National Speleological Society - Cave Diving Section
Accident Analysis Committee Report

Cave Diving Fatality
Twin Cave
Jackson County, Florida
18 March 2025

Summary

On March 18, 2025, a three-person team entered Twin Cave around 12:30 pm. All team members were on Optima rebreathers and DPVs. The team proceeded up the gold line with the victim in position 2. At approximately 1,000-1,200 ft penetration, Diver 1 swam through a restriction and waited for Divers 2 and 3 on the other side. While waiting, Diver 1 saw silt begin to pile up in the restriction.

Diver 3 reported that, upon entering the restriction, Diver 2 suddenly stopped swimming and his feet went to the ceiling. The restriction was silted out and Diver 3 took Diver 2's hand but lost contact with him as she tried to find the line which is on the floor in this area of the cave. Diver 3 found the line to exit, but realized Diver 2 was not behind her so she went back into the silt and found his hand. She dragged him to clearer water and then noticed he was on his back with his loop closed and out of his mouth. Diver 3 does not recall if Diver 2 had an open circuit regulator in his mouth at this point or not. Diver 2 was on the ceiling and Diver 3 went to the ceiling and "burped" his counter lungs which were overinflated. As he came off the ceiling there was another silt out and she lost contact with the victim again.

During this time, Diver 1 had been waiting on the other side of the restriction. However, when he noticed the silt out in the restriction, he clipped off his DPV to the line and made his way back into the restriction which was completely silted out. Diver 1 encountered Diver 2 who signaled to end the dive while saying through his loop "let's go." Diver 1 then retrieved his DPV and swam back through the restriction towards the exit where he now encountered Diver 2 upside down on the ceiling with Diver 3 trying to assist him as mentioned above.

As the area the three divers were in now was also silted out, Diver 1 swam into clear water and clipped off his DPV. Upon returning to the silted area, he noticed 2 lights exiting the silt. He initially believed this was Diver 2 and Diver 3 exiting. However, as he got closer, he realized it was Diver 3 with a primary light and a helmet light. Diver 1 told Diver 3 to stay in place while he went to search for Diver 2. Being unable to locate Diver 2, he returned and told Diver 3 through his loop, "I'm going to get help". Diver 1 then scootered out of the cave as fast as possible and called Cave Adventurers requesting assistance.

While Diver 1 exited the cave to get help, Diver 3 continued to look for Diver 2. In the silt, she ran into his face where she saw him not moving, but with a regulator in his mouth. She tried to pull him but he was "stuck". Pulling harder, she was finally able to free him but he then again went immediately to the ceiling. As he floated up, she lost control of Diver 2 and lost the line. She again located the line and moved to clearer water where she saw the light and heard the DPV of the recovery diver.

Cave Adventurers had received the call from Diver 1 that the team had gotten into trouble in the main passage in the shallow section and gotten separated. Cave Adventurers then mobilized the recovery diver who was teaching a side mount class at the shop. Other staff assisted in organizing his gear and getting him to the dive site. He dropped an oxygen cylinder on the line and proceeded on a DPV into the cave. The visibility was good for approximately 500 feet and then began to degrade rapidly. At the 600 ft mark, he came upon Diver 3. He made sure she was on the line and exiting the cave in the proper direction.

At this point, the recovery diver began swimming into the cave while pushing his DPV in front of him and sweeping from floor to ceiling and from wall to wall until reaching the 1,000 foot marker which also marks a T that proceeds down a deeper section of the cave.

From the report from Diver 1, the recovery diver knew the team had gotten into trouble in the shallow section of the cave at about 1,100-1,200 ft penetration. He continued to the 1,200 ft marker where the cave gets smaller and the visibility was the worst. He continued to search this passage for several hundred feet but was unable to locate Diver 2. The recovery diver then backtracked to the T and went down to the deeper section where he saw two lights in the distance on a shelf at a depth of about 85 ft. He then completed the entire loop of this section of the cave but was unable to locate Diver 2.

In order to make sure that Diver 2 had not exited past him and to make sure Diver 3 got out of the cave safely, the recovery diver exited the cave where he found Diver 3 but not Diver 2. The recovery diver then checked his gas which showed a little over 3,000 psi in each cylinder and went back into the cave. With visibility described as about 10 inches, he first noticed a glimmer of the front clip of Diver 2's DPV at about 1,000 foot penetration. Next to that was a second stage regulator attached to a green LP45 cylinder. That cylinder was completely off the diver and was attached to the diver by his drysuit hose. This cylinder had approximately 1,300 psi in it. The recovery diver tried to signal Diver #2 and presented his long hose to the victim, but there was no response. His eyes were closed and he had nothing in his mouth.

At this point, the recovery diver examined the victim who was on an Optima CM. The loop was closed and floating in front of him. The loop appeared to be overextended. The CCR controller was reading a PO2 of 0.74 and seemed to be in working order. His mask was on and

full of water. The left cylinder was completely off the diver as mentioned above and the right cylinder was only attached at the bottom clip with the bungee around the neck not secured. The diver was in a drysuit and both the drysuit and wing were full of gas, making the victim very positively buoyant. His DPV was slightly negative as it was well below his body.

The victim was located right at the T junction at approximately 1,000 foot penetration, just above the crack that drops down to the deeper section and right above the shelf where the two lights were located.

The recovery diver brought the victim out of the cave where FWC came to meet him. The FWC deputies then took the victim back to the head spring of Jackson Blue.

Evaluation of the victim's rebreather found it to be fully functional with about ¼ cup of water in the exhalation lung only. The scrubber, head, and inhalation side were dry. The computer downloads indicated that he bailed out 10 minutes into the dive which was about the time they got to the T and went into a low 2 ft by 3 ft clay tunnel and silted it out. Both bailout cylinders started at 3,200 psi and the left cylinder (short hose on necklace) dropped at a steady pace to 1,400 psi, suggesting it was free-flowing on the way in unnoticed. The right cylinder (with his long hose) was the one he started breathing on when he bailed out. He drained it from 3,200 psi to empty in 10 mins and then expired.

An autopsy showed only drowning as the cause of death.

<u>Analysis</u>

The victim appears to have bailed off his functioning CCR to open circuit upon encountering the initial silt out, likely due to an inability to read his PO2. Due to the stress of the silt out, his open circuit gas consumption rate was high resulting in draining his right cylinder from 3,200 psi to empty within 10 mins, leading to drowning.

What can be learned from this tragedy?

1. We never know what our SAC rate will be in an emergency until the situation arises. Some divers assume their usual SAC rate will double from, say, 0.5 to 1.0 cubic feet per minute. Given this area of the cave is approximately 55 feet deep (2.6 ATA) and he went through 3200 psi (60 cubic feet) of a low pressure 45 (rated fill pressure of 2400 psi) in 10 minutes, the victim's SAC rate was approximately 2.3 cubic feet per minute.
2. Practice bailout scenarios. Unfortunately, the victim died with 1400 psi of gas in his remaining cylinder but never changed to breathing off this cylinder.

3. Beware of free flowing regulators, especially when on DPVs. In this case, the victim's cylinder attached to his necklace drained from 3200 psi to 1400 psi during the first few minutes of the dive while entering the cave on his DPV.
4. With a functioning rebreather, in the event of being unable to read your PO2 due to a silt out, going to semi-closed mode can significantly extend your gas supply.