

## Pro Tec Dive Centers

<https://www.facebook.com/protectdivecenters/posts/we-would-like-to-share-an-initial-report-from-a-tragic-accident-that-happened-on/2188012527876256/>

***Note: This is a 1:1 copy of Kim Davidsson's initial report on Facebook on the then-current findings about the double fatality between the Cenote Calimba and Grand Cenote***

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We would like to share an initial report from a tragic accident that happened on November 14th. We will not answer any questions, comments or engage in any communication until the final report is complete.

An initial report on the double-fatality in Cenote Calimba on November 14th, 2018  
By Kim Davidsson and Dr. Johan Isaksson, November 20th, 2018

Disclaimer: This is an initial account of the search and recovery and has been written to get some early information out. A full accident analysis, based on more data, is planned.

A team of two divers, diver A and diver G, each diving sidemount 2x80 cft + 1x80 cft stage tank, entered the water at Cenote Calimba at approximately 10:30 Wednesday Nov 14th. They were Team 1.

Three other teams dived the same site on that day with Team 2 and 3 diving towards Box Chen (left at the T-intersection on Calimba mainline and first jump left) and Team 4 doing the bypass towards Pabilanny (jump right after the Boa Restriction and right at the next T-intersection).

Team 2 entered approximately 1 hour after Team 1. They noticed stage tanks left at 15 minutes of penetration and cookies marking the Calimba exit side of the first T-intersection. They saw no further markers or any jumps installed as they dived towards Box Chen. When team 2 surfaced, team 1 was not there and a member of Team 2 went to Gran Cenote to check if they had surfaced there. Not finding the divers of Team 1 in Gran Cenote, he returned to Calimba and when they still had not surfaced, he went to a local dive shop to raise the alarm at approximately 14:30.

Jeff Clark arrived at Calimba first, confirming the missing divers and called in further divers. Kim Davidsson and Johan Isaksson came with dive gear from Mayan Blue. Other locals arrived as well. By this time it was clear that if the divers had not surfaced in another cenote this would be a body recovery.

Robbie Schmittner trekked to nearby cenotes (Pabilanny, Box Chen, Ho Tul and Gran Cenote) to confirm whether they had surfaced in one of these as two teams prepared to enter the water to start the search.

The dive plan of Team 1 was unknown but there had been talk of a dive involving the Lithium sunset section. Based on this and the fact that the first T-intersection was marked but that no markers or jumps had been found by Team 4 who had dived on the right side of the T-intersection, search Team A was tasked to search left of the T-intersection while search Team B went right. The plan of search Team A was to follow the main line towards Gran Cenote and to search any jumps found and, if no other signs were to be found, traverse all the way to Gran Cenote and Ho Tul. Search Team B would take a right at the T-intersection and dive the Lithium Sunset section until it connected to the main line coming from the left side of the T-intersection.

Search Team A entered the water at 17:30 with 2x80 cft sidemount and 1x80 cft stage each. Traveling the main line, the stage tanks of the missing divers were found at 15 minutes penetration (swimming at a fast pace), clipped to the main line and with 115 and 105 bars respectively in them. At the

T-intersection, the cookie of one of the missing divers (Diver A) was left, marking the exit side towards Calimba. Taking left at the T-intersection and proceeding on the main line, no markers or installed jumps were seen passing the circuit to Much's maze or the jump to Lithium sunset. Two cookies from diver G were found on the floor, in the silt, next to the line, just past the jump towards Lithium sunset. Further ahead and a few meters off the line, a light was found on the cave floor (a handheld primary light carried by diver G).

Upon reaching the jump at Paso de Lagarto, at approximately 50 minutes dive time, diver G was encountered dead. He was found about halfway between the Calimba and the Gran Cenote main lines, heading towards the Grand Cenote mainline. There was no jump installed to connect the two main lines.

After connecting the jump search Team A proceeded towards cenote Ho Tul (following the double arrow marking toward the closest exit) where diver A was found dead on the floor at approximately 55 minutes dive time, just past the end of the line at the gap between the Gran Cenote mainline and the Cuzan Nah section.

Having confirmed the deaths and locations of the missing divers, search Team A exited towards Calimba to inform the waiting authorities and to plan for the body recoveries. Total dive time for the search team A was 2 hours.

Body recovery was scheduled for the next morning. Local authorities arranged access from cenote Ho Tul and a team of three divers entered the water for documentation and recovery. Recovery was successful with a total dive time of less than an hour.

### **Timeline**

10:35 Team 1 start their dive

*Between – filming and dropping stage tank*

11:15 Team 1 passes the T-intersection at Calimba

*Between – travel time and the assumed installation of the jump to Much's maze*

~11:40 Team 1 jumps from the line in Much's maze back to mainline, turning left at the main line.

*Between – dive is turned*

11:55 Team takes in the jump from the main line to Much's maze

12:10 Team is inside Much's maze without obvious signs of distress. After – the likely jump from the mainline to Much's maze was taken in. At some point after this, *Team 1 turn towards Gran Cenote/Ho Tul instead of going for their stage tanks and the Calimba exit.*

### **Discussion**

*Disclaimer: Below is a mixture of facts and educated guesses. Take it for what it's worth:*

Both divers have been reported as having full cave certifications and having visited the area before. They are also said to have dived Calimba before. Experience level is unknown to us.

Stage tanks were left at half pressure + a marginal reserve but at a very short penetration distance (~15 minutes). Travel time to the first T-intersection was significantly longer than needed, 40 minutes instead of 20-25 minutes, and it is likely that time was spent filming. Assuming 30-35 minutes until stage drop would mean that gas consumption, in that case, would be about normal and allow for the dive above with an expected runtime of 150 minutes at 10 meters average depth.

The T-intersection was correctly marked and at least one jump was installed according to normal procedures. Our conclusion is that all jumps and navigational decisions were likely correctly installed. The assumed jump into Much's maze is logical because there is confirmation of the jump

from Much's maze and back to the mainline as well as taking that jump back in. The lack of jumps found during the search implies that both jumps were taken in before problems occurred.

The main question is why and at what point Team 1 headed away from their planned exit (Cenote Calimba). The available options are planned decision and navigational error.

The only unconfirmed point in the dive where there is a reasonable chance to commit a navigational error is when taking the jump from Much's maze to the main line back in. The arrows will at this point be pointing toward the nearest exit, in this case, Gran Cenote/Cenote Ho Tul. Taking the wrong turn at this point would take you to the end of the Calimba line, the place where Diver G died, in about twenty minutes with gas to spare assuming standard gas planning procedures. If there was a navigational error involved Team 1 would have realized this as they reached the end of the Calimba main line at Paso de Lagarto and it is unlikely that they at that point would be out of gas. Signs of distress can be found even earlier on the main line with the left primary light and navigational markers. If a navigational error was involved something further must have happened after they realized their mistake.

The other option is that navigation was done correctly but that gas reserves made them decide to go for the nearest exit instead of back towards their stage tanks. There is moderate flow during parts of the dive and the exit will take longer than the entry. At a point where gas reserves were getting low and the distance to stage tanks at half pressure is unknown going for the closer exit might be reasonable. In Diver G's wetnotes is a written text saying "*Was mit den Stages?*" which I would roughly translate to "*What about the stages?*". Although this could, of course, have been written during an entirely different dive it could also point towards the planned decision option.

## **Conclusion**

There is a map of the system at the Cenote showing routes and alternative exits. The previous accident and analysis is well known and is frequently used as an example during training, especially for someone trained in Mexico.

There are markers in the system indicating the Gran Cenote exit. Our opinion is that the divers knew of these exit options.

We think that they made the correct navigational decisions but underestimated the time necessary to return, using too much of their reserves and due to not knowing the distance left to reach their stages decided to head towards the nearest exit, traveling with the flow and through bigger cave passage.

They very nearly made it with diver G drowning less than 100 meters from Cenote Ho Tul and Diver A drowning in the cenote, less than twenty meters from the surface.

Given the timeline, *it is reasonable to assume that the dive was done to thirds rather than the fourths that are suggested when diving stages to halves + reserve* but at the point where the stages were left they would have provided plenty of gas for the exit.

Hopefully, the authorities will allow the release of the dive computers and with permission from the families, the dive logs and dive profile can be used to better pinpoint their movements and decisions as that area of the cave has detailed survey. This would greatly improve the final report and accident analysis.

Map just added by the Webmaster:



