 million years, the exposed rock layers of Grand Canyon present an excellent record of geologic time. The rocks which range in age between 1.84 billion to 270 million years old contain a rich and diverse fossil record. Grand Canyon National Park encompasses 1,218,375 acres and lies on the Colorado Plateau in northwestern Arizona. It is 277 river miles (446 km) long, up to 18 miles (29 km) wide, and a mile (1.6 Km) deep. The land is semi-arid and consists of raised plateaus and structural basins typical of the southwestern United States. Forests are found at higher elevations while the lower elevations are comprised of a series of desert basins.

The Park contains several major ecosystems. Its great biological diversity can be attributed to the presence of five of the seven life zones and three of the four desert types in North America. The five life zones represented are the Lower Sonoran, Upper Sonoran, Transition, Canadian, and Hudsonian. This is equivalent to traveling from Mexico to Canada. The Park also serves as an ecological refuge, with relatively undisturbed remnants of dwindling ecosystems (such as boreal forest and desert riparian communities). It is home to numerous rare, endemic (found only at Grand Canyon), and specially protected (threatened or endangered) plant and animal species.

The park contains archeological and sacred sites ancestral to many contemporary tribes, reflecting an extensive history of cultural diversity. Native people have long been weft and weave of the canyon's human fabric—from tools left 12,000 years ago in what we now call archeological sites to participating in modern park development. Grand Canyon remains home to native peoples, a place of sacred pilgrimage and rare resources. Today, Native peoples return to Grand Canyon, a place of origin for some, to collect culturally important resources and make personally significant connections. Eleven American Indian tribes have known ties to Grand Canyon, and some consider the canyon their original homeland and place of origin. The 11 Federally recognized associated tribes are: the Havasupai Tribe, Hopi Tribe, Hualapai Tribe, Kaibab Band of Paiute Indian, Las Vegas Band of Paiute Indians, Moapa Band of Paiute Indians, Navajo Nation, Paiute Indian Tribe of Utah, San Juan Southern Paiute Tribe, Yavapai-Apache Nation, and the Zuni Tribe.



More profile information from the National Park Service can be located at the following links:

<http://www.nps.gov/grca/parkmgmt/upload/2013-park-profile.pdf>

<http://www.nps.gov/grca/index.htm>

Participants

The CWVC Grand Canyon research expedition was led by SSG Peter Quintanilla, and guided by Taztourz founder Rob Ferguson and Denise Becker. In addition to trail guiding, Denise is also a trauma nurse and photographer.

SSG Peter Quintanilla was responsible for assembling the team, planning and executing the expedition. CAPT David Olson was responsible for financing, logistics and contracting the guides for the expedition.

The Combat Wounded and Injured military participants who comprised the Grand Canyon Research Expedition team were selected by a committee of their peers and participating professional medical researchers and providers from St. Petersburg College of Orthotics and Prosthetics. Their selection was based upon the nature of their specific injury sustained in military combat or during military service as well as their intense desire and commitment to participate in medical research and improve upon the functionality of their condition, ultimately inspiring other wounded veterans to do the same.



Prosthetist Cameron Lehrer measures the residual limb of SSG Pete Quintanilla

St. Petersburg College of Orthotics and Prosthetics selected Cameron Lehrer as the prosthetic clinician who monitored the amputee participant's safety and status during the expedition. Cameron also collected data and monitored the veteran's anatomical reactions to the changes in environment during the descent and return climb. Specialized equipment and measurement tools such as residual limb measurement gauges were necessary to accompany the research team.

The Combat Wounded & Injured Grand Canyon expedition team was comprised of the following:

NAME	INJURY/FUNCTION	PROFESSION
 <p>Pete Quintanilla</p>	<p>CWVC Head of expedition Unilateral Left Amputee (BKA) & evaluator</p>	<p>SSG, U.S. Army Special Forces (Ret)</p>
 <p>"Billy Costello"</p>	<p>Unilateral Right Amputee (AKA) & evaluator</p>	<p>SSG, U.S. Army Special Forces (Green Beret)</p>
 <p>Chris Doggett</p>	<p>TBI evaluator; Self-Study</p>	<p>Master Sergeant, USAF</p>
 <p>Joe Frank</p>	<p>TBI evaluator; Self-Study</p>	<p>OS2, U.S. Navy</p>

 <p>“Bobo” Stanwood</p>	<p>Unilateral Left Amputee (BKA) & evaluator</p>	<p>MSG, U.S. Army (R)</p>
 <p>Cameron Lehrer</p>	<p>Orthotics and prosthetics clinician</p>	<p>Prosthetist</p>
 <p>David Olson</p>	<p>Support</p>	<p>Co-Founder & Executive Director, CWVC, CAPT, U.S. Navy (Ret)</p>
 <p>Colin Cassick</p>	<p>Support</p>	<p>SCUBAnauts International</p>
 <p>Rob Ferguson</p>	<p>Guide</p>	<p>Taztourz, LLC</p>

 <p>Denise Becker</p>	<p>Guide</p>	
--	--------------	--

Objectives

Our objectives were to conduct leg prosthesis (transtibial and transfemoral) field research studies of Combat Wounded Veterans during a week-long backpacking trek into the Grand Canyon. Our team collected valuable information and medical data during this “Challenge Expedition” to contribute to the science of human performance, rehabilitation and recreation under extreme conditions. The unique information gathered is being prepared for dissemination to relevant groups of rehabilitation professionals who will find it useful to



Cameron uses a residual limb length gauge on a transtibial amputee

- 1) advance the state of science and,
- 2) inform the rehabilitative care of others with similar prosthetic needs, specifically:

(1) Correlate residual limb length and the ability to complete the daily hikes:

Measure and record each participants residual limb lengths. Record when participant needs to stop for breaks, needs assistance to complete a task or maneuver an obstacle, and record the order they complete each day’s hike;

(2) Correlate changes in residual limb volume at various altitudes via circumferential measurements:

a.) Measurements will be taken at various predetermined altitude levels during the hike.

b.) Measurements are to be taken at PTB level of the residuum and every 2’ distally. Measurement levels would be marked on the liner and would be conducted by the same prosthetist throughout the expedition.



The same residual limb length gauge and measurement tape were used to perform the measurements on the entire amputee subject group throughout the research expedition.

Findings

TAB A: *The Effects of Extreme Heat on the Volume of Residual Limbs, a Case Study*, Cameron Lehrer, CPO, LPO

General

The Canyon Route



Dave Olson carefully sidesteps around a boulder along a very narrow trail. Some trails, like this one, do not leave much room for error.

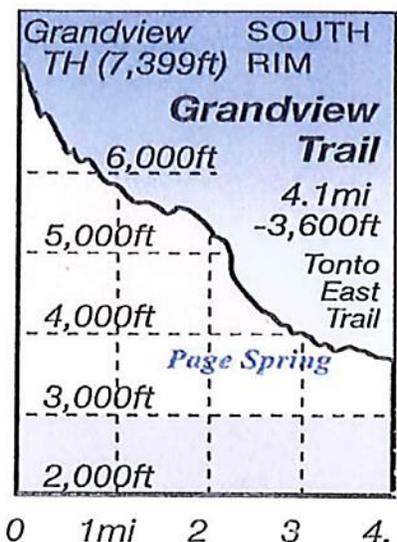
There is no easily accessible route to the Colorado River that churns nearly 6,000-ft in the inner Grand Canyon. In fact, during the late nineteenth century, mining prospectors at the Grand Canyon described only two ways to get to the Colorado River, the *hard* way and the *harder* way. After considering and having our trail guides Rob and Denise pre-hike the “harder way” two months in advance of our trek, i.e., New Hance Trail, Escalante Route and

Tanner Trail to the Colorado river, we opted for the easier ‘*hard way*’, a different route due to the numerous dangerous exposures and scrambles encountered on each of these trails. The Grandview Trail was then decided on as the trail to lead us to the Tonto Trail and the first portion of the Escalante Trail down to the Colorado River.

The Grandview Trail is considered essentially an unmaintained trail, but it was in excellent shape. The trail is steep and rocky making it very challenging to descend, particularly while our backpacks were fully loaded from the onset. It was actually much easier (less hard) to climb on the return than on the descent (harder).

The Grandview Trailhead stands overlooking the vast and majestic multi-hued Grand Canyon at 7,400 feet. We descended the Grandview Trail for over 3 miles to Horseshoe Mesa at 4,840 feet elevation, descended Horseshoe Mesa via the eastern spur trail that leads down to Miner’s Spring at the bottom of the Redwall, an additional 400 foot (nearly vertical) drop, then to Hance Canyon to merge with the Tonto East Trail down to the Colorado River which rests at 2,480 feet elevation. For more information on Trails:

<http://www.nps.gov/grca/planyourvisit/campsite-information.htm>



Water Sources

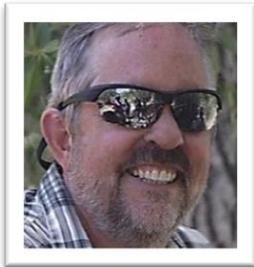
Water sources were scarce on these trails. There were only two available water sources on our planned trail during the six-day trek within the inner canyon: Hance Creek and the Colorado River. The Hance Creek water source was not easily located and might best be described as a large trickle. There was no available water available between the rim and Horseshoe Mesa, nor between Hance Creek and Hance Rapids at the Colorado River, our destination. Water consumption for each trekker totaled an average of 3 gallons per day making trekking during the hottest segment of each day nearly impossible due to the scarcity of water. The water gathered at Hance Creek was relatively clear, but like all untreated water, required sterilization. The most efficient and expeditious means of sterilizing our water was through the use of a SteriPEN wand.

There were many ways for us to purify the water we collected so that it was safe to drink. The principle ones are boiling, chemical treatment, filtration and UV irradiation. Boiling would have required us to pack additional fuel and gives you very hot water (not recommended in the desert); chemicals usually leave a nasty taste and can take a long time to work, while not managing to hit all protozoa; filtration is faster than these methods but can be quite bulky, and (with one expensive exception) is not able to deal with all viruses. Additionally, our filtration bags were flimsy and easily tore placing us in a very vulnerable situation. Our UV SteriPENS, however, were the 'hands-down' favorite as this method treats all biological parasites, uses no chemicals, and proved to be the fastest means. The only drawback was that the SteriPEN only treats up to one liter of water at a time and is not the best choice if the water is silty.

Daily Schedule

Due to the peak temperature within the inner canyon reaching as much as 110 degrees F during the day, we awoke at 0330 hours each morning in order to get a jump on the sun. Since we were within the inner canyon, we were able to take advantage of the vertical Redstone walls' shade characteristics during short periods of sunrise and sunset. At approximately 1000 - 1100 hours, the sun's impact forced the team to seek rock overhangs for shade and rest until approximately 1500 - 1600 hours. The team would then usually trek until approximately 1900 - 2000 hours, prepare dinner and rest.

The Team Prepares



Rob Ferguson, Guide

“I’m calling to see if you’d be interested in guiding our Combat Wounded and Injured Vets to the bottom of the Grand Canyon.” This was the start of my phone conversation with Captain David Olson in April of 2012. I think I spit out “I’d be honored!” I was instantly excited, humbled and apprehensive at the same time. Little did I realize that it would take fourteen months of planning and

constant changes to make this happen.

CAPT Olson wanted to challenge the group outside of the Seven Summits of Seven Continents challenges they are undertaking. Grand Canyon in June is the total opposite of the icy summits they are used to climbing!

Grand Canyon is the most difficult place to backpack in the U.S. It is basically an inverted mountain hike with cliff-face descents right from the start and again at the finish. The group wanted a challenging trail outside of the crowded main corridor trails.

After considering and pre-hiking the New Hance Trail, Escalante Route and Tanner Trail, we opted for a different route due to the numerous dangerous exposures and scrambles of each of these trails. Grandview Trail was then selected as the trail down to the Tonto Trail, which would lead us down to the Colorado River and the first portion of the Escalante Route.



MSG Chris Doggett (TBI)

As an active duty United States Air Force Master Sergeant I experienced Traumatic Brain Injury (TBI) during a terrorist bombing on June 25, 1996. Of course, TBI was nothing I had ever heard about until after 11 years of “dealing with” symptoms for which I reached out for help. I have been a pharmaceutical guinea pig for years trying different combinations...I am at best right now and still taking 6 pills a day (as long as migraines do not start up). My

symptoms range from vertigo, dizziness, lack of concentration, memory loss, extreme migraine headaches causing speech problems and no feeling in some extremities, and anxiety to name a few.

Tuesday 18 June: We left our Hotel in Las Vegas and headed to the South Rim of the Grand Canyon! What excitement; what a thrill to have this opportunity to be with other military members, continue research and experience the greatness of the Grand Canyon all at once! We made a short stop at the Hoover dam for a quick look, another

great site. The drive was a little uncomfortable due to lack of space...we had a lot of gear! But the company was great and it was a nice way to get to know the other members of the team.

Approximately 1.5 hrs before arriving at the campsite, I started getting a headache...not sure if it was a migraine I treat them all as if they were. The migraine meds I have remedied the headache shortly after arrival. Lots of pictures were taken at the rim and then we were off to set up camp with our guides Rob and Denise. Rob and Denise also provided us a great Mexican dish before we all settled and told stories around the camp fire. 2300 hrs lights out in preparation for a long day of sightseeing the next day...what a great lead into a 2-week trek with this team!



OS2 Joe Frank (TBI)

As I went into this journey with the Combat Wounded Veteran Challenge Team, I knew that I wanted it to be different from other things that I've accomplished in the past couple years. With the help of a therapist at the VA, I've come to admit that a lot of my recent life has been taking place from the outside looking in. I find myself not quite getting too involved near the center so I have more control on the outer ring. This has a lot of factors: don't necessarily have to be aggressively social; it eliminates many distractions to focus on, not really missed if you wander away from the group, and it gives space. I tend to get overwhelmed when a lot is happening around me, so I stack the cards to work for me.

Master Chief Will Wilson was kind enough to offer this wonderful opportunity with CWVC for me to attend as a TBI veteran. I knew he wouldn't throw any shitty gig my way. He explained all the great things he has done with this organization and I was very much excited to be a part. I knew the organization was solid once Pete, the leader of the expedition, began to send out emails with information containing flights, schedules, packing lists, and a kind note to leave firearms at home.

All the information was sent well in advance but I knew how I was and I would spend entirely too long nuking things and bringing unnecessary items to lug around. So the night before that early AM flight, I did what any other fresh college grad/ Navy cat would do.... I went out. A fellow classmate and SDSU swimmer, Maureen, and I went for some beverages. If anyone gets to meet Maureen, they'll realize that packing is the least of your concerns. Nevertheless, in the wee-hours of the night, we returned to my place and she was kind enough to read out Pete's packing list to me as I would go through my closets. Nope...nope... nah, don't need one of those... never owned one of those... I think I have one of those. Within no time I had one backpack packed, a sleeping bag and matt. I was ready to rock!



The Luxor Hotel, Las Vegas

A little mishap occurred with my gate-checked sleeping bag in Los Angeles so I jumped on a later layover and arrived in Las Vegas. I was under the assumption that I still had plenty of time before the team meeting so I proceeded to the USO within the Vegas airport and enjoyed two Hot-Pockets, an ice cream, and a few other amenities before grabbing a cab to the hotel. There I was, back in the great city of Vegas but for a little more business this time. I was

inside the Luxor and a margarita bar struck my eye. I was half-tempted but I didn't want to start off on the wrong foot since Will put me in for this and I wasn't sure what was waiting upstairs. I called the founder of CWVC, Dave Olson, and he mentioned everyone was there and they were all in the room. I figured, OH @\$%!, I should've taken that Hot Pocket to go. He told me to be aware of the two different wings of the Luxor and gave me the room number. Naturally, I went to the wrong wing and found that number didn't exist there. I rushed to the other wing and was thinking, what do these guys already think about me? Geez.

I found the room and everyone was already comfortably lounging and listening to a bearded guy (Rob) talk. I thought, good thing I didn't bring that 100 oz. margarita up here. I didn't know who anyone was but we all shook hands and I sat there trying to piece names with faces. Counterclockwise, there was Chris on the floor (Air Force- TBI), Dave on the floor (Navy-Founder CWVC), Billy on the floor (Army- A/K amputee), Rob in a chair (Tour Guide),



Cameron in a chair (Fruit Cake- guy changed his story everyday but we'll call him the prosthetist), Bobo on the bed (Army- B/K amputee), Colin on the other bed (SCUBAnauts), Denise on the bed (Nurse/ Photographer/ Motivator/ Rob's girlfriend), and lastly, Pete on the edge of the bed (Army- B/K amputee/ Leader). The only three people at the time that I was aware of was Dave, Pete, and Rob because of the emails and what Will had mentioned to me. You can't help look around the room and try to figure one another out. I knew Billy was strict business, couldn't tell how the @\$% Colin was so young and in the military, (he wasn't) and I tried to realize what movie

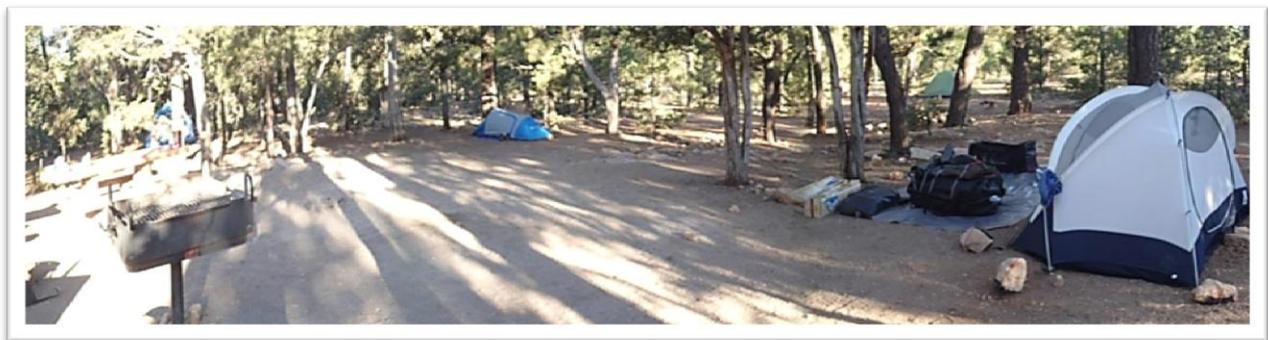
character that prosthetist looked like. (We later realized he looked like Bill Murray) The guide was going over all the ins and outs and I couldn't figure out if this hike was going to be all that badass or if he wanted to throw a scare out there.

I met my roommate and it was the other TBI guy, Chris. He seemed soft spoken and found out he lives in Texas and was Air Force. When you enter into something like this for two weeks, you sometimes forget that these strangers will be great friends by the day of departure. Chris was exactly that.

We went to a buffet that evening and received free beer tickets. I once again couldn't tell if people didn't want to be "that guy" and double fist or if they really want to just get to sleep? I would just sit back and let the cards play out before I showed my colors. One by one, the crew was heading to bed due to jet lag, necessary rest for what is about to come, etc. Luckily, Cameron and I put those beer vouchers to work and began the night. Rob was heading to the outdoor store bright and early and I knew that I needed a pack but we agreed he would check them out and I could pay him if he finds something good. This whole thing was about living in the moment so I didn't want to miss on an opportunity of nightlife in Vegas for a backpack.

We ended the night around 0330 and I had a sense that this trip could go well if I kept my thoughts in a positive direction and remain in the actual moment and not let my mind wander. I've done an excellent job over the years of having my mind jump to the next obstacle before I even complete the current one. I could be in the middle of a triathlon and be focused on the next weekend's run. This would be my start to hopefully keep my thoughts in the moment.

The next morning we loaded the van and took a few hour drive to the Grand Canyon. This was some of the guys' first visit so it was pretty neat for them to see. I was able to witness the sight a few years back and it was astonishing at first glance but then I got bored with it and wondered what I was supposed to do with it? I would soon find out the power of the actual Canyon once I began to hike it.



We set up tents for two nights at the campground above the rim. Chris and I shared a tent, Cameron and Billy shared, BoBo, Pete, Dave, and Colin all had individual tents and Rob and Denise slept in the back of his truck. We were set to depart early on the

morning of June 19th to descend into the Canyon. The day before I ran to the General Store and grabbed a pair of hiking boots and a pack. I suppose they did come in handy for the hike. I barely packed more than two shirts, two shorts, one pant, and a fleece. The majority of the weight in my pack was the amazing spread that Rob had gathered for us. There was trail mix, breakfast bars, dry freeze meals, tuna, granola, peanut butter, crackers, Vitamin-C packets, utensils, a bowl, a sausage link the size of a baseball bat, and even jerky. There were no complaints on my end with the wide spread of food.



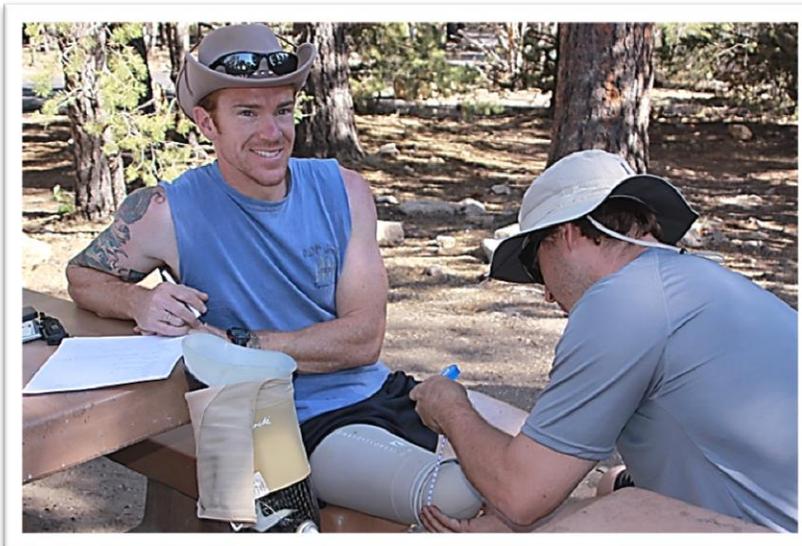
**Cameron
Lehrer,
CPO**

It was incredible for me to realize that the view from the top of the Grand Canyon was just as breathtaking as the first time I laid my eyes on it less than one year ago. As we were all anxiously awaiting the first light of the day to arrive and begin our journey into the canyon, a young man with a trans femoral amputation approached the group. It turns out this young man lost his leg while serving his country.



I have always believed in science and had convinced myself that so called “miracles” were just random occurrences rather than acts of divine intervention. However, this struck me as more than just being in the right place at the right time to witness first-hand, when one in a million or more odds actually occurred; I began to question my beliefs for the first time in a very long time.

As a prosthetist, I know that this young man’s life has drastically been changed. In my professional experience working with amputees I know this young man has been left with many questions, fears, and uncertainties. I am sure to a certain degree, like the vast majority of new amputees, he feels lost and confused. He may even feel angry, resentful, or possibly depressed.

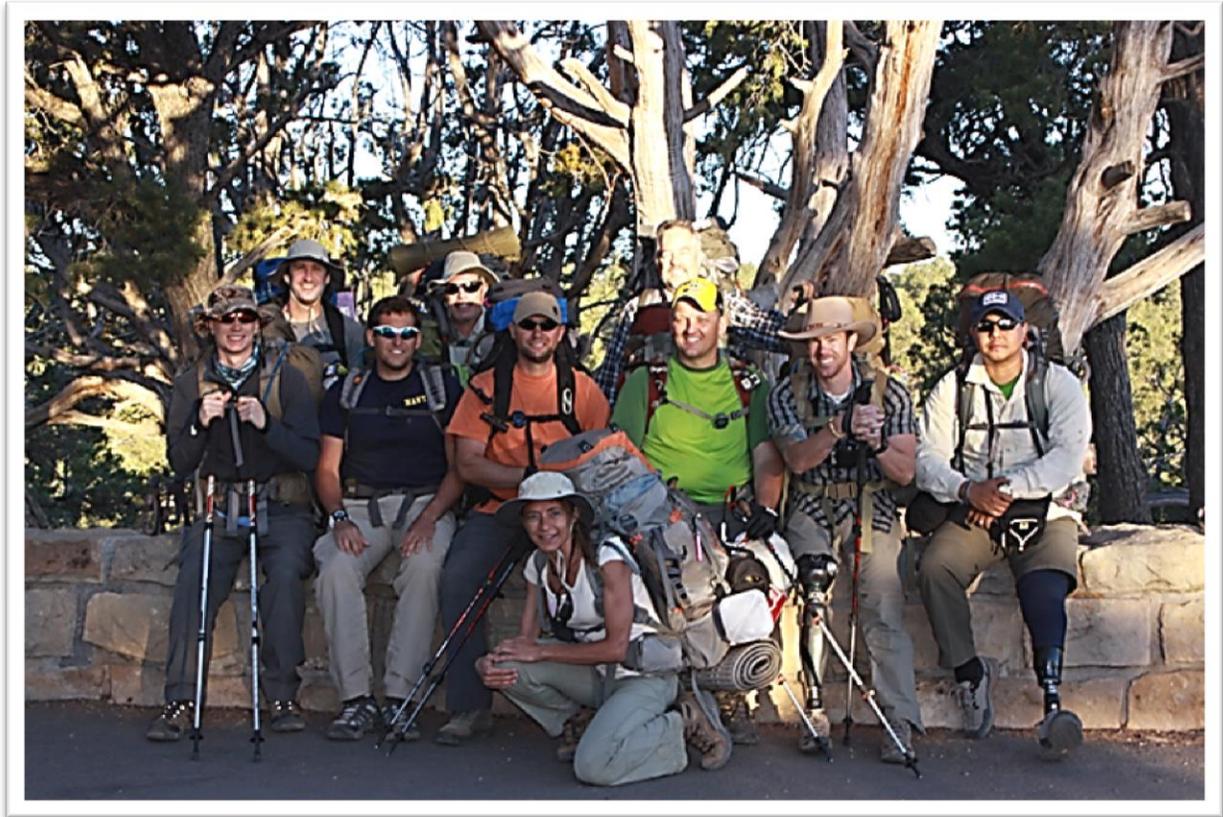


The circumferential measurements for Billy's transfemoral residual limb was measured using the same length gauge as the transtibial amputees and recorded every 2" from distal to proximal.

Max Lerner once said, "I am neither an optimist nor a pessimist, but a possibilist." I do my best to encourage all my patients to get back to living their lives. I always ask what they liked to do before their amputation and do my best to design a prosthesis that will help them return to as many activities as possible. However, seeing is believing, and nothing is more powerful than witnessing something you thought was impossible to happen. People once thought flying was impossible or that man would never reach the

moon, but people who dared to challenge the nay-sayers and think outside the box blew those people's minds and brought about great change. Great things will not happen by thinking small; they happen when someone dares to do something deemed impossible.

These amputees on this trip are doing just that. They are saying "I don't believe this is impossible, and I will prove you wrong." I know without a doubt that it was a powerful thing for that young man to see. I believe he witnessed the fact that life does exist after amputation, and he, too, can dare to do great things and achieve whatever he sets his mind to.



The Team just prior to the long descent into the inner Grand Canyon.

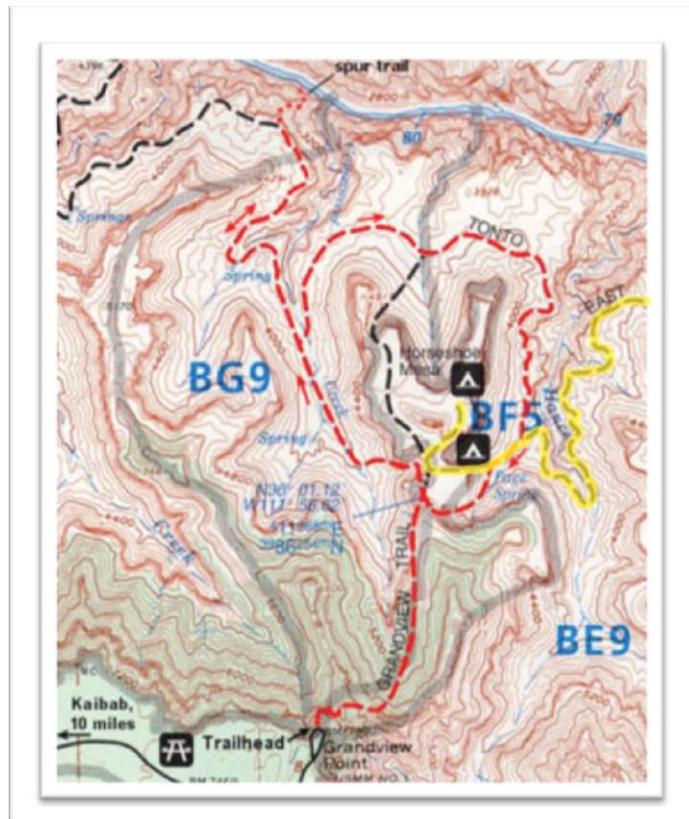
The Expedition Log– Grand Canyon Challenge 19 – 24 June 2013

Date: 19 June (Wednesday, Day One)

Location/Route: Grandview Trailhead – Grandview Trail to Miner’s (Hance) Creek (7,400 feet to 4,400 feet)

The Grand Canyon of Arizona...is wild and sublime, a thing of wonder, of mystery; beyond all else a place to grip the heart of a man, to unleash his daring spirit. – Zane Grey, 1922

Descending from Grandview Point, today’s trail crosses a narrow saddle between upper Hance and Grapevine canyons. It rounds a point and continues its descent, switch-backing and dropping steeply until the trail gradually angles downward to Horseshoe Mesa above the Redwall limestone. At Horseshoe Mesa, the trail branches down to



Hance Creek. We decided to take the 'double-black diamond' "expert" spur trail as a shortcut down to the Last Chance Mine (1890) leading to Hance Creek where we were scheduled to remain overnight. Rockslides and washouts in the Redwall had eroded portions of this near vertical trail. This spur trail proved to be the most challenging aspect of the entire trek as our lower limb amputee serviceman had great difficulty maneuvering and securing their prosthetic limbs on the loose scramble.

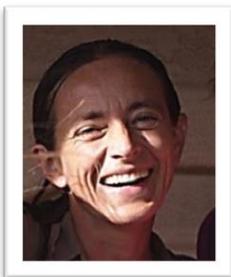


Rob Ferguson, Guide

Grandview Trail started like most other GC trails- steep switchbacks for a couple of knee and foot-pounding miles. It then mellows out for a while before the next steep sections down through the Redwall. Our group of ten- five wounded vets and five support personnel, did a great job on the first three miles of the descent. This led us to opt for the shorter, steeper route past Page Springs to get to our first camp at Hance Creek. This saved us about 3 miles of full sun exposure hiking. In GC, shorter equals steeper, and this stretch down From Horseshoe Mesa proved to be the most dangerous and challenging section of trail we undertook. It took all hands, feet, knees and elbows to make enough contact to negotiate this near-vertical stretch. This slowed and taxed the group physically and mentally. It was encouraging to see each team member complete this section in good spirits in spite of the difficulties.

Due to a modest pace, we exited this tough stretch mid-day into full sun hiking. We soon sought refuge in the cool shade of an abandoned mine shaft. The snoring of resting hikers echoed off the mine shaft walls, or so I was told! Late afternoon we completed the hike to our first camp at Hance Creek. To some in the group, the trickling, algae-filled "creek" was disappointing. However, this consistently flowing water is a powerful life-giving force in the desert.

It was rewarding to see the group complete day one in good shape and to develop a sense of awe in the immensity of Grand Canyon. Filter water, cook, eat, filter more water, "pass out". These steps would be repeated throughout the trek.



Denise Becker, Nurse/Guide:

Wednesday Canyon, day 1
June 19, 2013.

Heat of the day. Resting up in an old copper mine shaft (Last Chance Mine).

Alarms were at 3:00 a.m. to break camp at Mather Campground, Grand Canyon, South Rim. After two days of travel and a full day of prep our team was anxious to get underway. Spirits high at sunrise on trail head-windy, felt brisk. Everyone feeling the

anticipation of what lay ahead. A 4,000 ft descent, seemingly bottomless, infinite... Nervous energy, anxiousness, a looming challenge, commitment, determination.

Our team:

Pete--Amputee, BKA
Joe---TBI/ortho injuries
Chris---TBI/ortho injuries
Billy---Amputee,AKA
BoBo--Amputee,BKA
Dave---Captain, founder
Collin---SCUBAnaut
Cameron---Prosthetist
Rob----Guide
Denise--
Guide/nurse/photos



Pete Quintanilla begins the steep descent from Horseshoe Mesa

Can't imagine thoughts of amputees. Pete and Billy experienced hikers, recently on Kilimanjaro.

Bobo , many other experiences, *not* backpacking. A challenge on so many levels, heavy packs, prosthetics, heat, unknowns . These three notably more solemn in the wait to finally make those first steps down. Strong, practiced determination, courage.

5:15-noon....on the trail, making the steep descent, picking one careful step at a time. Amazing to watch the amputees so carefully choose each step. Focused. Sometimes losing balance briefly, quickly regaining. Bobo taking off prosthetic routinely to manage perspiration, too much moisture. Keeping steady pace. Pete having difficulties with rotation of prosthetic. Stated relief after Cameron made a few significant adjustments. Carrying tools, equipment, packs heavy Pete tiring, pushing on. Quietly maneuvering for each stone. Amazing to watch the team pick its way down. Slips, strains, strength. Worries about Pete--getting so hot. Bobo drenched in sweat. Billy, ultimate focus.



Hot midday break in this old copper mine cave now. Cool air of the cliff's innards enticed us to crawl in here. Hours now. Eat, cool, rest. Comfortable beds of gravel, dirt. Joe's nice stone pillow. Sleeping, many snoring. Waiting for high heat to pass or at least for a chance for fleeting canyon shade. Can't stay too long and risk night hiking or not making it to water source. Doing well with water

Joe Frank and his stone pillow

now, heavy to carry. Mine shaft is a perfect, cool, protected shelter. Getting to know the team.



SFC Billy Costello (A-K amputee)

Day 1
12:05
19 Jun 2013

Today started at 03:00. We ate some cold breakfast, loaded up our bags, and drove out to the trailhead. We watched the sun rise over the canyon ridge. It was an amazing site with a soft orange sun rising over the blue film stretched across the whole canyon. We met an amputee at the trailhead who was on crutches. Bobo spotted



A chance meeting with another Combat Wounded amputee just before Canyon descent

him walking toward the observation deck and introduced himself and let the guy know what we were about to embark on. He was passing by on his trip cross-country. He seemed interested in our adventure. Maybe Bobo helped that kid start setting goals for a future challenge in the back of his mind.

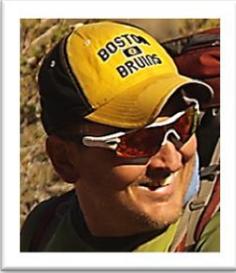


It was about 20 degrees cooler in the old abandoned mineshaft

We finally stepped off at about 05:00. Right now we are resting in an old mine that was retired years ago. It's nice and cool in here, probably close to 20 degrees cooler. There's a gate blocking the tunnel at about the 10 meter mark, which is a good thing, because I would probably get lost exploring how deep it goes. Minegates.com put up the gate. I know that because it's etched into the gate. Who would have thought that such a business would get enough business to put up a website.

The descent into the canyon has been hairy, to say the least. The trail is extremely difficult in places consisting of rocks ranging from large bowling ball size rocks down to pebbles – all loosely lying across the trail making negotiating the path extremely challenging and dangerous at times. It feels like we're cutting our own trail down the

canyon wall. I've made a decent living moving heavy packs from one place to another, but this trail poses more threats of injury than any others I've faced. I live most of my life teetering on the line between brave and stupid – on this trail I stumbled onto the wrong side of that line a few times.



MSG “Bobo” Stanwood (B-K amputee)

Well, I'll start that off with “WHAT AN IDIOT I AM”, I carried entirely too much crap. That trek down was extremely difficult. I needed to do a practice day hike or two before we started down into the canyon. The small owie that I have on the back of my leg is SCREAMING pretty good. I never realized how difficult it is to walk downhill with a (heavy) pack on my back. I had to side-step almost the entire way. Even the slightest downhill was difficult. If it was truly level

or uphill, it was MUCH easier, the ankle range of motion and articulation is just not there. This “Just walking in the Grand Canyon” is MUCH harder than I thought it was going to be. It sure is beautiful though.



Bobo carefully negotiates each step down the Redwall spur trail to Hance Creek



OS2 Joe Frank (TBI)

We took our group photo (at the Grandview Trailhead) and off we went! They gave me walking poles and I'd never seen or used any before. Well, within the first 100 yards I quickly found out how to use them and realized they were luckily adjustable. I really didn't know what to expect from this hike but I knew physically I was ready for it. For some reason, it didn't cross my mind that, no-shit, if you were to lose your balance, that's your deathbed waiting at the bottom. Some portions were narrower than others but the sketchy areas made you think, this shit is legit! I vividly remember looking up the steep path that we just came down and there was BoBo. He was excited, happy, and enthusiastically said, "Switch-back, mother#@!\$%!" BoBo's sense of humor lasted the entire trek, regardless of the situation. After hearing just one comment from him, you could spend the next hour replaying it in your mind to keep entertained.



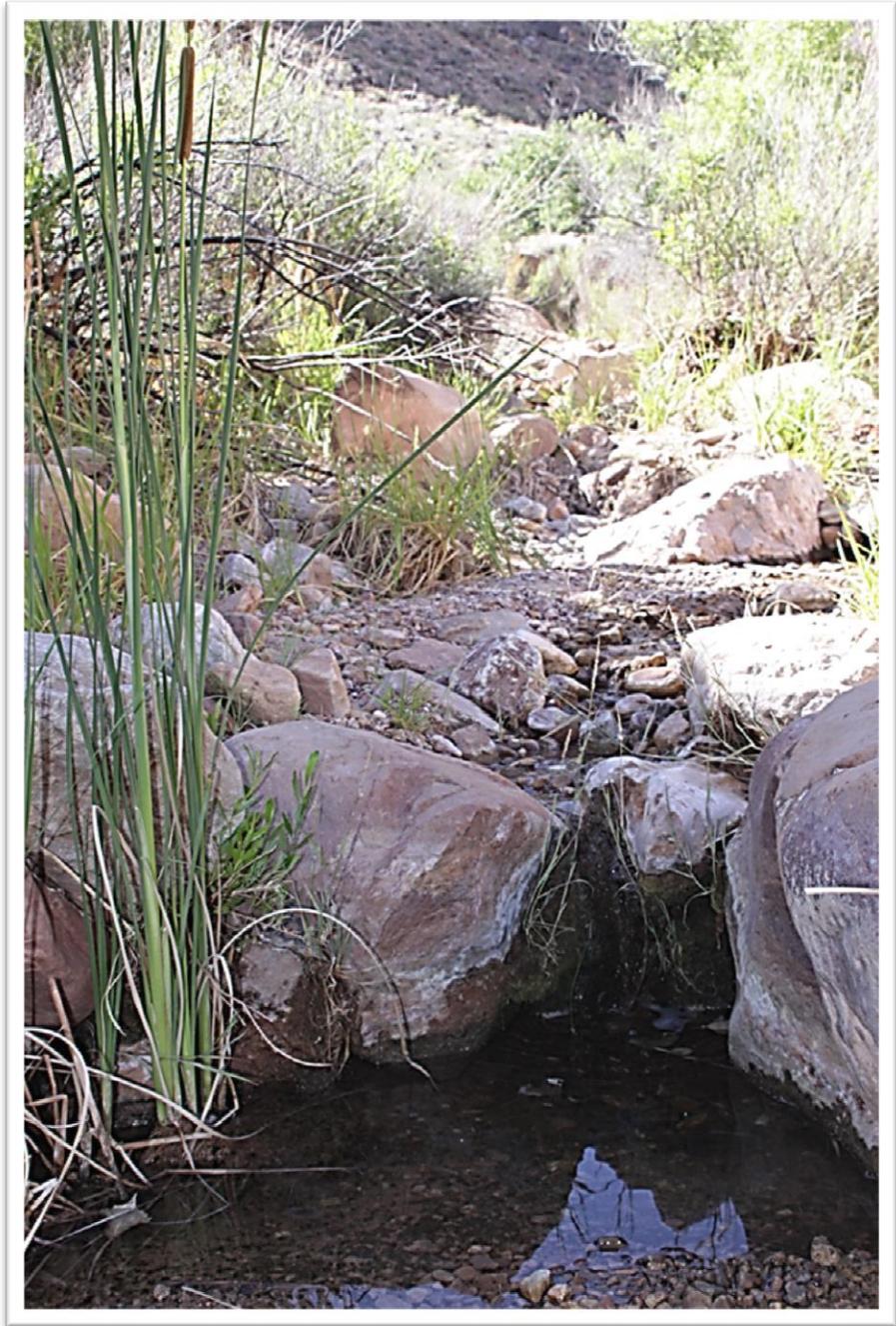
"For some reason, it didn't cross my mind that, no-shit, if you were to lose your balance, that's your deathbed waiting at the bottom"



MSG Chris Doggett (TBI)

I awoke several times throughout the night not sure if it was restlessness or excitement for the trip tomorrow. This is the first day of our decent into the canyon; very hard on my knees and legs

(especially my knees as they were injured during the same explosion I had my TBI). I have met some extraordinary men here so far but still find myself needing solitude at times. No headaches today. I have experienced some anger today, well maybe just irritable, not at anyone in particular just one of those moods I guess. We stopped in a small cave to have lunch and take some time out of the hot sun...eventually this turned into several hours of sitting and waiting for the sun to hide and provide us some shade. After trekking a little more this evening we set up camp, which consisted of throwing out a blanket wherever you could find a soft place and hoping the ants weren't attracted to you or your blanket.



Hance Creek water source was little more than a trickle

I slept better last night but still awoke a few times...once due to the ants crawling all over me. An early morning

today; up at 0330, grabbing a quick bite of a granola bar or crackers and then off onto the trails at first day break. A very long and hot day of trekking today. We went through some really hard terrain and a few times was very worried about other members. I have experienced some pretty traumatic things in my career and I vowed to myself if something were to happen to one of these men I would never go on another trip like this. Knees and legs are still very worn out and irritability is coming and going. All members are very strong and positive, really starting to get to know people.

We made it to our alternate water source today...my opinion this was a very risky water source. Not very much water flow and then filtering took quite a bit of time and effort; water was at best lukewarm and all we had to carry us over until we reach the Colorado River tomorrow.



Cameron Lehrer, CPO

My back is sore, my legs ache, and my face is sunburnt.

Nonetheless, I am awe stricken with these three

amputees. The transfemoral (SFC Costello) of our trip refused the offer to have some of the weight of his pack, or “ruck” as all the military guys are calling it, carried by some of the non-amputees on the trip. Not one of the amputees on this trip wanted any special treatment, and I cannot help but admire them for this. It was hard for me to get up first thing and grab their measurements for this trip, and even harder to find the energy to record the measurements in the evening. However, these men are living proof and shining examples of perseverance, and I will not even begin to feel sorry for myself when I have to push through the aches, pain, or fatigue to assist these amputees on their expedition to challenge, inspire, and further the research to help those who come behind them.

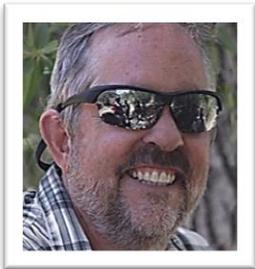


Cameron's full mattress was the envy of all the trekkers

Date: 20 June (Thursday, Day Two)

**Location/Route: Miner's (Hance) Creek to Colorado River
(4,400 ft to 2,450 ft)**

*The glories and the beauties of form, color and sound unite in the
Grand Canyon. – John Wesley Powell, 1895*



Rob Ferguson, Guide

Day two started early on the Tonto Trail. Hiking the Tonto pre-dawn and in early morning shadows is as easy as GC hiking gets. It's what I call "Canyon level". Lots of joking and getting to know each other better made it a nice start to the day. Just before rounding the bend towards Mineral Gulch and entering full sun for the remainder of that day's hike, several members decided to cache some gear to

reduce pack weight. They were starting to realize my earlier warnings that every ounce counts. Since we would be returning via the same route, caching gear was a good decision. Not long after the turn into the sun, we encountered our first of three pink Grand Canyon Rattlesnakes, found nowhere else in the world. This docile reptile was in the center of the trail. This was the only time I saw fear on Bobo's face the entire trip. Did I mention he HATES snakes?!?

Day two-morning sun took its toll on the group. It was going to be a struggle to reach the river at Hance Rapids. We split into two groups. The first group went ahead to scout shade and hit the river. The rest of the team shade-hopped until reaching the



large boulder field about a mile from camp. Half of this second group soon continued on

towards the river. Denise and I brought water from the river back to the remaining members of the group under the boulders. After a little more rest in the shade, this final group made it to the river and camp. The Colorado River is COLD. It is about 48 degrees F, quite the contrast to the 100+ degree air temps. Today's hike was a struggle due to heat and full sun exposure for much of the day. Not once was there the slightest bit of whining from any of these amazing guys! This group was proving its toughness more and more each day.



Denise Becker, Nurse/Guide

Thursday Day 2

June 20, 2013. Colorado River, Inner Gorge, The Bottom

A day that put all to an ultimate test.

Alarms started day at 3:30 a.m. Hard to get up, actually got cool sleeping under stars, guess about 76 degrees. No tents. Quiet pack-up by light of head lamps, an efficient, disciplined feel from the group. Cameron did morning measurements of prosthetics. I was the only one who took time for coffee making. Hurried to fit it in. Cold quick breakfast of bars, granola. Ready for trail by 4:45 a.m. at first glow in sky. Everyone good-spirited.

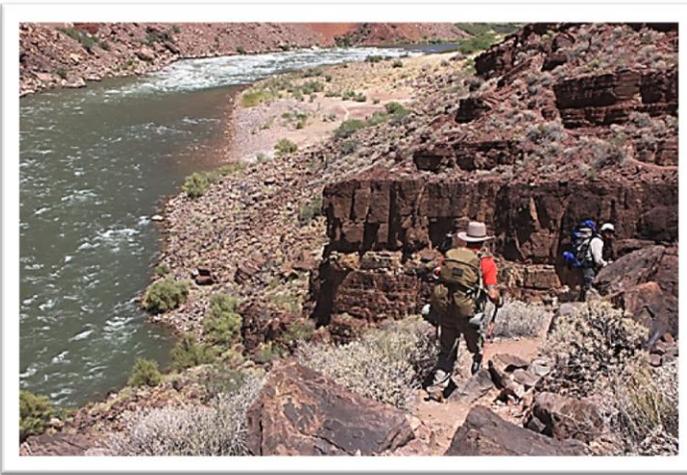
Yesterday, a long hike into that camp, Hance Creek. Got there at dusk, a race to set up, chores, water and quick to sleep, bedrolls on best level ground. Only about 8 hours later and time to hike out. There was a good stream of water to use and now packs heavy again in anticipation of big day ahead. Today, the Tonto trail, climbing but good trail for footing. Group hiked together, lots of chatting and

moments to stop and enjoy the beautiful scenery and early morning's shade. Pace slowed, spirits strained, intense heat moving in on us. Seeking thin slivers of shade from rock edges. Heavy breathing, sweating, red faces, parching mouths, precious water. Heat took our energy. Trail became more difficult, challenging step after step.



Billy takes point followed by Pete and Bobo

Down, down, down. It was a long tough day for all but the team strong. Group decisions, shared concerns, support, determination. All hurting. Supplies cached, not needed. Changing priorities. Much unloaded and hidden away. Bobo left tent. Billy, Pete, Bobo, enduring, perseverance. Each step dangerous, a missed one lethal. Steep drop offs, unstable edges. Intense sun's heat. Intense rock's radiating heat. The tougher it was, the harder they worked, the deeper they dug in. Pink rattlesnakes up close. Bobo trying out a new sock and needing to stop for readjustments. Pete's challenge of heat stress, endurance. Billy with increased footing challenges, each step. Prosthetic knee challenged. Chris, looming severe vertigo. Stoic, steady. Captain Dave, shoulder, heat, solid, Joe, blistering, sharing, encouraging.



Really tough last hours on trail, dangerous heat conditions. Some out of water. Could see the Colorado below, hard to judge how long to get there, maybe an hour? Unknown conditions. Take a chance at being exposed longer on hot unknown trail? Wait out heat of day in shade of beautiful large red rocks ? Everyone low on water, some out. More group decisions. Rob, Joe and Collin went on to the Colorado first. Followed by Billy, Pete, Chris and myself. A grueling

hour for Billy and Pete down to the river. Many stops, fatigue, heat. Never quitting. See them turning in, digging deep digging hard. "It's hard to dig when you got nothin left...", Billy. Joe running to them with water, cold from the river. Back up to the red rocks, Rob and I brought water to Dave, Bobo and Cameron. Sounds of splashing in the river below. Revitalized by the cold clear canyon water. We submerged in it, drank, washed and cherished the source.

The final descent took everything. Bobo, Pete, Billy...quiet. Made it. Was it too much? Was everyone okay? We set up camp with decisions to stay 2 days for re-powering.

Camps set, solar chargers out, stoves cooking supper. It was a huge relief to be at the river's side. The stress on the amputees very concerning. Bobo was quiet about the extent of his stump wounds. Pete, Billy in the river. The team. Humbling to be among such strength. Quitting never an option.

Sun down now. So tired. Big moon, bedrolls under the stars. River rapids soothing roar...to sleep now. We made it down. THEY made it. Goodnight.

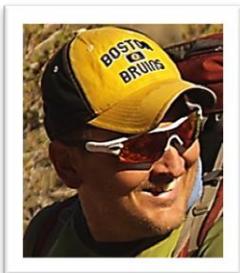


SFC Billy Costello

DAY 2
20:04
20 JUNE 2013



WE MADE IT TO THE RIVER!!! Today started at 03:30 to break down camp and get moving before day break. Today's hike and the heat were rough. It was slow going for the amputees. We ended up separating into 3 groups. The lead group consisted of Rob, Colin, and Joe. They reached the beach first. The second group was Chris, me, and Denise. We got in at about 14:00. The trail group was Dave, Pete, Bobo, and Cameron. They got into camp about 17:00. The river helped to wash away the grueling hike and all the pain that came along with it, both physically and mentally. The water was cold!!! Probably in the low 50s. My lower body is handling the abuse well. Not much to complain about besides being sore, completely smoked, and having a raspberry where the bottom of my right butt cheek meets the top of the socket. It's rubbed the skin away and is now pretty tender. My ruck would push down on my butt so that when my leg came back it pinched my butt check between the pack and my socket. If I could I would lower the trim line in the rear of the socket a 1/2 inch to an inch.



MSG "Bobo" Stanwood

Today I changed up a bit and donned a sock below my liner called

the Valor sock from a company named Swiftwick. I hadn't yet put it on before and it's supposed to help with sweat. Also I sprayed some Arrid Extra Dry anti-perspirant.



Started off just as painful as yesterday, what a ROOKIE I am.

At the first break I had to tell Pete Q that I was going to cache some of my stupid shit, i.e..... Tent and some AA **Dave Olson (l) and Bobo (r) prepare to make the final push for the river**

batteries that I didn't even have anything that required AA's, and some other small items, Oz's equal LB's is the bottom line. HaHa I just always carry shit for contingencies and not on this trip anymore, bye bye now to about 10+lbs of nonsense.

We are moving entirely tooo much during the heat of the day, people need to get up earlier or something cause there was a lot of bullshitting going on and sitting around when first light came and went when we should have been on the trail. If we have to backup first call or what I don't know. I am completely smoked again today.



Joe Frank collected water at the Colorado River, nearly an hour's trek below, and returned to help resupply his remaining amputee teammates

We separated today and sent a little recon team out to see exactly how far it was to the bottom, from now on we have to be smarter and give 5 point contingency plans anytime we split for whatever reason, cause it just makes sense. After a while of NOT hearing the whistle technique that very rarely works anyway what do we see coming around the corner of the cliff but "Joe the Show" running in his sandals to come back and tell us that it was still about an hour or so. The remainder of the group stayed in the shade till the sun went behind the canyon and then we began our final trek down to the bottom. What a mind#@%\$ that was. I knew that they said there was a couple false corners etc.... well they weren't kidding. Once I first saw the river I thought OH YEA I got this, then we



Cameron collects research data on Bobo's residual limb following the descent to the Colorado River

had to contour the canyon walls more and it seemed to get further away at times. Mentally it crushed me. Had I left with the middle group that went down during the heat of the day to just close out that trek I probably would have been a heat casualty. It was a complete Gut-Check. I had to go into old school Ranger Mode and just put my head down and take it one step at a time. It never felt so good to be down with a segment of a

road march or in this case trek in the Grand Canyon. We are now

at the bottom of the canyon resting right along the Colorado River and it's gorgeous. Although I cannot move from my spot that I almost just collapsed on, I'll wait till tomorrow to get over to the river that is only about 75 feet away, if that.

Owie on the back of my leg has grown to 3 small owies and extremely painful but I'll pull maintenance on them and see what I can come up with. Once I pulled off the Valor sock it pulled off the skin of all 3 owies that are now all dripping blood. GREAT but at this point I'm soo smoked I just need to dress it and pound water and get some sleep.



OS2 Joe Frank

One observation that I did make was that we were chattier on the way down than on the way out. I can imagine for obvious reasons; tired, sore, banged-up, etc. One neat thing was that we were never alone. There was always someone in front or behind you. You didn't always have to talk but if you wanted, there was someone around to strike up a conversation.

For the majority of the hike itself, I only jotted down a few reminder items that I wanted to journal on. I thought about keeping journal entries consistent but then I decided I wanted to work more on being in the moment and watch now and type later. I wanted to be closer to the inside of the ring. I wasn't necessarily all about talking the entire time but I wanted to be near to listen and take everything in. I looked at all the Canyon had to offer. I was very content that I was separated from everyone and everything above that Canyon. Inside the Canyon, there was a sense of freedom.



The Colorado River

On the descent down, it was an easy fact that we just had to get to the bottom where the water was. It was as easy as that. Not much questioning there. Well, I'm sure Colin could find two or six. Once we caught that initial glimpse of the Colorado River, a rise in spirits was among us. On that very hot day in the midday sun, we finally reached the

river! After dropping our packs, we stripped down to get into the water. Not exactly sure of the temperature but it initially took your breath away. I knew that cold, natural water would be great recovery so I knew what needed to be done. I submerged myself time after time. My immediate thought was the trip has been completely worth it with that plunge. There's not many things in this world that can give you the refresh feeling that that water supplied. It was such a rejuvenating feeling that I confidently told myself that I would do the hike all over again just to dive under that water. Weeks later as I type this, I'll 100% still back that up.



MSG Chris Doggett

I didn't sleep very well last night, very windy and cooler than normal.

Today is the last push to arrive at the Colorado river. A very hot and hard trek today, we had to split the team after chasing shadows. 5 went to the beach and 5 stayed behind until cooler weather came in. The heat definitely got the best of us today along with the terrain, change of plans with our guides...we will bed down here for the next 2 days and rest before heading back. Make shift shade were made with tarps and we all rested and soaked our heads and bodies in the cold Colorado river. It was nice to be at a dependable water source, to have some cold water to drink. To bring our body temperatures down many dipped completely into the water, pretty cold (40 degrees or so). Good to have some time alone and "chill" in the river...I did find myself still needing some time to myself, kind of regroup my thoughts and surroundings. The remaining 5 team members came into camp when the sun hid and provided some shade.



Lightweight Tyvek HomeWrap provided valuable shade during the hottest segments of each day along the Colorado River

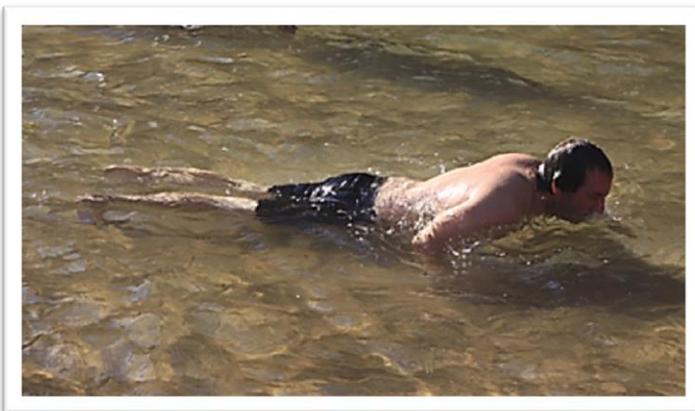


Cameron Lehrer

Today, we finally reached the bottom of the canyon. I have never experienced thirst like I did toward

the end of yesterday's hike. The final portion of yesterday's hike was

downright daunting. We spent the last portion of the hike forced to see the cold, clean, and refreshing water of the Colorado River so close to us, but not quite in reach. As I finally reached the bottom, I used every last bit of energy to drop my ruck, remove my clothes, and run like one of those people wandering through a desert in the movies to what I prayed was not an oasis.



"I prayed that it was not an oasis"

Date: 21 June (Friday, Day Three)

Location: Hance Rapids - Colorado River

There are places in the world that you see with your eyes and there are those you see with your heart. The Colorado River and Grand Canyon are that way for me... We are reminded of our own humanity on the river. And we are restored. – Christa Sadler, 1998



Rob Ferguson, Guide

It was obvious that our itinerary would need modifications to deal with the heat and its effects on the artificial legs and residual limbs of the vets, as well as the safety for us all. Day three was originally planned to continue hiking along the Colorado River on the Escalante Route.

The amputees were in need of a rest and recovery day for their residual limbs. It was finally hitting me over the head as to how much these men were enduring and working through in order to accomplish this challenge I had organized. I was really starting to worry that I set the bar too high for this event. Fear was setting in about the possibility of failure, which would result in a helicopter evacuation of one or more team members. I kept going over CAPT Olson's assurances during our earliest planning discussions, "These men will not quit." I hoped he was right.



Day three gave those that needed, the opportunity to rest. The rest of us did the next portion of trail as a day hike. This incorporated some of the most fun hiking of the trip. It included climbing a 200' loose, steep scree field, while trying to avoid sending rock slides on top of each other. That was followed by cliff-hanging overlooks above the river and descending the Papago Wall. This is a 30' rock face which required scrambling from ledge to ledge to the bottom. We were richly rewarded with a private, pristine sandy beach cove. Swim, joke, eat, nap, repeat! We then had the privilege of reversing course up the wall and down the scree back to camp. This was an awesome day! As for the amputees, the day off was appreciated and needed.



Denise Becker, Nurse/Guide

Friday, Day 3
June 20, 2013

Colorado River Camp

Today was a day of much needed rest and recuperation. Billy, Pete and Bobo were all hurting and had reached their limits, and then gone past. They do not stop. It is not an option for them. The climb out will be tough, hopefully they have had time to re charge. There is worry about Bobo's leg. The wound has opened. He downplays it, takes care of it on his own, "it's good".....but it looks sore with potential for infection. He is diligent in the care, cleaning, ointments, dressings. Bobo from Boston, "the mutha land", always colorful words. Billy said each step up will be difficult and he worries about slipping. Pete is doing well, says that having better knowledge of how much further to go on the trail would help. Billy says it helps them all to know more exactly how far the goal is so they can gauge themselves for stamina. Joe's ankle and leg injuries with hardware repair could be so limiting but he pushes on. always with a smile--kind soul. Quiet Chris makes us smile big with his sudden blurts of dry humor and surprising 3 to 4 sentences of 'chat'. Cameron is a real jokester and very chatty, always a good story to lighten the moment, real concern for the vets, for the amputees, diligence about his morning and afternoon measurements and data collections. Gives us all a laugh with his Luxor bedroll. Dave, always has a task to work on with so much to organize for the groups present and upcoming projects. He was managing much with a satellite phone, difficult to do given sporadic connection. Got news that Carol Martin is ill and in the hospital. So sorry to learn and really too bad she won't be able to come out to enjoy all the 'fun' planned for Utah. It had seemed she was very much looking forward to it. Hope she is okay. Such a good person to contribute so much to helping others.

While Dave, Bobo, Pete and Billy rested up in camp today, the rest of us did a day hike up a steep rock scree climb, and down the Papago Wall. The scree was unstable and very steep. We spaced out so as not to climb above others and knock rocks on them. Looking down to the river straight below was somewhat unnerving. The feel of the wind pulling on you, the sense that the slightest slip could send you plummeting. We climbed, focused, deliberate, each toe and finger hold carefully chosen. On top, a sense of big accomplishments. Tremendous climb efforts and feelings of camaraderie. We made it to the gorgeous sandy river beach for an afternoon of relaxing and play, It was a great day. Storytelling, jokes, laughing, snoozing. We got to know one another more and more. Friends being made.

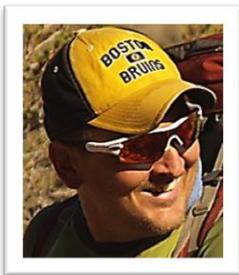
Back to camp in the late afternoon. The sunshades made of light weight white tarp worked well over the camp during the day. We are estimating the temperatures about 100-110 degrees, dangerous if exposed. It was so nice under the full moon. Pete and Bobo opted to stay up at camp. Hope they are enjoying this powerful place in the Canyon. Sleeping under the open night sky is phenomenal. Magical.



SFC Billy Costello

Day 3
21 June 2013

Denise asked me how I was going to teach this work ethic, determination, drive and perseverance to my kids. I answered that I hoped it was in their blood, but now that I think about it I hope that they are learning it by my example on these challenges. Simply by seeking out opportunities to rise to the challenge and be successful after such a devastating blow is dealt in life. By not letting the road blocks of life stop me in my tracks and by looking at life's obstacles as challenges I hope to pass on a moral courage to my children that is only found in these circumstances.



MSG "Bobo" Stanwood

Well, we have readjusted our plan and it's a good thing because if I had to go on the "Day Hike" today we would have been on the SAT phone calling in a helo at some point. The 3 small owies on the back of my leg are extremely sore but we are now going to be spending about 36ish' hours here so there is time to rest and heal.

A badass shelter was built today to hide from the sun and the majority of the group went onto a 30 foot scree wall or some shit like that all I heard was BLAH BLAH BLAH after we decided it was optional. Sat on my ass all day today and just enjoyed the beauty of the Colorado River even though I had NO idea if my owies were gonna allow me to continue. Of



course, I was only thinking that to myself. I did talk to Q a couple times and say “Holy Shit Brotha, Just Walking Huh” haha that was the ongoing joke with us as Q didn’t know it was going to be so difficult either.

We will be here till tomorrow late afternoon and then start the trek back up to the top. OH BOY I can hardly wait.



**OS2 Joe
Frank**

We spent two nights at the river bottom and we were able to witness our first

human contact. They were rafting tours and kayakers. It was nice to see something new but you knew that they cheated their way down to that river.



We had a very Patriotic camp setup with the American Flag flying and our individual sleeping areas. The water was 50 meters away and there were rapids just a few hundred yards from us. I especially enjoyed lying at night because all you would see are stars and the occasional plane flying overhead. I was sitting in one of those planes just a few weeks prior. When I was looking out of the plane I thought, so that’s where I’ll be in a couple weeks, as I looked way down and saw the river. Now I was at the bottom and looking up. I said, “#\$%!, life is good.” Nothing was bothering us down there. No nonsense, we had food and water, no e-mails, traffic, you name it. You have to think,,, how many people fly over this thing everyday and of those, how many actually get to lie here and do what I’m doing? I was very aware of everything that came along with this trek. Not to mention the cutting of a few pounds and an extra few layers of tan. There’s so much history behind the Grand Canyon and people of all countries visit this site because it’s known across the world.



MSG Chris Doggett

An additional hike was offered and 5 of us went on it. We hiked to and then climbed the Papago, this was very challenging but very fun. We spent the day at the new beach and watched the packrafters drift by us, had some lunch and then after a nap headed back to base camp. We

arrived at dusk, had some dinner and discussed our plans to ascend the canyon the next morning. Our new plan was to avoid the “double black diamond” slope we came in on but this added another 4.5 miles to our trip. We all agreed it was the best plan. After repacking our gear, bathing in the river, it was time to attempt to get a good night’s sleep.



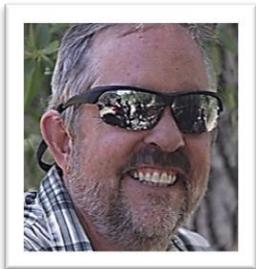
Cameron Lehrer, CPO

Today the group decided to rest and recharge. I know the amputees are hurting... we all are. Today is the first day I am starting to really worry about the safety of the amputees. Sores are showing up on their residual limbs, and the nurse on the trip is doing her best to care for them. Not one of them is saying it will be a problem. They all just say to let me rest, recharge, and I’ll be fine. I asked one of the amputees on the trip how the military trained them to be so tough, and he just humbly said, “They don’t/can’t teach this, you have to find it in yourself and polish it.” I am three days into the trip and have only become more impressed and inspired by all of these guys.

Date: 22 June (Saturday, Day Four)

Location/Route: Colorado River to Hance Creek/Mineral Gulch

The whole gorge for miles lay beneath us and it was by far the most awfully grand impressive scene that I have ever seen. – Thomas Moran, 1873



Rob Ferguson, Guide

Since we had changed our itinerary, day four was continued rest and filtering of water until late afternoon. Instead of two long torturous days ascending, we decided to break it up into four shorter uphill sections. The first was late afternoon of day four. The next two sections would be early morning and late afternoon of day five with rest and water at Hance Creek in between. Early day six would be our final ascent. These revisions allowed us the ability to avoid the worst of the sun and heat.

We ate an early dinner day four and started the climb away from our beloved river camp. We stopped at dark and camped on rocky ledges about a mile from Mineral Gulch, just after an encounter with our third pink rattlesnake!



Denise Becker, Nurse/Guide:

Saturday Day 4
June 21, 2013. Colorado River Camp, midday.

We leave here today when the high heat breaks down. We will begin our climb back up.

Lots of scramble to get William and Devan out here on a commercial flight [Denise and Devan are Denise's children who's flight arrangements had been abruptly cancelled while we were trekking and required rescheduling while we were in the inner canyon]. Dave went all out with the limited satellite reception. He climbed a mountain to get signal to connect. As always, by all, a great positive 'can do' attitude. Dave made it happen and the kids will fly with SCUBAnaut Danny Alaniz and Dave's son, Evan. It took a lot of work from Dave and tons from his wife back in Florida to make it all happen. Different flights and people but the kids will meet us in Tusayan as

planned. Thank you Dave! Great effort. What a group. I hope Mrs. Martin is okay. I wish she could experience some of this group power.

Time now to make more water, lunch, start checking things over for evening trek out. Will soak again in the river to cool down. We dry before walking back up to camp but it is cooling. The water filter system has been somewhat disappointing. The filters are okay but problems with the gaskets not holding position and the bags ripping. This is the test the system needed.



We got underway from the memorable river camp at 1800 hrs. Fully hydrated and loaded with water in anticipation of the hot red rock climb. It was hard on the guys to wait until the p.m. for departure but the smartest thing to do given the scorching sun's heat. We got our group shot with the flag. Also took good pictures around the figured amputee beach monument Rob and Collin made for the CWV team. We were fully prepped for the straight up climb, into the hot red rock. I could feel the tense anticipation, the anxiety. We knew this would be a hard climb for the amputees, for all. We had gotten to know one another over the days in camp and to know more of the challenges for each. Chris, his TBI, migraines, vertigo, ortho injuries. Joe, the inner struggles, the outer blisters, arthritic injury sites. We only learned through subtle mentions, time together. The more I know, the deeper my respect. I cannot imagine how they all felt that day, sitting and waiting to tackle this immense challenge.

Final soakings in the Colorado River, a baptism of sorts. Set off dripping wet, drying after seconds in the arid furnace wind.



SFC Billy Costello

Day 4
22 June 2013

We left our camp after 18:00 today to trek as far as we could before we lost the daylight. It was already cooling down when we said

goodbye to the lovely cold embrace of the Colorado River. The trail was much easier going the opposite direction without the sun beating down on us. We made it past the hard part and found a decent flat spot on a bend in the trail. We only go about 2 hours of movement before we ran out of daylight so we didn't make it as far as we hoped we would. The cliff face has 3 tiers and a few of us are camped out on each level. The wind is blowing pretty hard so



Pete Quintanilla (foreground), Cameron (middle) and Billy discuss their apprehension at sleeping so close to the ridgeline of the Canyon along the trail

everything is staying in the ruck sack. We should have very little to do in the morning besides eat up, throw on our gear, and get moving at first light. 03:00 first call. Moving by 04:00.



MSG "Bobo" Stanwood

Sat on my ass almost all day today in preparation for this afternoon's departure. Once the sun went down enough we took off right back up that same trail that we descended on. Well, to be honest, I don't remember

ANY of it. Until we got to the place where we stopped 2 days prior in the small caves with shade I didn't recognize a damn thing, which tells me how close I was to probably going down on the decent. Before we left I



"At our first rest break, I had to rip off the rest of the hydrocolloid I placed on the back of my leg at the start of today's hike because it started to migrate under the extreme activity"

had placed a small piece of hydrocolloid on the owies on the back of my leg to help pad them and try to start healing process, well NO JOY on that one. At our first rest break I had to rip it off the rest of the way cause it started to migrate under the extreme activity. I placed a 4" x 4" piece of duo-derm with some thin padding on it. I had used that stuff before just now with the padding in it also. Let's see how this works. In addition, I also still continue to use the Valor sock with the antiperspirant.

So far so good on the duo-derm pad. I am going to keep it in place tonite and hope that it doesn't move around while I sleep. I will sleep with my liner on as well to help keep it in place.



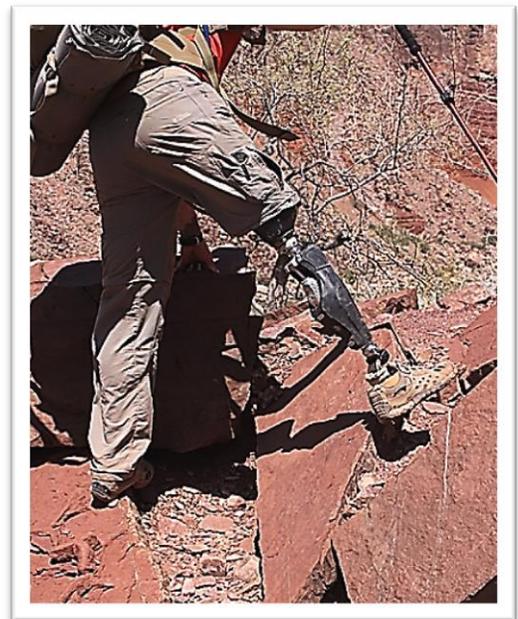
OS2 Joe Frank

We were well rested to begin our climb from the river and head toward the rim. I know BoBo was hurting but I NEVER EVER had any doubt he would get out under his own power. He would sometimes jokingly bring up the chopper coming in for him but I would break both Satellite phones before that could be an option. Billy was an animal, Pete just wanted to keep forward motion, Dave was solid even with recent shoulder surgery, Colin was young and healthy, Chris was strong and quiet, didn't have much to say but when he did, it was something good and funny, Cameron.. well, he made it and not by much more, Rob was beginning to weaken, it was noticeable as "our breaks" would become longer and longer, and Denise was never even aware that we were hiking the Grand Canyon.



Cameron Lehrer, CPO

We continued to rest the majority of the day down at the river, and began our hike out once the sun fell behind the canyon. I miss my family, friends, and my girl. I want to get back and see them, but I don't want to leave my Oasis. This will not be easy and the hike out will be a great test to all of us. These amputees have continued to amaze me, especially Billy- the transfemoral on the trip. He has an X2 knee from Otto Bock (the military version of the Genium). I am seeing, first-hand, how superior this knee is to the others on the market. In my professional opinion, no other microprocessor knee would have enabled him to make it this far. This alone has been such an



"(Billy) has an X2 knee from Otto Bock. I am seeing, first-hand, how superior this knee is to the others on the market"

astonishing thing to witness. Technology has come very far in my field, and I hope and pray that technology such as this will become available to more patients. Third party payers (insurance companies) make it far too difficult for patients to have access to this wonderful technology. Prostheses are intended to enhance the quality of life for an individual with an amputation, and it infuriates me to receive denials that keep patients from having the most active and fruitful quality of life that this type of technology can provide them.

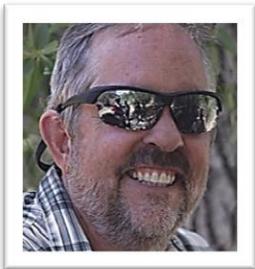


L-R: Denise, Rob, Bobo (kneeling), Joe, Billy, Colin, Pete, Cameron (kneeling), Dave and Chris

Date: 23 June (Sunday, Day Five)

Location/Route: Mineral Gulch to Horseshoe Mesa (North Slope)

It is never the same, even from day to day, or even from hour to hour... Every passing cloud, every change in the position of the sun, recasts the whole. – Clarence E. Dutton, 1885



Rob Ferguson, Guide

Early day-five rejoined team members with untouched cache'd belongings. It was an easy, shaded morning hike to Hance Creek which featured cool shade and water. The tiny algae-filled trickle looked better to all today! Another early dinner and late afternoon hike kept us in the shade for the third uphill section of our ascent.

This was our longest mileage day of the trek. The group was tired and some were having difficulty as darkness set upon us. I pushed the group up towards Horseshoe Mesa to eliminate as much climbing as possible for our last day. This meant scattered, sloping, rocky bedding spots. I felt bad about this last uphill push of the day, but was happy to have part of it behind us for that final day of steep never-ending switchbacks.



Rob gives pep talk, "one more switch-back" to Dave, Bobo, Chris, Pete, and Billy



Denise Becker, Nurse/Guide:

Sunday Day 5
June 22, 2013 Midday break spot - Hance Creek

The climb was grueling. Each step a great effort. Each with pain and shear determination initiating the next. Billy so tough. Pete never quitting. Bobo swallowing the pain. All of hot, flushed, hurting. Silence, climbing and marching on. Joe's happy spirit no matter what, carrying more water for all, ankles dressed for the blisters of running water back to us days before. Chris, quiet, stoic, air force, fighting off vertigo, migraines, the evils of TBI that resulted from a bombing impact. As the team sweep



Chris (L) and Cameron (R) take in some shade and rest at Hance Creek prior to ascent to Horseshoe Mesa

on the trail I was over whelmed with their powerful silhouette on the red rock horizon. This was something everyone needs to witness. So much to learn from them. The inners that drive to great things. Our first stop back at that red rock site was brief. Bobo's stump dressing had already ripped off with the sore now open and bleeding.

He redressed it and pressed on. Billy was silent, swallowing the pain, addressing his high stump wound in private. Pete with no suction to his prosthetic. All were anxious to press on as nightfall loomed. We kept a good strong pace until nightfall then made camp just off the trail, on shale tiered outcroppings of the cliff side. I watched the



Cameron (Top) and Bobo take advantage of the fast disappearing shade

shine of the full moon rise over the canyon, the

cliffs, magical. It was a huge full moon casting bright light. A warm night.

Alarms at 3:00am. Trail by 1st glow of light at 4:45. Good pace, good spirits, mile by mile. Back at the cache, all the stashed gear and food was recovered in good untouched shape. I was surprised. The tough wire bags were effective. It was hard to fit it all back into the now full packs. Bobo gave his tent to Joe! He also had a 'yard sale' of all else. Collin took most of the items and food. Always carrying more for the rest of the team. Everyone sat and ate some to the excess food, but remained hungry for something besides the trail mix, tunas and crackers. Conversation turned to 'dream food'. We hiked into this spot at Hance Creek by mid-morning. The little creek is still trickling the all necessary water and we filtered and filled. Daytime chores. Sun shades up. Rest. Await that high heat to pass, all in it together, more and more a team. Couldn't ask for a better group, really feeling the ties strengthen.

Hate the thought this is our last canyon night. We will head back on the trail in a couple of hours and hope to make the mining area by nightfall.



SFC Billy Costello

Day 5
23 June 2013

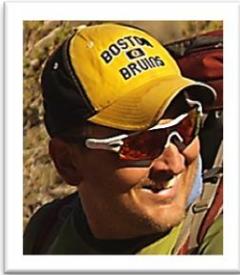
We departed for the afternoon trek at about

17:20. We hiked until dusk just after 20:00. I'm currently camped out on the side of a mountain with my body sloping down feet toward the base and a bat circling over my head. My socket is failing on me making these inclines hard to do. My socket is made of a Boa ratcheting system so that I can adjust for volume changes, but it was a prototype idea. The cord stays are glued on with epoxy and the head made them soft enough to

break loose at the top so I'm not getting the tightening effect that I need. The epoxy has broken and the laces are loose so I can't tighten it up.



I'm currently camped out on the side of a mountain with my body sloping down feet toward the base and a bat circling over my head



MSG “Bobo” Stanwood

Extremely painful are the owies but the duo derm pad held in place. So far and the seal is still intact. What a night that was also on the “Cliff”. Q was snoring soooo dam loud last night that Cameron at some point grabbed his KING SIZE mattress that he brought along and went up a couple of tiers of the cliff to hopefully get some sleep. The moon was sooo full and bright when I woke up and saw him

climbing with that mattress and with the moon being like a flashlight in my eyes I thought that I had actually dreamed it when I woke up this a.m. But apparently it wasn't a dream cause shortly after first call down he came with the king size mattress in tow to start his measurements.

I am glad that the duo derm pad held up cause it's gonna hurt coming off and most likely gonna bleed pretty good. Off we go.

At the first break I checked the duo-derm and its showing signs of migrating but it's still good to go or so I thought. The 2nd break I took off liner to check it out and don't ya know it the damn thing migrated and has caused a half dollar sized blister. What a genius I am.

Now with several hours still to go I have to deal with this new pain of the blister which was right on the back shelf of the prosthetic. Each and every step I am feeling the love.

Once we actually figured out that we were not going to get to our intended destination we finally stopped for the night right at DARK. It was no longer safe to walk so we literally dropped packs and got settled in for the night right on the semi steep incline right on the trail. The reason I say semi-steep cause last night it was extremely steep, meaning I had to snap link all my stuff together to a bush and hope for the best. All that meant was it was going to be that much of a longer trek tomorrow BUT it is the final trek so that was a huge help mentally.



"Each and every step, I am feeling the love"



I could sense the concern once they both saw the back of my leg

Once I got unpacked for the rack Cameron came up to do his measurements along with Denise who was just doing her rounds checking on people as she did every step of the way, I could sense the concern once they both saw the back of my leg. Not sure what their real thoughts were but I had a lot of concern myself. I just hadn't seen anything that bad before on my leg. Denise brought up some medical supplies that I

picked thru and came up with a plan for dressing it in the morning. I saturated the entire back of my leg with Neosporin and put the valor sock back on so not to wipe it all off while I slept and just hoped for the best.



OS2 Joe Frank

We had stopped right on the side of the trail as it became too dark to continue. It was absolutely beautiful. I wanted to take a picture but I knew it wouldn't come out and it wouldn't do any justice. I could only be there and know that the image would be stored in my brain. It was very peaceful and quiet. No more river sounds. The sky was the clearest sky that I've ever seen in my entire life. Endless amounts of stars, you could see the satellites rotating in the sky, everything was so bright! Once the moon came out, it lit up every mountain around us. It was almost like daylight. I didn't want to fall asleep, I wanted that moment to keep lasting, I didn't want that Canyon trek to be over yet. That next morning, or about 6 hours after we stopped hiking, I found out that several others were unable to sleep as well. Perhaps it was the bright skies, the calming quietness, the peaceful wind?



MSG Chris Doggett

Sunday 23 June: Short night of sleep, we again woke at 0300, ate a small snack breakfast and hit the trails at first light. Our plan was to hike as long as we could during the day stopping when we found a nice shady area to set up a temporary camp, after lunch and usually a long 8 hrs of resting and trying to stay cool we would hit the trail again early evening time frame. We hiked until it go too dangerously dark, threw down a blanket, ate a meal and slept until 0300 the next morning. We slept on rocks, on plateaus of rocks, on hill sides, on ant mounds, haha.



**Cameron
Lehrer,
CPO**

We are all hurting, and the amputees are certainly in the most pain. To no surprise, not one of them will accept any special treatment or call it quits.

This scares me as a clinician, but inspires and impresses me as a person. One of the transtibial amputees on the trip had a terrible sore on the posterior portion of his residual limb. I have expressed my concerns, and he insists that he finish the trip. I know he not only wants, but needs to do this. I am proud to help him in any way that I can.



"This scares me as a clinician but inspires me as a person"

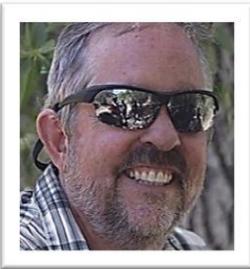


Cameron collects measurement data on transtibial amputee Bobo Stanwood

Date: 24 June (Monday, Day Six)

**Location/Route: Horseshoe Mesa (North Slope) to
Grandview Trailhead**

***The Grand Canyon is carved deep by the master hand; it is the gulf of silence, widened in the desert; it is all time inscribing the naked rock; it is the book of earth.* – Donald Culross Platte, 1941**



**Rob Ferguson,
Guide**

Day six was another early start, beginning instantly with the steep

continued climb to Horseshoe Mesa. It felt good to reach the “flat” stretch of the mesa top. “Canyon level” hiking can’t be beat! This led us to the final three miles up and out of the canyon. This part gradually became steeper until the final grueling 1.5 miles of false last turns and switchbacks!



As the team exited at the trailhead about 10:30 a.m., numerous tourists were there looking over the edge at Grandview Point. As they realized the emerging hikers included amputees and other veterans, they began to clap for our team. It was a wonderful conclusion to our efforts of the past six days.

Looking back on this entire experience, from the planning to the final uphill steps, it constantly inspires me to think of how hard all five wounded veterans worked to make it into and out of Grand Canyon. There was never a hint of whining or quitting from any of them. The entire group of veterans and support personnel really gelled and worked together to ensure the success of all. I wouldn’t have traded a single individual from this group. It truly was one of those rare experiences where everyone did their part without complaint. THANK YOU, Team!

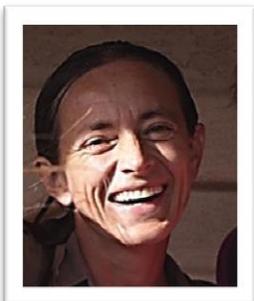
This Challenge succeeded because of the efforts of some outstanding individuals who each understood the importance of teamwork. CAPT Olson founded this fine organization with a clear mission which is never forgotten. Pete Quintinilla as team leader, put together this fantastic group of veterans. Your quiet struggles during the hike, and your perseverance helped us all. Billy Costello showed every one of us endless strength and determination which kept the rest of us from even thinking of complaining. You've got my vote if you run for office! Robert 'Bobo' Stanwood proved that underneath that "Boston Strong" attitude, lies a caring American Hero. I want you on my team. Joe Frank, your simple name and always smiling face hid the complicated struggles you have and continue to deal with. Your attitude and endurance gave us all the belief that we'd make it! Chris Doggett, your quiet confident demeanor made your rare, but biting commentaries more relevant and humorous than we could ever imagine. Thanks for the laughs!



No team succeeds without great support, and that we had. Cameron, your knowledge and care for the amputees was priceless. Collin, your constant offers of help and assistance were greatly appreciated by all. Denise, your 'Bambi-esque' hiking abilities along with your skilled nursing and photography made this trip safer and more memorable. Thank you all.

Throughout this challenge, we practiced Leave No Trace. We held to that ideal with one exception: I found an old hiking boot near the river. I used it to anchor a monument to our group- a ten foot circle of stones surrounding a stone and stick figure of an amputee hiker. With Collin's help, it also included driftwood letters which spelled out, "CWVC 2013" and "Vulner non Vincor" (Wounded, not Conquered). This was the only physical trace left behind of our Challenge. I am hoping this Challenge left as big a trace in the veterans' minds and hearts as it did in mine.

To the veterans above, thank you for your service to our country. Thank you for this incredible opportunity to be associated with you and this Combat Wounded Veterans Challenge. To all of you, no matter what challenges we all face in the future, just remember, it's "Only one more switchback!"



Denise Becker, Nurse/Guide:

June 24, 2013 Day 6
Top of the Canyon!!!!

WE MADE IT! Only a few minutes for a quick note. The excitement, the scurry now. Cannot believe we are done.

We did not get to the mining area last night. The evening hike was straining on all. That old sense of 'only a little further', Once again took a toll and when we hit an exceptionally difficult incline in a tight valley at nightfall we were discouraged. Exhausted, the guys wanted to stop before we did. Rob felt bad about pushing, but did it to get some of the extreme done for today.

I followed Billy for some time. He was exhausted. He fell twice. He muscled back up on his own. His pride pushed him on. I have no words to describe how it feels to watch the strength pour from the inside out.

We dropped and slept across that steep slope last night, where ever we could each find a spot to work into. It was surreal. Cameron and I did checks on all by head lights. Dressings, measurements, congestion, ant bites.



Amazing positive spirit. Support to one another, the ultimate power.

Now up here, I look down. That spot of last night so far below. The day was grueling again. But, never did the spirit break. There was talk, storytelling, quiet and reflection as we hiked and climbed up, Step by step.

I ran ahead to picture each person's individual arrival to the top, their final steps up. It was emotional to see each achieve this enormous accomplishment. It was life changing to pose with that team for the final picture.



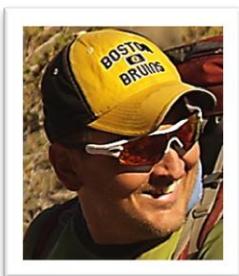
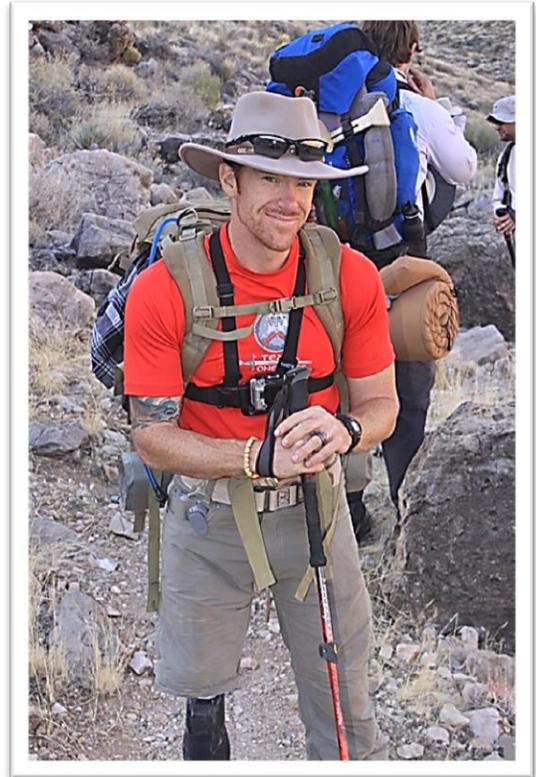
SFC Billy Costello

Day 6
24 June 2013

WE MADE IT TO THE
COLORADO AND BACK AND
LIVED TO TELL THE STORY!

It was such a great feeling to get to the top of the South Rim. It was nothing but hugs and high fives for the team. We even got some claps and congratulations from people who came to take pictures and look out over the canyon. Everybody came together well on this challenge. When there was work to be done, people sought out jobs without having to be assigned them. When someone was having more trouble than others, the team picked up the slack, and when person could he returned the favor. I like it when a team takes on a life of its own and everyone just knows what part they must fulfill, and the team doesn't force a leader to make demands.

We successfully accomplished what less than 1% of the people that visit the Grand Canyon accomplish. According to the Rangers we are the first Amputees to attempt this trek in the history of the Grand Canyon. That feels pretty amazing.

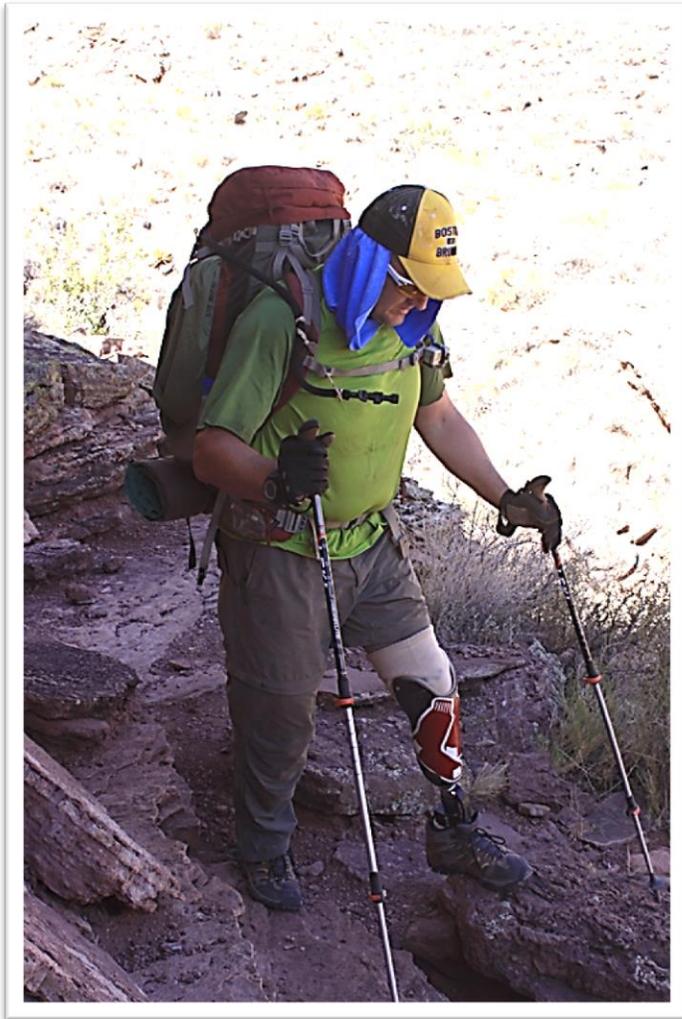


MSG "Bobo" Stanwood

Today first call couldn't come soon enough. I had NO idea what my leg was gonna look like and also so much for the good night's sleep. Between the incline I was on and the pain in the back of my leg there wasn't a whole lot of REM going on. Cameron came up as per SOP and took the measurements and still kind of had that same look of concern. Again I'm not sure how he really felt but the look was still there. Not sure if it was the look of "Quit your whining and get your leg on and lets go" or "Holy Shit we gotta call in the Helo cause that may do permanent damage" look.

I opened up the Vaseline impregnated 4"x4" piece of gauze and a clear piece of tagaderm (thin clear piece of film that covers wounds) and I attempted to dress the owies and blister. Well that was a waste of time. The plan had changed. So all I had was my Neosporin and my Valor sock and my arrid extra dry and went for it. I also used

some papertape to tape the top of the valor sock just as an extra tether to hopefully keep it from slipping.



We finally headed out for the final trek. At first it was feeling pretty good. I was very pleased as to how it felt pretty much all day. There was pain but not as much as the past couple days. A lot of the last trek was completed with my leg NOT locked into the socket. As soon as it locked in with 1 click it was ok but as soon as I went in 2 and 3 clicks it was brutal. So to take that out of the equation I just went unlocked. When it got real narrow or tricky rock terrain I would lock it because I know what the consequences could be but the pain relief I got from unlocking was the only way to complete the trek.

We walked for what seemed forever but we finally made it to what we thought was the last corner and Rob kept telling us it was only $\frac{1}{4}$ mile and 1 more switchback. When we came around one corner and looked across the canyon to another part of the canyon and realized that we were NOT quite where Rob thought we were I looked back at Chris and he had the look of exactly how I felt. At

that point I wanted to take what was now my trekking cane and poke Rob in the eyeballs multiple times but I just could not reach him. If he told me 1 more switchback or anything after that it was gonna be UGLY. We joked about it after but at that point I was mentally CRUSHED. Old School Ranger days mentality once again took over and I just put my head down and took it one step at a time.

All I wanted at this point was to get that damn ruck off my back and let my leg air out but NOOO we had to pose for at least a hundred pictures. Then finally made our way up to the general store and had the much needed greasy pizza and some ice water. Things were immediately getting better.

If I could do it again I would pack much differently. I would get rid of any and all “comfort items” or the nice to haves. Now that I’m all healed up it was a great learning

experience for myself. I learned what NOT to do as far as dressing an owie in the back of my leg. Also I wasn't in the best of shape and conveyed that to Q even before the trip but "it's just walking" came back to mind. We laugh about that often still. Next time I will definitely put some miles on my feet (no pun intended) and do a good kit shakeout before we descend into the canyon.

I made a lot of rookie mistakes that I am embarrassed about but, bottomline, it's over and we all made it out of there with no permanent damage other than my spirit. Also now that it's over I would definitely consider doing it again with a different route on itinerary. Maybe the rim to rim route, that from what I hear is the most touristy route.



OS2 Joe Frank

I didn't do very well when it came to our scheduled long breaks during the day to allow for the sun to pass. I'm not much of a napper, don't like sitting still, and there's only so many bags of water to fill. On some of the hikes and breaks, I did get some serious chat in with Chris about some TBI difficulties that we share. It was actually pretty nice to open up to someone that can relate and knows exactly

how it is to be in your shoes. It's always neat to be placed in a situation with others and you come to find out that each of them has their own little significant story behind them.

There we were on our very last couple of miles before we were to exit the beautiful Grand Canyon. As mentioned before, the conversation was minimum. Perhaps we were all just looking up and trying to figure out -out of the hundreds of miles of rim, where the hell exactly is where we pop out? Everything looked the same below so you could think you're looking in the right direction

and it's actually 30 degrees off to your left. It was hard to believe that the journey was coming to an end and those long hot days that seemed endless, were now just a part of our past.



Rob had no damn clue as to when we were about to exit so he kept telling everyone, "One more switch-back". Later on it was made a joke that he was just being sarcastic. Truth be told, I watched him closely as we went turn after turn and you could see that he would keep eyeing up the mountain. On one particular switch-back, I watched him turn and look up and just as one would think that was the final turn, he saw there was

higher ground and I read his lips, "Mother#@&%!". Its things like that that put a smile on my face and kept trekking along.

As we finally made our exit, I loved how it was finished. There was no camera crew, there was no parade, there were no shaking hands and kissing babies, it was just the ten of us that knew exactly what we just did. It was not only for ourselves but for the many injured that come after us, the articles that service members can read in the hospital, the research conducted and recorded to give others support and hope. This organization is unlike many of the others and it has more purpose than just a spotlight moment. As I hiked along, I thought of friends that were double amputees. Can they and will they take down the Grand Canyon? Absolutely. Will a blind individual make this trek? Absolutely. Our experience and stories are only going to evolve into progress of the injured.



MSG Chris Doggett

I slept probably the best I have the entire trip last night, even though I was rolling around all over the hillside. 0300, This is it...this is the day we ascend the south rim! I don't know how many miles we have left, a lot still, but we are going to encounter mankind today. We start off and I know that there are some of us who have small injuries, blisters, cuts, scrapes, and just dog-gone worn out bodies, but we all kept hiking and we pushed through the last day of hiking out. When

we started to see people along the route it was that extra boost of energy that we



needed to get to the top! Closer, closer...wait another ¼ of a mile! Ha! We all crouched together and went up as a team! What a feeling! What an accomplishment we had all made! There were people clapping and congratulating us, asking us how far we had gone, were we all mentally unstable for trying such a feat? Ha! There were hugs, high fives, and handshakes shared as we all looked back over

the (37 mile?) hike we just completed. To be a part of a team that has accomplished something that less than 1% of all the visitors that go to the Grand Canyon even think about doing, with amputees, with fellow TBI friends - what a rush!

With all of the heat, cold, headaches, times of needed solitude, and minor vertigo feelings I would not have traded the feeling that I had once we finished our mission. I would not have traded out one of the military members on this trip! I hope that this log can serve in some way to help track and log feelings TBI/PTSD can cause. I believe with the focus on a mission and with the people that know it and can relate you don't tend to think about the symptoms you experience on a day to day basis. My suggestion as far as TBI/PTSD goes is to at least have 2 members...Joe and I spoke quite often about symptoms and experiences we have daily. We laughed about many of them because we could relate to them so well...we also gave helpful suggestions to combat some of them as well. I would gladly attend another Combat Wounded Veteran Challenge.



Cameron Lehrer, CPO

I would like my last entry to be non-clinical or research related. This hike has inspired me far more than words could ever describe. I have experienced stars brighter than I have ever seen growing up in South Florida. I looked up at them every night and thought about my friends, family, and my girl... I miss them all. I thought about my mistakes, successes, and failures in life. I remembered all of those in my life who have helped me achieve my goals. I have come to realize the petty things in life are not worth my time (i.e. frustrations with work or ignorant people). I began my career in this field with the aspirations of helping people with limb loss to achieve active and fulfilling lives. This trip has more than reminded me of that and has helped me realize that I am doing just that and can continue to do so. I will be forever grateful for this experience and the friendships I have made during this trip.



TAB A

The Effects of Extreme Heat on the Volume of Residual Limbs, a Case Study

Cameron Lehrer, CPO, LPO
Florida Shores Brace Systems

Edited by: Arlene Gillis and Jillian Gifford

Introduction

The original case study was to observe the differences between the various residual limb length categories of transtibial amputees. This case study subject was abandoned due to some last minute cancelations with the group's amputee participants. The decision to monitor the volume fluctuations within the amputee members' residual limbs was made. The amputee and non-amputee members within the group were also tracked for their falls throughout the trip. In addition to the fall count and residual limb measurements, the number of times an amputee had to stop and remove their prosthesis was counted.

In clinical practice, volume change within the residuum is a daily challenge in maintaining a comfortable and well-fitting socket for the amputee. These volume changes are typically accommodated for by the use of various thicknesses of prosthetic socks. These volume changes can reduce or increase throughout the day. In the author of this case studies clinical experience, a correlation with extreme heat and increase in volume changes has been noted. Most amputees are told to increase sock ply throughout the day to accommodate for volume loss within the residual limb. However, an increase in the residual limb's volume would require the removal of socks (if possible) in order to approve the fit of the socket.

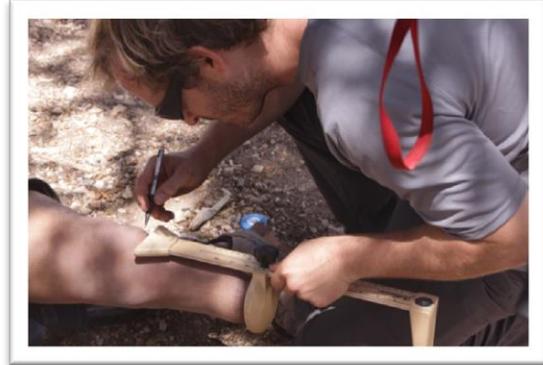
It is hypothesized that the amputees within the group would fall at a higher rate than the non-amputees. It was also hypothesized that the volume of the residual limbs would increase rather than decrease throughout the day due to the extreme heat environment of the Grand Canyon.

Methods

Residual Limb Volume Changes



Measurements were performed by the same Certified Prosthetist to control the variables of human error as much as possible. The same residual limb length gauge and tape measurer were used to perform the measurements on the entire amputee subject group



throughout the trip. The circumferential measurements for the transtibial amputees were recorded in two inch increments from the patellar tendon; 2 & 4" proximal, and every 2" distally. The original length measurements were marked on the gauge and used at each measurement collection to ensure the circumferential measurements were at the same location each time. The one transfemoral residual limb was measured using the same length gauge as the transtibial amputees. Measurements for the transfemoral were recorded every 2" from distal to proximal.

Fall Count and Removal of Prosthesis

The fall count was recorded at each hiking break. These falls were confirmed by the guides and other members of the trip. A fall was defined as anything where the individual slipped/fell and touched the ground in anyway.

The number of times an amputee removed their prosthesis was also recorded at the time of each hiking break.



Test Group (amputees)

TG Subject #1

Age: 43y.o. **Height:** 6'2" **Weight:** 245 lbs **Gender:** Male

Amputation Level: Left, Transtibial Amputation (8yrs post amputation)
Limb Length Classification: Short

Skin Issue(s): Yes.

*Subject reports occasional sores due to lack of sock ply accommodations. He further stated that this is his responsibility, and the sores occur when he is lackadaisical about it.

Current Prosthesis:

Length of use of current Prosthesis: 5 years

Socket: Total surface bearing PTB socket

Suspension: Pin/Lock (Ossur Dermo wave locking liner) **Foot:** Ossur VSP

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

*Subject stated "Nothing is a 10".

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

* Subject reported he was "Good to go".

Self-perceived limitations secondary to prosthesis: None

TG Subject #2

Age: 42y.o. **Height:** 5'11" **Weight:** 215 lbs **Gender:** Male

Amputation Level: Left, Transtibial Amputation (9yrs post amputation)

Limb Length Classification: Mid length

Skin Issue(s): None

Current Prosthesis:

Length of use of current Prosthesis: 1.5 years

Socket: Total surface bearing PTB socket **Suspension:** Sleeve/Suction
(Alpha cushion liner)

Foot: Freedom Innovations Renegade

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

*Subject declined any comments

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 10

* Subject declined any comments

Self-perceived limitations secondary to prosthesis: None

TG Subject #3

Age: 31y.o. **Height:** 5'9" **Weight:** 155 lbs **Gender:** Male

Amputation Level: Right, Transfemoral Amputation (1yr & 9mo post amputation)

Limb Length Classification: Long

Skin Issue(s): None

Current Prosthesis:

Length of use of current Prosthesis: 1 year

Socket: Ischial containment/ narrow M-L Socket **Suspension:** Suction (Ossur Seal-in Liner)

Knee: Otto Bock X2 Knee **Foot:** Ossur Veriflex

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 7

*Subject stated the prosthesis "loses suction too often".

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

*Subject stated "there is not enough user control of the settings. He needs to be self-efficient".

Self-perceived limitations due to their prosthesis: Subject reports difficulty with stairs, inclines, and steep obstacles.

Control Group

CG Subject #1

Age: 28 y.o. **Height:** 5'10" **Weight:** 180 lbs

CG Subject #2

Age: 40 y.o. Height: 5'10" Weight: 185 lbs

CG Subject #3

Age: 58 y.o. Height: 5'7" Weight: 165 lbs

Results

Figure 1

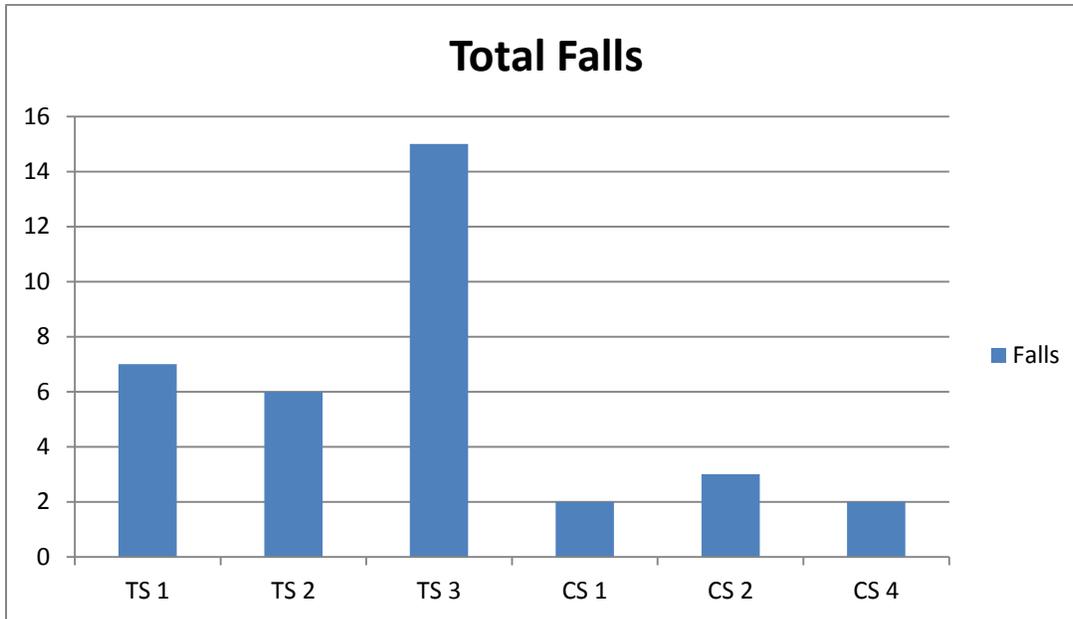
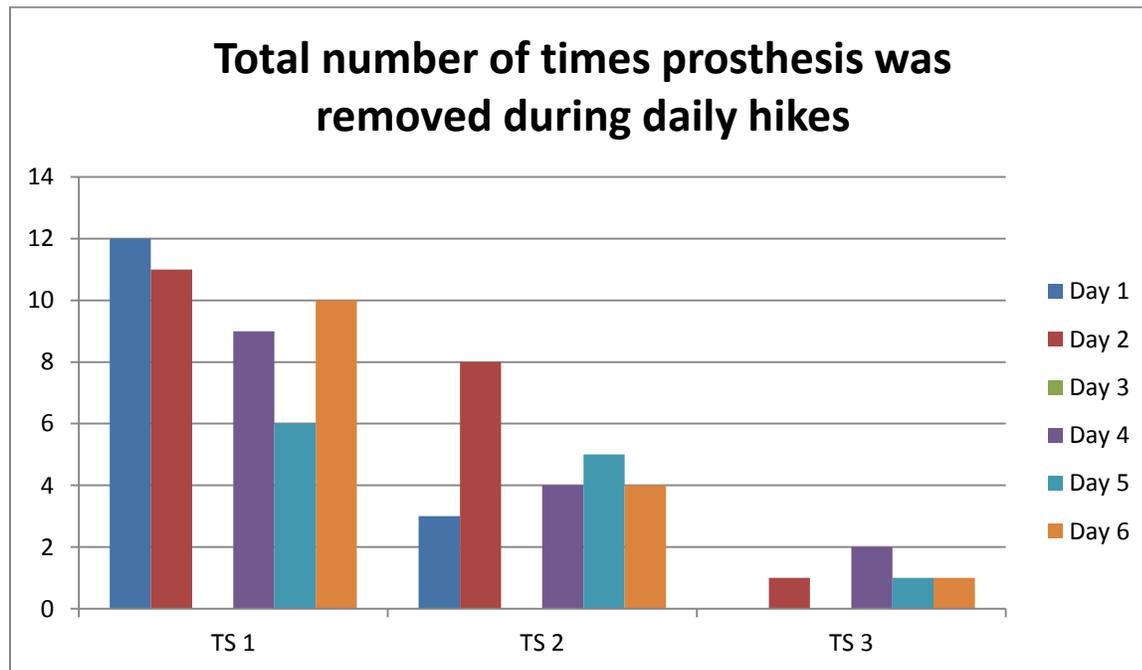


Figure 2 (all circumferential measurements were recorded in centimeters)

Subject	Day 1am	Day 1pm		Day 2am	Day 2pm		Day 3am	Day 3pm		Day 4am	Day 4pm		Day 5am	Day 5pm		Day6am	Day6pm	
T.S. #1																		
4	43.2	43.2	0	42.1	42.7	↑0.6	42.5	42.9	↑0.4	42.6	42.9	↑0.3	41.8	42	↑0.2	41.7	42.2	↑0.5
2	41.2	41.2	0	39.9	40.2	↑0.3	39.5	40	↑0.5	41.1	41.6	↑0.5	39.7	40.3	↑0.6	39.4	40	↑0.6
(PTB) 0	38	38.1	↑0.1	37.9	38.3	↑0.4	37.6	38.1	↑0.5	38.3	38.8	↑0.5	38	38.3	↑0.3	38.3	38.5	↑0.2
-2	33.1	33.5	↑0.4	33.6	34.5	↑0.9	34.1	34.9	↑0.8	34.6	35.3	↑0.7	33.6	34.1	↑0.5	34.2	35	↑0.8
-4	31.9	32.2	↑0.3	31.8	32.6	↑0.8	32.3	33	↑0.7	32.1	32.8	↑0.7	31.8	32.3	↑0.5	32.5	33	↑0.5
T.S. #2																		
4	41.8	41.9	↑0.1	41.4	41.9	↑0.5	41.1	41.6	↑0.5	40.6	40.9	↑0.3	41.3	41.5	↑0.2	40.9	41.2	↑0.3
2	38.7	38.8	↑0.1	38.8	39	↑0.2	38.6	38.8	↑0.1	38.5	38.6	↑0.1	39.9	40	↑0.1	38.7	39	↑0.3
(PTB) 0	36	36	0	36.6	36.7	↑0.1	36.6	36.6	0	36.6	36.6	↑0.1	36.9	37.1	↑0.2	36.6	36.9	↑0.3
-2	30.7	30.8	↑0.1	30.8	30.9	↑0.1	30.7	30.8	↑0.1	30.8	31	↑0.2	32.5	32.9	↑0.4	30.6	31	↑0.4
-4	26.9	27	↑0.1	26.9	27.1	↑0.2	26.7	27	↑0.3	26.7	27	↑0.3	26.9	27.3	↑0.4	26.8	27.2	↑0.4
-6	27	27.2	↑0.2	26.8	27.1	↑0.3	26.7	27	↑0.3	27	27.2	↑0.2	26.9	27.2	↑0.3	26.8	27.2	↑0.4
T.S. #3																		
2	35	35.4	↑0.4	35.5	35.7	↑0.2	35	35.2	↑0.2	35.1	35.3	↑0.2	35.1	35.4	↑0.3	35.2	35.4	↑0.2
4	37.9	38.2	↑0.3	38.4	38.7	↑0.3	38.6	39	↑0.4	38.4	38.7	↑0.3	38.1	38.5	↑0.4	38	38.3	↑0.3
6	42.9	43.2	↑0.3	44.1	44.5	↑0.4	42.9	43.3	↑0.4	42.4	42.7	↑0.3	42.3	42.6	↑0.3	42.2	42.4	↑0.2
8	47	47.3	↑0.3	47.9	48.2	↑0.3	46.8	47.1	↑0.3	47.1	47.5	↑0.4	47	47.3	↑0.3	46.8	47.1	↑0.3
10	50	50.2	↑0.2	50.5	51	↑0.5	49.4	49.7	↑0.3	49.8	50	↑0.2	50	50.4	↑0.4	49.8	50.1	↑0.3

Figure 3



Post Hike Surveys:

TS#1

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

- Test subject stated “the fit was great until, I (the test subject) tried to use a 4”x4” DuoDerm pad and made the sore on my limb into a blister. Lesson learned the hard way.”

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

- “The leg was good to go. However, going downhill was extremely difficult with the limited amount of ankle movement in my prosthetic foot.”

TS#2

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

- Subject stated “things were fine until I torqued my knee (day 1) and punctured a hole in my suspension sleeve on day 2 of the hike.”

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

- Subject stated “the limited ankle motion of my prosthetic foot made it difficult to go downhill, and I had to compensate for it uphill as well.”

TS#3

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

- “The proximal/lateral aspect of the socket caused chaffing where it came in contact with my ruck. This caused a painful sore.”

Satisfaction with the fit of current prosthesis (1 being the worst & 10 being the best): 8

- “I need more user end control of the X2 knee. The amount of weight carried in my ruck varied throughout the trip (water amounts and loss of weight as I ate the food I carried) More control of the knee setting would have allowed me to adjust for the changes.”

Discussion of Findings

The findings were consistent with the Hypothesis in both areas. The residual limbs of the amputees were larger, circumferentially, at the time of each PM measurements when compared to the AM measurements from the same day throughout the trip. The most significant volume changes occurred with TS #1; a transtibial amputee. Interestingly enough, he also had to remove his prosthesis at a much higher and more frequent rate than the other two amputees on

the trip. His current suspension system, a pin liner & lock, may have contributed to increased pistoning within the socket. Once the other transtibial amputee's (TS#2) sleeve was punctured on day two of the hike, there was a small increase in daily volume change when compared to day 1 and day 2.

The amputees on the trip, two transtibial and one transfemoral, all fell at a higher rate than the control group of non-amputees. The transtibial amputees fell at a rate of ≈ 2.5 times more, than that of the non-amputees on the trip. The transfemoral (TS#3) fell at a rate of ≈ 2 times more than the transtibial amputees and ≈ 6 times more than the control group of non-amputees.

All of the amputees on the trip developed sores on their residual limbs, with TS#1 developing the worst sore; located just distal to the popliteal fossa of his residual limb. As mentioned above, TS#1 also had the highest rate of removing his prosthesis throughout the trip, and this sore was more than likely a large contributing factor to the increased rate in the removal of his prosthesis throughout the daily hikes. No amputee was able to participate in the day hike down the Colorado River on Day 3 of the trip due to their injuries. Two of the non-amputees, CS#1 & CS#2, were able to participate in the day hike on Day 3. CS#3 stayed behind to rest with the amputees that chose to stay at camp.

Conclusion

All of the individuals who participated in this expedition successfully accomplished a great challenge. All the subjects' residual limbs increased in volume throughout the day regardless of amputation levels or suspension mechanisms. Both of the transtibial amputees reported difficulty with the limited range of motion (ROM) in their prosthetic feet. This feedback makes the author of this case study wonder if the benefit of increased ROM associated with hydraulic ankle mechanisms would outweigh/perform the energy storing and return capabilities of carbon fiber feet with less ankle ROM on a hike like this. The findings in this case study merit further and more scientific investigation.

The Expedition Team

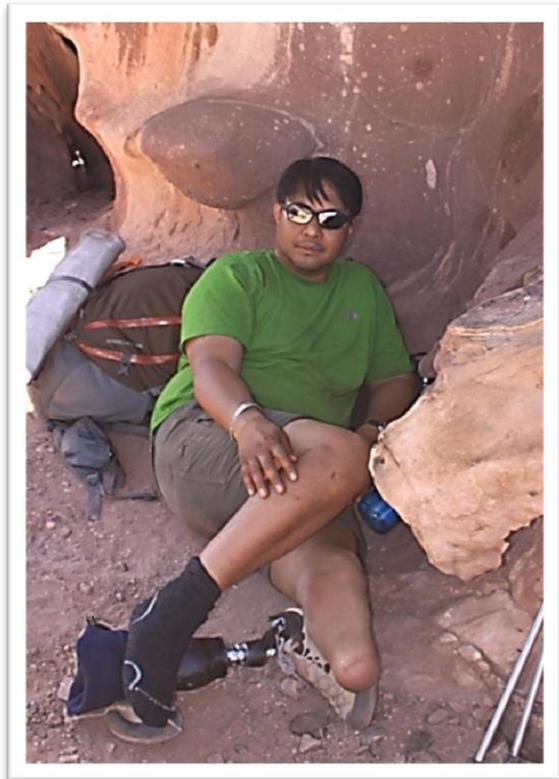
Staff Sergeant Peter Quintanilla, U.S. Army (R)

Injury: Transtibial Amputee

Staff Sergeant Peter Quintanilla was born in Honolulu, Hawaii. He enlisted in the Army in 1989, completed Basic training and advanced individual training at Ft. Benning, Georgia, where he was awarded the Military Occupational Skill (MOS) Identifier 11B. Upon graduation, he reported to the US Army's Airborne School, where he earned his jump wings. Graduating from airborne school, he was met by the cadre from the 75th Ranger Regiment: Ranger Indoctrination Program, where he spent the next five weeks proving both mentally and physically that he was able to join the ranks of the men in the 75th Ranger Regiment.

Upon completion of RIP, Peter was assigned to Bravo Company, 2nd Battalion, 75th Ranger Regiment at Ft. Lewis, Washington.

On November 9th, 1997 during a live fire training exercise in the jungles on Panama, Peter was struck in the left ankle by a single round from a M249 Squad Automatic Weapon (SAW). He was medevac'ed to Brooke Army Medical



Center at FT Sam Houston in Texas, where in spent the next year rehabilitating and eventually undergoing an ankle fusion on his left ankle. During this time, he served as the Force Modernization NCO at his unit, where he tested and procured clothing and equipment for the Ranger Regiment, and assisted with tests within the U.S. Army Special Operations Command (USASOC).

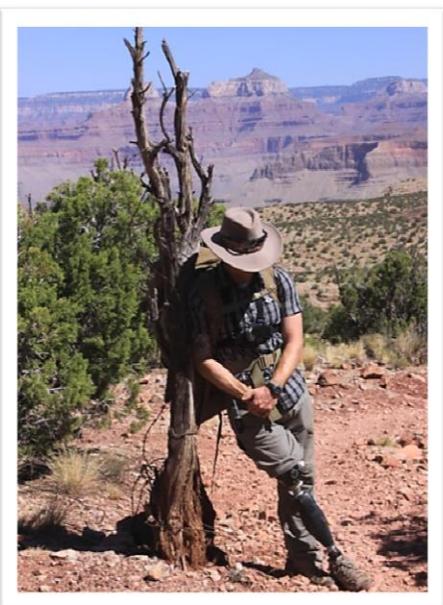
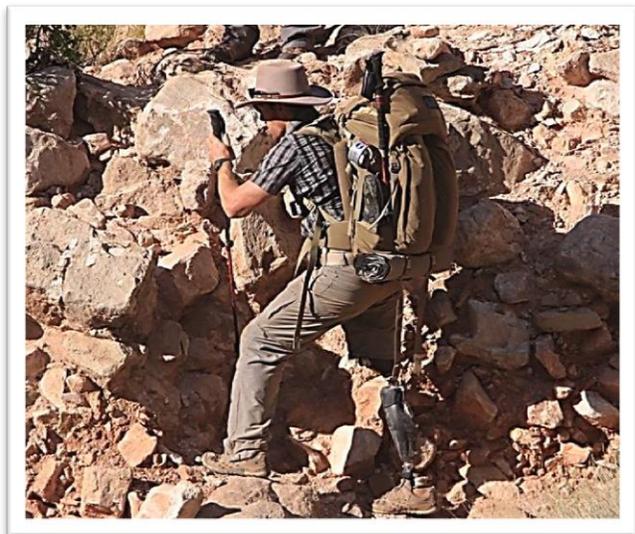
After medically retiring from the Army in January 2000, Pete attended the University of Hawaii as an architectural major. Pulling from his experience in the Special Operations community, and ties to clothing and manufacturing companies; Peter ventured into the business world helping to start-up an outdoor clothing and equipment company. As the company's Vice President, he restructured the company to ensure stable and profitable growth aimed at directly helping service members, government officials, and civilian contractors in the Global War on Terrorism.

Pete has recently opened an office of the Care Coalition, U.S. Special Operations Command, in Seattle, Washington, to care for all Wounded and Injured Special Operations Forces within the Northwest District. Pete was introduced to the CWVC through the Care Coalition at MacDill AFB, Tampa, Florida in 2012.

Sergeant First Class Billy Costello, U.S. Army (Green Beret)

Injury: Transfemoral Amputee

Sergeant First Class Thomas W. Costello was born in Lexington Park, Maryland, on February 22, 1982, and enlisted in the Army in November 2002, after graduating from Great Mills High School. SFC Costello completed Basic Training and Advanced Individual Training at Fort Jackson, South Carolina, and graduated from the Heavy Wheeled Vehicle Mechanics Course. From there, Billy went to Airborne School at FT Benning,



Georgia, where he earned his Jump Wings. Upon the completion of his training, SFC Costello was assigned to 1-72 Armor Battalion, Camp Casey, Republic of Korea. SFC Costello volunteered for U.S. Army Special Forces Assessment and Selection in December of 2004, and was selected to attend the Special Forces Qualification Course (SFQC) at the U. S. Army John F Kennedy Special Warfare Center and School. Upon completion of SFQC he was assigned to Charlie Company, 4th BN, 3rd Special Forces Group (Airborne) as a Special Forces Engineer

Sergeant. Upon arrival to Charlie Company, he volunteered for the dive team and subsequently attended and passed the Combat Dive Qualification Course. SFC Costello deployed with his Operational Detachment Alpha team attached to 2nd BN, 3rd SFG(A) in support of operations in Afghanistan.

SFC Costello's mission was to develop Village Stability Platforms in order to support Village Stability Operations for Shah Wali Kot District, Kandahar Province, Afghanistan. On the 20th of September, 2011, in Kandahar Province, SFC Costello was injured after stepping on a landmine during a route clearance mission. His injury resulted in the loss of his right leg above the knee, a tibia/fibula fracture of the left leg, the fracturing of the middle and index finger of the right hand, and a blown ear drum in the right ear. SFC Costello is currently attached to Able Company, 1st Platoon with the Warrior Transition Brigade, at WRNMMC.

Billy first participated in CWVC Challenges in the summer of 2012 when he was selected by the Care Coalition to join a team of Special Forces amputee divers to conduct research, underwater, on prostheses in an effort to improve performance. Since then, Billy has also completed the Kilimanjaro Research Expedition and is preparing for additional Challenges.

Master Sergeant Robert (BOBO) Stanwood, U.S. ARMY (R)

Injury: Transtibial Amputee



MSG (R) Robert G. "Bobo" Stanwood entered the Army on February 1, 1989. After completion of Basic Combat Training and Advanced Individual Training, MSG (R) Stanwood completed Basic Airborne School and the Ranger Indoctrination Program and was assigned to C Company 2nd Battalion, 75th Ranger Regiment at Ft. Lewis WA. In 1994, he was assigned to the 75th Ranger Regiment at Fort Benning, GA, where he served a tour as a Pre-Ranger Instructor. He then was assigned to 2nd Battalion 5th Infantry Regiment at Schofield Barracks, HI. In June of 1999, he was assigned to 1st SFOD-D, Fort Bragg, NC, where he served as a Team Member/Operator, Master Breacher, and Research Development Training and Evaluation Non-Commissioned Officer.

MSG Stanwood has deployed to Panama and conducted a Combat Jump in support of Operation JUST CAUSE, Haiti, in support of Operation RESTORE DEMOCRACY, and

multiple rotations in support of Operation IRAQI FREEDOM...all successfully executed as a BK Amputee.

On 29 August 2000, MSG Stanwood was injured during rappelling training and fell appx 29' down the side of a building, landing on a cement platform. After 5 years and 18 surgeries involving cartilage transplant to both feet and a "non-union fusion" on St Patty's day of 2005, he had his left leg amputated below the knee. On May 13, 2005, Bobo put a prosthetic on for the first time. In December of 2005, he was subsequently reassigned to an Assault Team conducting Direct Action combat missions with 1st SFOD-D where he successfully completed multiple rotations and more than 150 Combat Operations.

MSG Stanwood retired from Active Duty on January 5, 2012. He now resides in Seabrook, NH, and is "living the dream" with his wife Lin, Stepson Jack, Niece Celeste, and puppy's Wally, Daisy and Georgia.



Master Sergeant Christopher Doggett, U.S. AIR FORCE

Injury: Traumatic Brain Injury (TBI)



Master Sergeant Christopher O. Doggett is a Military Training Leader, assigned to Goodfellow Air Force Base, San Angelo, Texas.

After graduating high school, Sergeant Doggett attended one year of Carl Albert State College before enlisting in the Air Force in October of 1992.

Upon graduation from basic training, Chris attended technical school at Sheppard Air Force Base, TX, to become an electrician. Sergeant Doggett's first duty station was Travis AFB, CA, where he further developed his high-voltage and airfield lighting skills. He was then selected for his first deployment to Taszar, Hungary, to participate in Operation JOINT ENDEAVOR where he installed airfield lighting supporting the largest European airlift since WWII.

A month after his return from deployment, MSgt Doggett was selected for deployment to support Operation SOUTHERN WATCH, Khobar Towers, Saudi Arabia where he was wounded by enemy forces and received the prestigious Purple Heart. After a 3-year medical recovery, Sergeant Doggett then deployed to Aviano Air Base, Italy, to participate in Operation ALLIED FORCE where he set up joint operations in support of the largest flying wing



ever assembled in Air Force history. His next deployment was to Masirah Island Air Base, Oman – Operation ENDURING FREEDOM, where he worked with joint and coalition forces maintaining power for the Air Forces largest Reverse Osmosis Water Purification System (ROWPU) in military history. Sergeant Doggett spent one year in the 554th RED HORSE Squadron, Osan Air Base, Republic of Korea, where he worked special projects throughout the peninsula, including Seventh Air Force Headquarters. He then deployed to Balad Air Base, Iraq – Operation IRAQI FREEDOM/ENDURING FREEDOM where he earned an Army and Air Force Commendation Medal for restoring power under active mortar and rocket attacks, in and outside the wire. His second tour to Iraq was in support of Operation IRAQI FREEDOM III to Camp Q-West, Iraq, where he was team lead for 23 craftsmen in completing construction of five tactical facilities, valued at \$7.6 million, and helped construct the 101st Combat Aviation Brigade Operations Center. Sergeant Doggett spent the next 3 years as a subject matter expert/instructor, Silver Flag training and exercises at Ramstein Air Base leading the way for Civil Engineers of the future. Upon arrival, and currently, at Goodfellow AFB, Sergeant Doggett has served as a Military Training Leader Flight Chief.

MSgt Doggett is married to Brook Doggett, a prior active Air Force service member. Together they have three daughters, Alyxandra, Mayzie and Zoey.

OS2 Joseph Frank, U.S. NAVY (Ret) Operations Specialist

Injury: Traumatic Brain Injury (TBI)



With written permission from his parents, OS2 Frank signed up for the Navy's delayed entry program on his 17th birthday. Once he completed high school, Joe departed for Recruit Training Command in Great Lakes, Ill. In December of 2005, while serving on USS Gunston Hall (LSD 44), Joe attended and completed Surface Rescue Swimmer School in Jacksonville, FL, to become a ship search and rescue swimmer (SAR). Upon completion of a deployment in support of the Global War on Terrorism, Joe's Basic Underwater Demolition School (BUD/s) training

package was accepted in 2006. On January 18, 2007, while still completing the training course, Joe was hit head-on by a drunk driver who was fleeing at high speed from police. Due to the severity of the injuries Frank suffered, he had to alter his plans for a Navy career. Since medically retiring, Joe has continued to exercise and compete, keeping his body moving and preventing his injuries from taking over. In 2012, Joe joined other disabled veterans and cycled across the country as part of the Sea to Shining Sea ride. Frank has also finished two full-Iron distance triathlons, six cycling double centuries, and three marathons. In addition to recently completing his Bachelor's in Finance from San Diego State University, Frank finds interest in piloting tandems with the Blind Stokers Club of San Diego.



Joe is a recent graduate of San Diego State University (May 2013) and resides in San Diego, CA.

Cameron Lehrer, CPO, LPO



Cameron Lehrer is an ABC Certified & FL Licensed Prosthetist Orthotist practicing in the Miami-Dade & Broward County areas at Florida Shores Brace Systems. He earned his Bachelor of Applied Science degree in Prosthetics & Orthotics from St. Petersburg College and is a graduate of the prosthetic residency program at the University of Michigan. Mr. Lehrer's current clinical practice focuses on the areas of high activity prostheses for complex cases of amputation and pediatric orthoses.

Arlene Gillis, CP, LPO, M. Ed



Arlene Gillis, CP, LPO, M. Ed first became interested in the field of rehabilitation when she was very young. Her mother was diagnosed with Multiple Sclerosis and passed away when Arlene was just 12 years old. Determined to help other families who suffer with any kind of physical impairment, she pursued a career in Rehabilitation and Physical Therapy. While pursuing a degree in Physical Therapy she worked with a prosthetic patient. It was during this time she discovered Orthotics and Prosthetics and fell in love with the profession. She immediately transferred into the Orthotic and Prosthetic program and graduated from Florida International University in 1994.

Arlene worked as an Orthotist/Prosthetist in private practice for over 10 years and has over 20 years in the field. Seeing a desperate need to help the growing number of people affected by limb loss and impairment, she became involved in Education, helping to open the J.E. Hanger College of Orthotics and Prosthetics at Saint Petersburg College – she is currently the Program Director. Arlene developed a consortium with FSU to offer a Master's in Orthotics and Prosthetics. The consortium was recently awarded the VAI2 award for Innovation in Prosthetic Materials.

Arlene's passion for orthotics and prosthetics, as well as education, pushed her to earn her Master's in Education at the University of South Florida, and she is currently pursuing a Doctorate in Education. Arlene currently serves as the Vice Chair for the National Commission of Orthotics and Prosthetics (O&P). She hopes that her

involvement in various boards and committees for the O&P field makes an impact, not only in regards to the promotion of Orthotics and Prosthetics itself, but to the patients and families that benefit from its progression.

Mrs. Gillis lives in the Tampa Bay area with her loving husband and two daughters. Arlene enjoys spending time with the family and participating in her children's activities.

CAPT David Olson, U.S. Navy (Ret)

David coached sailing at the Naval Academy after graduation before reporting to flight school at Naval Air Station, Pensacola, in the fall of 1979. He was designated a Naval Aviator in 1981. While stationed at Naval Air Station Lemoore, California, David met his wife to be, Teresa Pearson, and married in 1984. He entered the Navy Reserve in 1987, served as Commanding Officer of two Naval Aviation Systems Command reserve units and



then re-activated in September of 2001. Together, they completed several assignments and deployments, the last of which was Operation ENDURING FREEDOM and Operation IRAQI FREEDOM while assigned to U.S. Central Command, where he retired as a Navy Captain in 2009.

David remains active in the local community. He founded SCUBAnauts International in 2001, a marine sciences program that introduces young men and women, ages 12-18, to informal science education through underwater exploration. David has led over eight underwater research expeditions with SCUBAnauts throughout the Florida Keys, Bahamas and Hawaii. Today, SCUBAnauts International has expanded to four chapters nationally.

In 2010, David co-founded the non-profit Combat Wounded Veteran Challenge program to improve the lives of our wounded and injured Veterans through rehabilitative, high-adventure challenges, and therapeutic outdoor recreational activities while conducting scientific research to speed their recovery and that of their families. David has led and participated in over ten Challenge events to further research and treatment associated with prosthetics, Traumatic Brain Injury and psychological trauma (PTSD).

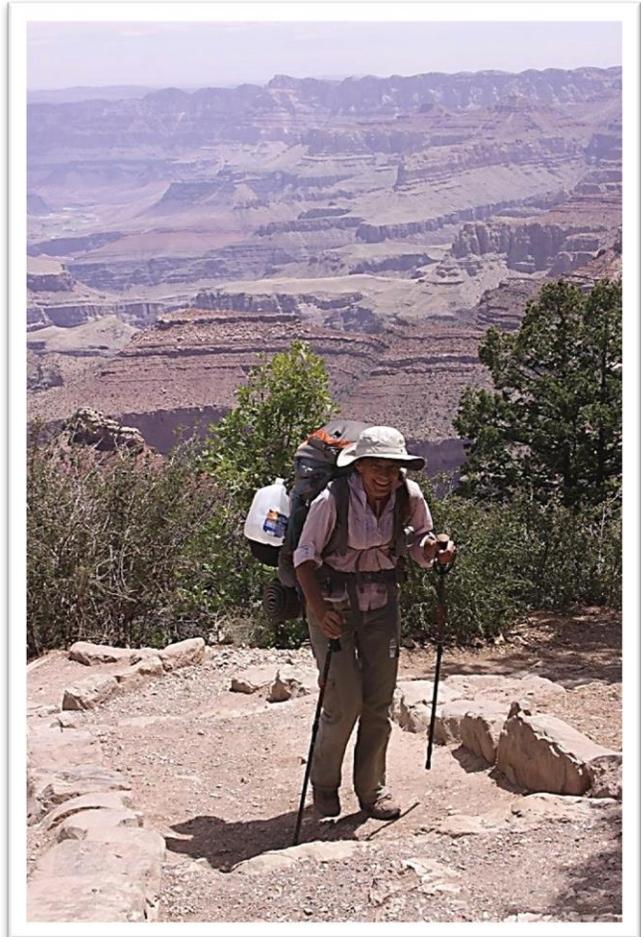
David lives in Palm Harbor, Florida, with his wife of 29 years, Teresa. They have three boys and one daughter, two of whom currently serve in the military.

Denise Becker, Guide/Photographer/Critical Care Nurse

Denise Becker was born in Calgary, raised in L.A., Denver and Vancouver. Her wilderness training began with childhood walks with her Dad and Grandpa on and around the farm where the road ends in Good Soil, Saskatchewan, Canada. Grandma took her on long berry-picking walks, educating her along the way. Denise has passed her love of wilderness and berries and photography on to her children, William and Devan. Bears were, and continue to be, a constant source of competition for the best berry patches!

After earning her BSN degree at UBC, she began her nursing career in Texas. After moving to Florida, she started a six-month solo backpacking trip through Central and South America which lasted two and a half years! Numerous cultural and wilderness experiences were gleaned during this time. She also put her love of photography to use, capturing remote villagers and unique settings which could easily be featured in National Geographic.

Her years of Trauma and Critical Care nursing at Tampa General Hospital, along with her backpacking and photography skills and upbeat attitude, made her irreplaceable on the Grand Canyon Challenge 2013. Watching the Vets overcome tremendous obstacles on this hike was an unforgettable and rewarding experience for Denise.



Rob Ferguson, Guide

Born and raised in Pinellas County, Florida, Rob grew up exploring every creek, ditch, pond and patch of urban wilds within biking distance; observed, chased, captured and caged every unfortunate living specimen of wildlife within this range, venomous, or not! For a few years, the backyard rivaled many smaller zoos.

Formal wilderness endeavors began with annual family camping trips throughout the Southeastern U.S. Rob was introduced to backpacking in middle school and his pursuit of bigger and better excursions began in earnest.

A ninth-grade backpacking trip west with The Science Center of Pinellas County changed Rob's life for good. His first sighting and touch of snow (ice), REAL mountains and THE Grand Canyon, changed the course of his life.



Rob founded Taztourz, LLC, as the product of his love of the American West. It started with Rob exploring and visiting every site possible, year after year. As friends would join him on these summer trips, they repeatedly suggested he should start a tour company. The goal of Taztourz is to help individuals, families and groups to get the most from their limited time in the West. Rob's areas of expertise include: backpacking, mountain biking, day hikes (museums, Indian ruins, dinosaur tracks, ghost towns) and ATV'ing on many of the area trails.

Grand Canyon hikes have become a favorite for Rob since 1979. Each summer, Rob leaves his teaching job on the last day of school and sets out to explore and guide throughout the Southwestern states. He returns with stories and pictures the night before school starts and shares many of both with his students each year.

The Combat Wounded and Injured veteran Grand Canyon Challenge – 2013, for prosthetics and TBI research, has been an amazing journey for Rob and another life-changing event.