

Gear check! Catching vertical errors before they catch us

John Ganter

We were deep in a desert canyon. The rest of the team had gone in the entrance to rig the pit series. Vertical gear on, I kneeled in the shade of a scrub oak and looked over my survey and photo gear again. Lots of things to remember.

Valerie, the co-leader of the trip, walked over. She smiled and said, "Gear check!" I looked at her. "Gear check?" I asked in surprise.

"Oh, we always check each other's gear," Valerie assured me. "You never know what a second set of eyes might find."

It seemed like a good idea, so I stood up and presented my Frog rig for inspection. We're doing a preflight, I thought.

A few years before, I had done research observations aboard commercial airliners, sitting just behind the pilots in the jump seat.

An aircraft only becomes airborne if its lifting surfaces are set for current conditions: loaded weight, air density (barometer and temperature), runway length, etc. Much of the preflight routine involved an electronic checklist, switches that had to be flipped as the pilot and first officer called out each item and cross-checked each other.

While not an aviator, the crew treated me as another cockpit resource. If you see something that doesn't seem right, you speak up, the pilot in command would always instruct me. Yes sir or yes ma'am, I would reply.

The crews told me that some pilots, even very experienced ones with 10,000 or more hours of flight time, still resist checklists. These pilots think they never forget. Except, they do. Rarely. But "rarely" does not seem good enough when the aircraft weighs 60 tons, there are 230 people sitting behind my jumpseat, and the throttles are pushed forward.

It was a great view, looking straight down that rapidly-shortening center line. I always started to sweat. And I was always very glad that no small detail had been forgotten.

Valerie did her check. "Some of this cord is a bit... *Flintstonian*," she observed. I explained that, in eastern caves, all of this gear comes out covered with mud that has to be scrubbed off. This makes it look older than it is.

"OK, so how old is this footloop?" asked Valerie. The foot loop was made of SuperTape, 1/2-inch tubular webbing, protected with vinyl tubing where I stood in it. "Uh, well, now that you mention it, about 5 years."

Valerie raised her eyebrows. I had to admit it: "Since webbing loses strength,

that's too old, isn't it? I need to watch it today and replace it when I get home." She looked satisfied with that, and continued her visual check.

Apparently satisfied, she looked me in the eye. "There is one small problem," she said.

"What's that?" I asked confidently.

"Your Croll is on upside-down."

"Oh, very funny." I replied. She just looked at me.

I looked down. I looked again. I stared. My Croll ascender was on upside-down.

I was impressed by my own lapse, and quickly came up with a sequence of errors. In the past, I had always used an elastic loop around my shoulders to hold the Croll up. When the Croll was off, I always kept track of it by leaving the small carabiner and elastic loop attached to the top hole.

But I had recently started using a light webbing chest harness that held the Croll up better when I tethered a heavy pack below the seat maillon. It had not been connected to the Croll. In paying attention to the new harness and putting it on, I had then distractedly put the wrong end of the Croll through the seat maillon.

Due to the heat on the surface and in the cave, I was wearing a loose Supplex shirt that partly obscured the Croll area. I was thinking about photo gear and survey gear instead of my life support gear. I forgot my mental checklist.

I fixed the Croll, checked over Valerie's rig, and we went caving, on the lookout for more errors.

The importance of remembering

Let's assume that we had not done the gear check, and that I had missed the error again when I attached my rack carabiner to the maillon. What would have happened? Probably nothing at all. That's the funny thing about safety. You can be unsafe in thinking and in action, and get away with it—until you don't. But I probably would have reached the bottom of the cave, gotten ready to ascend, shaken my head, and fixed the problem.

But what if I had to switch over from rappel to ascend? This happens occasionally, even if you aren't the first one down and find yourself at the knot in the end of the rope. You may find a tangle, or the rope running the wrong way around an obstacle, or a rebelay issue. You may miss a pendulum point, and have to ascend up a section of rope. Rockfall may even sever the rope below you. You may have to ascend quickly because someone becomes disabled on rope

or off rope and needs help.

If a changeover is needed, an upside-down Croll would be a problem because the seat maillon cannot be opened in vertical *flight*, if you will. I always carry an ascender safety, thus giving me a spare. But it would still be awkward and slow compared to the streamlined Croll. And, generally, when a changeover is unexpected, something has gone wrong already. This raises stress and time pressure, which in turn increases the chances that a caver will make still more errors.

Like an aircraft starting to roll down the runway, vertical caving has crucial moments where things are either ready to go in advance or there will be great hazard or worse. Rack bars are of course a perfect example.

I have learned that five factors underlie a wide range of incidents and accidents everywhere people do complex operations from aircraft, to railways, to ships, to factories, to construction, to healthcare, to physical and computer security, to caving, and many more:

Haste. With all the work of hiking to the cave and getting project gear ready, there was less time to perform actions and I did them more hastily with less self-checking.

Change in routine. It was some new gear, a new cave, and a hard hike to the cave that I had not done before.

Distraction. Preparing to cave often includes some anticipation and adrenaline. These emotions ready us for survival. But they can distract us from small but important details. Then we have events arising from nature (think weather), the mind (stray thoughts or suddenly remembering something else), or other people (questions, requests) that draw our attention away at critical moments. We return to what we were doing... *What was I doing?* Oh right, I was just about to put on my Croll. But sometimes something is lost along the trail of thoughts.

Fatigue. A fatigued brain makes extra errors, and is less likely to catch these errors. For example, experiments have shown that getting less than 4-5 hours of sleep in 24 hours causes driving impairment comparable to the legal alcohol limit. Long cave trips always include fatigue. As fatigue increases, dialing back what we do (e.g., free climbs), and self-checks and cross checks with team members become more important.

Experience is great, until it isn't. In many high risk endeavors, researchers have noticed a pattern. Very experienced people make very few errors. But when a very experienced person does make an error... it

tends to be very bad, often fatal.

Excess confidence. Like very experienced pilots, very experienced cavers can begin to assume that their long record of safety ensures future safety. But as the hours and trips pile up, rare events occur. Like flying, caving is a one-strike game, not a

three-strike game. Cross checks are a small investment that can pay off big even for the most experienced caver: "You never know what a second set of eyes might find."

What have you forgotten in caving? How do you reduce forgetting? Comment or message with this link: <https://bit.ly/3dqQxB8>

[ly/3dqQxB8](https://bit.ly/3dqQxB8) You will also find more information on safe caving and preflights.

Thanks to Corey Hackley, John Lyles, Tommy Shifflett, Amy Skowronski, and Bill Storage for preflighting this article.

OBITUARIES



Al Stewart

Albert "Al" William Stewart passed away on June 8, 2022.

Al was 92 years old, and he lived an amazing life.

Born in Saginaw Michigan, on January 8, 1930, Al Stewart was the oldest of four boys. John A. and Mary Martin Stewart had their hands full raising Al, Jock, Bob, and Denny. They lived an all-American lifestyle and spent summers at the family cabin on Drummond Island, Michigan.

After graduating high school, Al enlisted in the US Navy and became a C-2 Electronics Technician and Radio Telephone Operator – First Class. He graduated top in his class (18-51), and he served on a mine sweeper (# 33).

When his tour of duty was up, Al took advantage of the G.I. Bill at Virginia Tech in Blacksburg Virginia, and graduated with a BS in Engineering and later a Master's degree.

In the late 1960's, Al moved to Roanoke, Virginia. He began his career as an instructor in the Electrical Engineering department at Roanoke Technical School, which later became Virginia Western Community College. He retired with 35 years' service in 1992.

OK, now for the fun stuff. Al loved the outdoors! He was an avid hiker and was a member of the Roanoke Appalachian Trail Club. When it would snow, Al would take his authentic snowshoes down to a nearby

park and have fun slogging in the snow. He was also a member of the Roanoke Camera Club, where his nature photos of waterfalls won several awards.

If you ever visited Al, you were in awe of his extensive vinyl LP collection of classical music, only rivaled by his CD, DVD and VHS collections. He loved music, from classical and opera to punk rock! His house was a time capsule from the 1970's and was rumored to be the basis for "Doc's house" in the movie *Back to the Future*.

Al loved the water. In his younger days, he was on the Virginia Tech Swimming Team, and was awarded an Outstanding Service Plaque in 1963-64. Later in life, Al was a member of the Roanoke Gator Pool, where he swam every day and helped maintain the pool and building.

A quiet philanthropist, Al donated to Alice Lloyd College in Pippa Passes, Kentucky, Hillsdale College, Hillsdale, Michigan, The Joy Ranch in Hillsville, Virginia, Patrick Henry Family Services of Brookneal, Virginia, and cave conservation organizations such as the National Speleological Society (NSS), the West Virginia Cave Conservancy, the Mid-Atlantic Karst Conservancy, American Cave Conservation Association, and others.

Al was a staunch Right-Wing Republican and a member of the John Birch Society.

Al Stewart donated a boatload of blood over the decades – the Red Cross calculated that as of May 1987, he had donated 15 gallons!

But most of all Al Stewart was a Caver! He began exploring caves in 1967 and was the college sponsor of the Virginia Western Community College Caving Club (VWCCCC), which later became the Blue Ridge Grotto (BRG). Al took many of his students caving, camping, and rappelling. Al was a founding member of the Blue Ridge Grotto of the NSS, calling the first BRG meeting to order on December 12, 1969, in his classroom in Webber Hall, WVCC. Al Stewart was a Life Member of the NSS, RL 8695 FE. Al became a Fellow of the NSS in 1994. He won national awards for his cartoon sketches. He surveyed many caves in Virginia and West Virginia – look for his name on reports and old cave maps! Al

also assisted at several cave rescues, and often drove other cavers to the caves in his old gray Checker station wagon.

Al Stewart was a Life Member of The Robertson Association, and he attended every Old Timer's Reunion until he could no longer go camping or make the drive to Dailey, West Virginia.

Al Stewart mentored generations of cavers, students, scouts, and various ne'er do wells who called him names, such as "Professor FUBAR," "Mister Stewart" and "Fossil # 1".

Al moved to Assisted living in 2019, and he had been in declining health since October 2021.

Al was my neighbor for many years.

Al was my caving buddy.

Al was my friend.

See you on the Other Side, Al!

Mary Sue Socky
June 26, 2022

End? No, the journey doesn't end here. Death is just another path, one that we all must take. The grey rain-curtain of this world rolls back, and all turns to silver glass, and then you see it: White shores, and beyond, a far green country under a swift sunrise...

Gandalf in J.R.R. Tolkien,
The Lord of the Rings

Instead of flowers, consider a gift in Al's memory to:

Good Samaritan Hospice
2408 Electric Road,
Roanoke, VA 24018

... or another of his favorite organizations, or a favorite of yours.

And, at some point, there will be a celebration of Al's life. TBA.