



Counter-Clockwise from top Left: Carbon tanks in Texas; Driving the coast road in Mexico; the Sierra Juarez; Sorting food for 3 months; The team camps out at Rancho Faustino.





Clockwise from top Left: Sorting the first load of dive gear for transport up the mountain; beginning the ascent into the Ocotil cloud forest; deep in the cloud forest; final packing of dive gear at Rancho Faustino.





Clockwise from top Left: giant tree ferns are common in the cloud forest; first arrival at J2 basecamp in the Ocotal cloud forest; unpacking Mk6 rebreathers from the burros that carried them up the mountain; wild orchids bloom in the cloud forest.





Counter-Clockwise from top Right: Unpacking Mk6 rigs at basecamp; same; loading latest software revision at basecamp; cooking for 25 explorers in a rain forest; packing food for underground camps (everything has to be waterproof, so most items go into Nalgene bottles)







Counter-Clockwise from top Right: Contacting Camp 1 from basecamp using the Michie phone -- a custom built single wire earth-conducting telephone system; climbing equipment maintenance takes significant effort between underground pushes; 9am call in to underground camps; planning the first diving assault on Sump 2; hauling gear underground; the entrance to J2.







Counter-Clockwise from top Right: at the top of the third shaft, J2, -90 m; on the 6th shaft at -120 m; bottom of the second shaft in J2 at -70 m; topo of the second shaft in J2 at -50 m. Complicated rigging such as shown at lower right is known as a "rebelay" and there are hundreds in J2. At these locations, rock bolts in the wall are used to divert the rope so that it will not contact and abraid on the sharp walls of the cave. More than 4,000 meters of rope are rigged in J2.





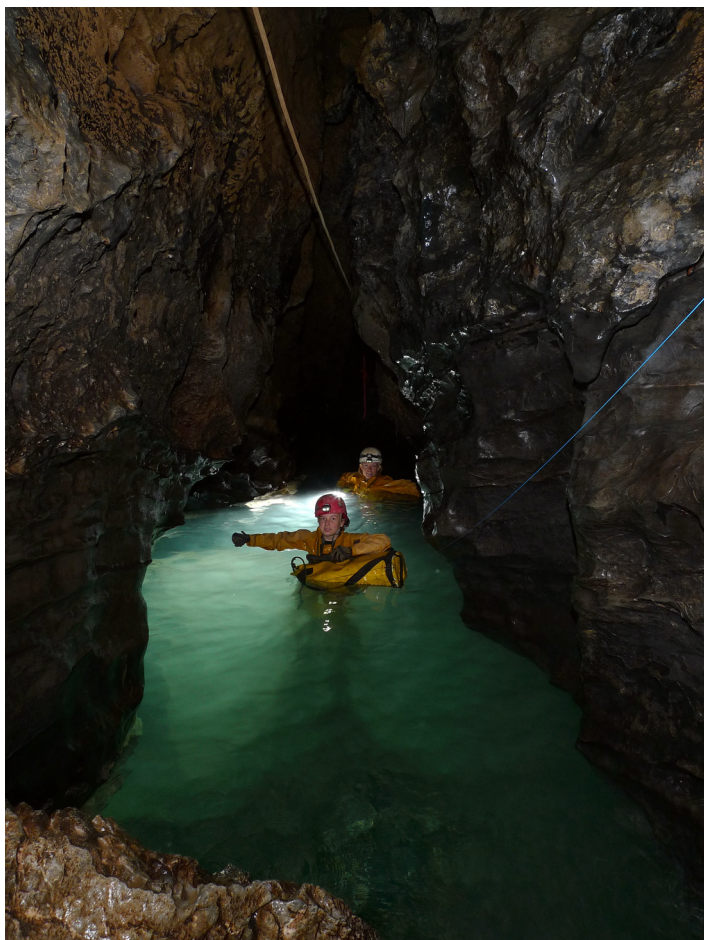


Clockwise from bottom Left: Making dinner at Camp 1, -533 m level of J2; the top bunk sleeping platform at Camp 1; rappelling one of the 14 segments of "Saknussem's Wall" - a 140 meter shaft beginning at the -240m level of J2; typical crew sleeping arrangement at the top bunk at Camp 1; underground camp life at the "beach resort" camping area at Camp 1, located just a half meter above the main cave stream. The plastic tarp overhead keeps water drips from the ceiling from landing on sleeping bags. As can be seen in these photos, everything that goes to underground camps travels inside waterproof drums. There is no effective way to dry wet clothes and sleeping bags once inside the cave. Keeping things dry is an art form.





Counter-Clockwise from Top Right: Dinner at Camp 2 at -600 m above "Surprise Sump"; traversing the "jungle gym" drop just below Camp 1 at -550 m; multi-rebelay pitch at -580 m in polished, banded rock strata; swimming the canals beyond Surprise Sump.







Counter-Clockwise from  
Top Right: Traversing the  
"Black Gorge" at -700m;  
on a tension tyrolean  
across a deep lake in the  
Black Gorge, -750 m; final  
pitch in the Black Gorge,  
-780 m





Counter-Clockwise from Lower Right: re-packing diving equipment at Camp 2A; panoramic view of Camp 2A at -800 m; seven crew members sleeping inside the silk wind-break tent at Camp 2A.





Counter-Clockwise from Bottom Right: Descending the main canyon below Camp 2A; the main "borehole", 500 m beyond Camp 2A; transporting diving equipment below Camp 2A; the "moustache" of Chapulapa at -840 m.





Counter-Clockwise from Upper Right: transporting equipment through the "Donde Homek" breakdown pile at -1,000 m; on tyrolean traverse at -950 m; gear depot at -970 m, 1 kilometer beyond Camp 2A; living in "Nalgene Land" at Camp 3, -1,100 m level of J2.







Clockwise from Top Left: equipment hauling team at Camp 3 during the first diving effort at Sump 2; re-assembling Mk6 rebreathers at the staging area, 20 m above Sump 2 at the -1,200 m level of J2; carbon composite tanks at 410 bar pressure stand ready for diving.







Counter-Clockwise from Top Right: Kitting up on the dive deck at Sump 2; view of Sump 2 and dive deck from 20 m above; transporting dive gear and supplies to the dive deck via the tension tyrolean; divers in the water, ready to transport supplies to Camp 4 on the downstream end of Sump 2.







Clockwise from Bottom Left: Diving through Sump 2 at - 1,209 m in J2; diver surfacing at the dive deck at upstream side of Sump 2; transporting Mk6 rebreathers across the "Land Between the Lakes" at the downstream end of Sump 2; hiking to Camp 4 with a Mk6 rebreather. A total of more than 500 meters of dry (air filled) caverns were discovered beyond Sump 2. Camp 4 was located approximately 150 meters beyond the end of Sump 2 in a high, dry bypass tunnel.

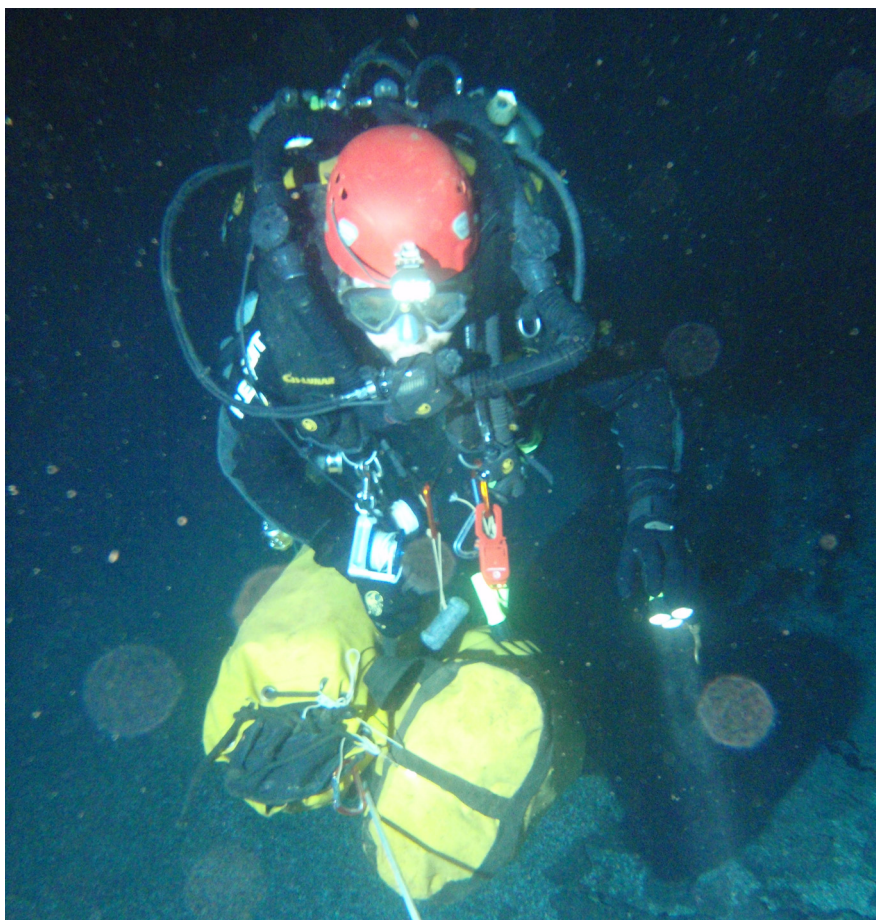




Clockwise from Bottom Right: creating a primary cave diving light from three 2-watt lights at Camp 4 during the final 19 day push; preparing to leave on the second exploratory push on the 170-meter-long Sump 3; returning 2 hours later with the underwater survey of Sump 3; the first open-circuit reconnaissance dive at Sump 4.







Counter-Clockwise from Top: Beginning of a dive at Sump 4; the return dive through 220-meter-long Sump 2 with two 55-liter packs of equipment. Lead and rocks were used to ballast the packs so that they were approximately neutrally buoyant underwater. Inside the bags was everything from sleeping bags to food, batteries, and dry camp clothing (synthetic fleece).





Counter-Clockwise from Top:  
At Camp 4 during the final 19 day push beyond Sump 2; Sump4 has now been explored in two different tunnels to 170 meters and 350 meters penetration, respectively. The main tunnel averages 8 to 10 meters wide by 5 to 8 meters tall. It continues at 350 meters penetration and appears to be rising. The direction of the tunnel -- almost due west towards Cueva Cheve -- confused the early exploration efforts. It now promises a potentially quick connection to the main subterranean Cheve river. Plans are now underway for return expeditions in both 2010 and 2011.

