

# Weeki Wachee Karst Project

## EXPLORATION AT TWIN D'S SPRING

### *"Where Some Men Want to Go"*

By JEFFPETERSON  
AND DAVIDMINER

#### THE BEGINNING

What started as surveying and water sample collecting quickly turned into some of the most logistically demanding cave diving exploration in Florida. Initially, David Miner and I were hired by the South West Florida Water Management District (SWFWMD) to generate an accurate survey of Twin D's Spring and Weeki Wachee Springs for inclusion in their geophysical study of the area. Weeki Wachee and Twin D's (which is approximately 3,000 feet southwest of Weeki Wachee) are located in coastal Hernando County southeast of Eagle's Nest and about two miles west of Diepolder.

Until this point, Weeki Wachee had never permitted legal cave diving at either spring. Before we dove Twin D's the first time, we had heard that Paul Hienreth had found the spring in the mid-70s and Sheck Exley had laid all the line around 1978. After speaking with cave divers who had clandestine experience in the system, we heard that it had a tight solution tube entrance, followed by a healthy swim through raging flow, in low tunnels at 130 ffw which would lead to a huge room called the Pleasure Dome.

I located a rough survey map made by Exley and based our initial decompression profiles on the distances and

depth laid out on the map. Our first estimated schedules called for about 40 minutes of deco from 30-10 feet for a 45 minute bottom time using either air or a light trimix.

When we arrived for our first dive, we were faced with some confusion before even hitting the water. Legend spoke of a monstrous discharge — at certain times of the year enough flow to create a boil rising a few inches above the basin's surface level. We saw only the weakest eddy of a discharge and no boil whatsoever. The water was at least still clear blue (This alone was refreshing for Dave and I after all the work we had done in the murky waters of Sulphur Springs.)

Sheck's map stated that the bottom of the Pleasure Dome was approximately 250-feet deep. Dave chose to dive air with oxygen for his 20 and 10-foot stops. I choose to dive Trimix 20/25; I hate narcosis. Our dive plan was basically to get a look at the system and, if we made it to the Pleasure Dome, drop to 230ffw and then head out.

The entrance was a round vertical solution tube starting at ten foot venting into a three foot deep basin at the edge of a swamp. The tube was about two feet in diameter and dropped to 40 feet, which made the

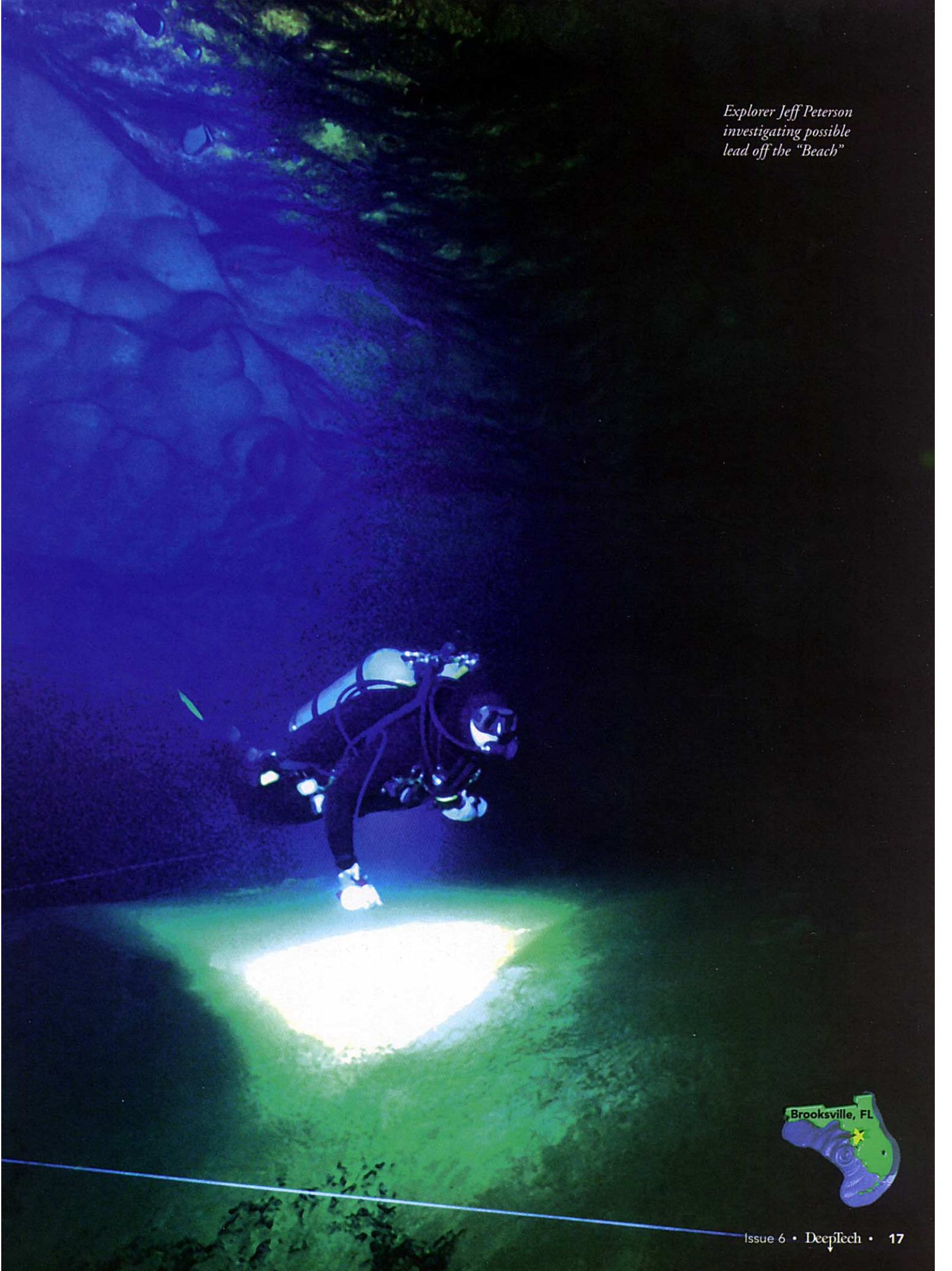
descent as tight as we had heard. Because of the absence of flow, we didn't have to claw our way down, but the loose debris surrounding the tube poured down with us, creating an irritating silt out as we inched our way straight down. We knew the shaft would also be the place we would have to push our oxygen bottles over our heads frozen in a Superman-in-flight pose (if you let an arm fall to chest level you were sure to be wedged in the shaft) for almost all of our deco schedules.

The solution tube opened into the ceiling of a small room (we would later dub The Staging Room because we used this room to setup stage bottles, scooters, etc.). From here lead a low horizontal tunnel with faint flow. This tunnel ran for about 350 feet at 55 feet deep, averaging about three feet high, with widths ranging from 15 feet to three feet. The bottom was clay overlain in some places with sand or small chert fragments. Although this area was low, it was highly decorated with formations giving it the appearance that it had spent considerable time dry.

After rounding a 90 degree turn to the right where two impassable feeder tunnels met the main tunnel, the morphology of the tunnel changed

*continued on pg. 18*

*Explorer Jeff Peterson  
investigating possible  
lead off the "Beach"*



*continued from pg. 16*

fracture; this fracture tapered at the top and bottom, so we followed the line on its 45 degree descent downward through the largest portion of the fracture.

At the far end and bottom of the fracture, we found ourselves at a body-sized restriction with a sand bottom at a depth of 125 feet. In this smaller aperture, the flow had become more noticeable and again the morphology changed. Now, the tunnel was a man-sized keyhole shape with a thin plate of dark mineralization overlaying clay.

The tunnel leveled off at 130 feet, three feet high, and 4 to 5 feet wide, with the same formation covering the floor and gently scalloped walls. This tunnel grinded on for about 800 feet. At last, we made a sharp turn to the left and the morphology changed yet again.

We had made it to what Sheck had called the Black Room. The walls were black and scalloped in random places as if a

mad giant scooped out pieces of the cave with his ice cream scooper. The floor had rolling dunes of clay covered with a thin veneer of sand. The line snaked across the dunes and lead to a large room.

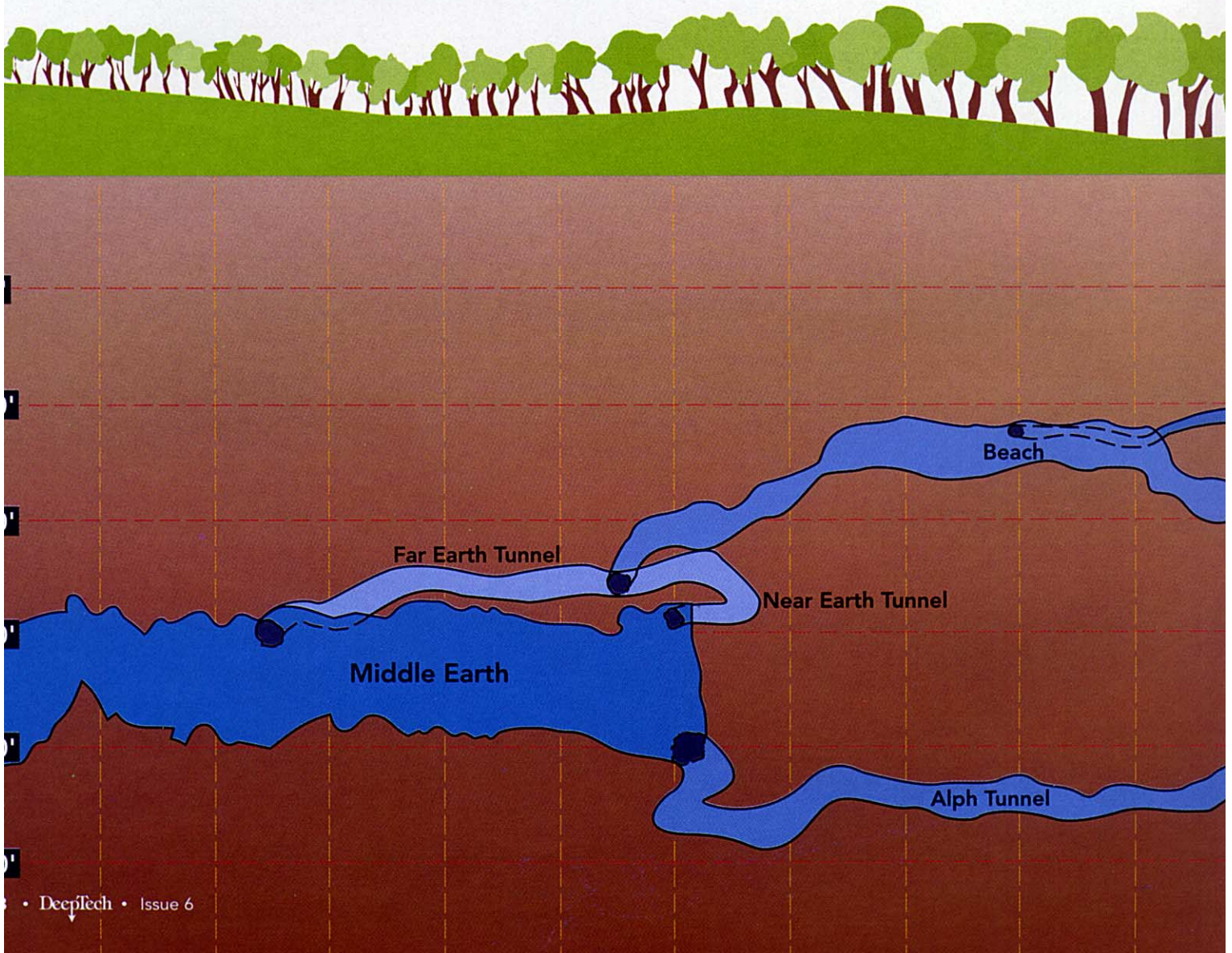
Here the ceiling rose, vaulting up 10-30 feet above the floor, which almost immediately dropped away to form a large pit. This pit had no floor per se; instead, the floor spiraled downward getting larger and larger.

We noticed that the line was T'd and that a line went off into a lower section to the right. We had heard that this line went to another smaller terminal pit. We chose to stay on the main line as it spiraled downward to what we expected to lead to the Pleasure Dome. This section was truly impressive becoming more craggy and scalloped with black scorch marks standing out against the cream colored limestone. This tunnel was now about 20 feet x 20 feet with a fluffy silt bottom.

This large, spiraling tunnel ended at the balcony into the Pleasure Dome at about 210 ffw. The tunnel breached the Pleasure Dome near the top along the curving outward slope of the wall. The room was roughly circular expanding outward as we went deeper. Sheck's line went down to the middle of the room, tied off on breakdown. Although the water was clear, fine particulate in the water gave it a smoky quality that dissipated our lights, making difficult to see the outer edges of the room. We hoped that somewhere out there, at the bottom edge of the Dome, would be some lead missed by those who had tried before us.

We were just at third's and decided to head for the door. My guesstimated schedules appeared to have been fairly accurate for times and depths.

We spent 40 minutes staring at the wall of the limestone tube only 4-inches from our faces. Both of us juggled our

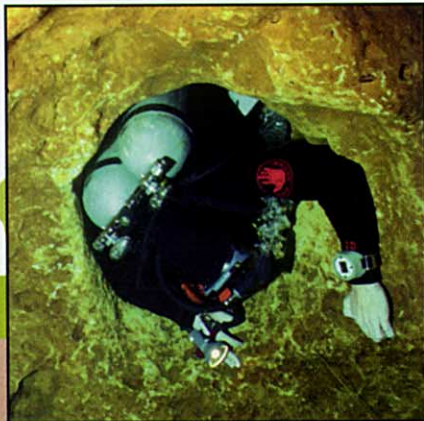


oxygen bottles over our heads and waited. Every minute those steel 72s felt like they were getting heavier and heavier. Dave had to deal with my exhaust bubbles and I thought about the fact that there was no way he could help me if I had a serious problem and I would have to *go through him* to get out of the cave.

Once we hit the surface our elation returned and we began planning the next dives. Our first reconnaissance dives showed us a “rites of passage” system that required some determination from would-be divers. But for those with the desire, the rewards at the end were more than worth the efforts.

### THE OTHER PIT, A LEAD AND THE BIG ROOM

We decided the first order of business would be relining the cave; this



Diver squeezes head first down the 30-inch diameter solution tube into the staging room.

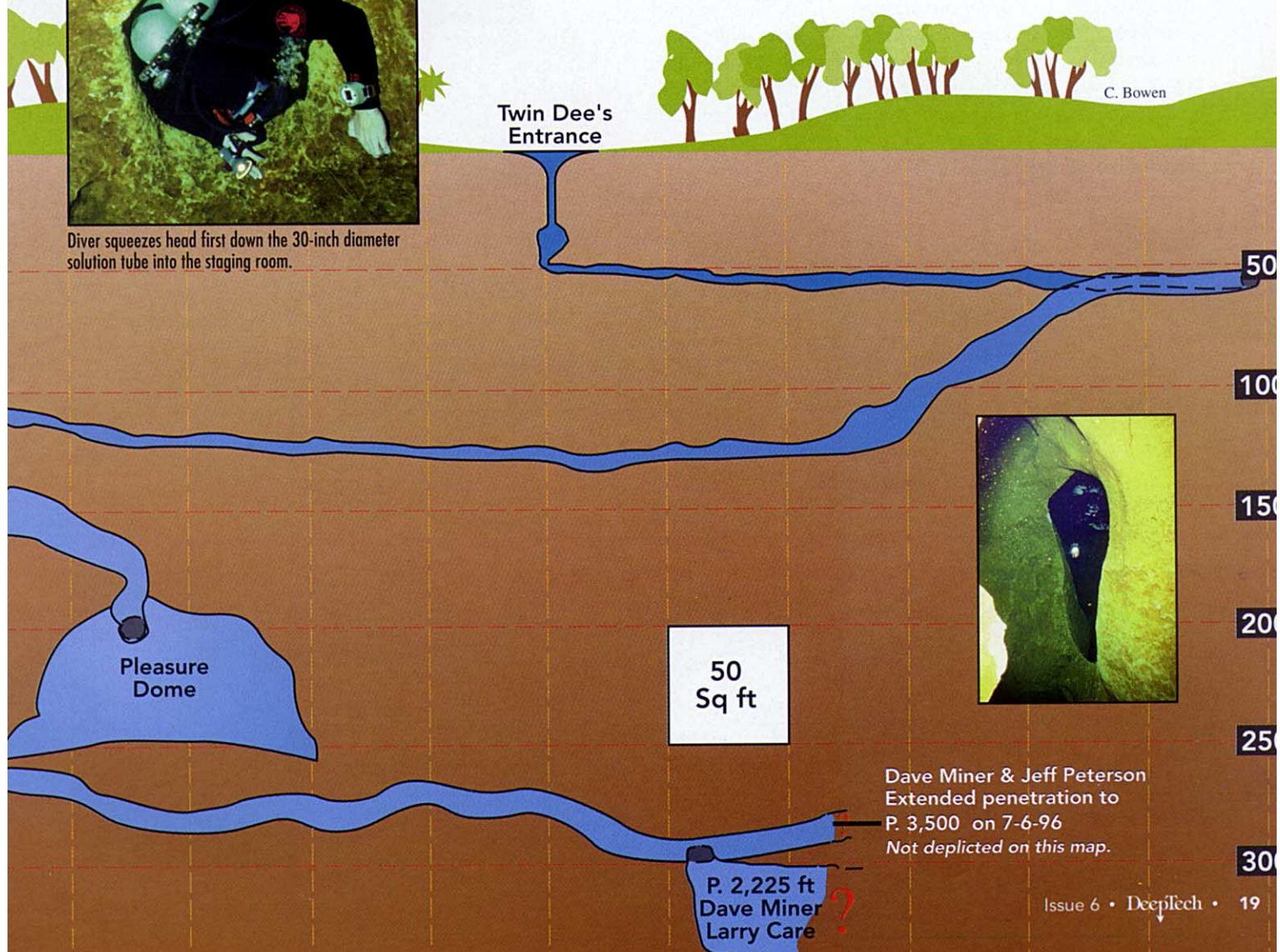
would clean up some of the loose line, line traps, and facilitate the surveying. Then we would start the survey which was SWFWMD’s first priority and take water samples when SWFWMD requested them.

After two tedious relining dives, we decided we needed a fun dive as a reward. Our fun dive would simply be another sight seeing dive to the Pleasure dome. We stopped before reaching the dome and checked out a couple large tunnels at 170 ffw; these turned out to be loop tunnels. As we started to head out we saw that we still had extra gas left in our doubles so we decided to take a look at the other line at the tee.

The line ran into a low broad area much like the adjoining Black Room; this area actually appeared to be another bedding plane. The line went around a large pillar and was tied off in a jumbled knot at the lip of a pit at 115 ffw. This pit was different than its larger counterpart

that lead to the Pleasure Dome; it had a distinct bottom and was slightly smaller (roughly elliptical with a 30 foot circumference). We drifted out into the middle of the pit and started to drop down. As we dropped down we noticed that the northwest wall of the pit was actually a triangular tunnel created by a fracture line. Hovering at 140 ffw, we looked into the new tunnel; it definitely went some where, but we weren’t sure how far it would go — everything else at this depth had been false leads. We were at thirds again so we left with intentions to return to the Forgotten Pit with full doubles.

We figured we could get at least 300-400 feet more out of our doubles assuming the tunnel stayed at 150 ffw so again we dove our doubles (104s) and oxygen. The idea of dragging stages through all the low clay beds at the beginning of the system was not an appetizing thought.



C. Bowen

Dave Miner & Jeff Peterson  
Extended penetration to  
P. 3,500 on 7-6-96  
Not depicted on this map.

On the next dive, we dropped into the Forgotten Pit. After about 20 feet, the vertical fracture broadened with sprawling pockets branching off. The walls all had the same dark burnt layer covering the limestone. The tunnel dipped and averaged about 170 ffw and about 15 feet high and 20 feet wide. We swam about 350 feet where the tunnel ended abruptly in a small pit. Just before this pit were two tunnels, one to the left and one to the right. Both of these tunnels lead off from the floor of the main tunnel, so we knew the next dive would be even deeper.

For the next dive, we came armed with a single stage of EAN 40 that we planned to drop and the bottom of the fracture section; this stage would also act as a decompression bottle for us on the way out. For this dive, we arbitrarily chose to check out the right tunnel.

We hit the intersection again (which would later become known as Grand Central), tied off a new reel and dropped into the right tunnel. After passing through a small duck under entrance we were back in a tunnel just as large as the last one. We ran off about 250 feet of line at 200 ffw and came to the end of the exhilarating after swimming through the tunnel. We stopped, hovering, with nothing but a huge blue void in front of us; our tunnel had intersected some immensely large room. We could see the ceiling about 15 feet above us and walls

shooting of at 90 degrees to our right and left. We couldn't see the bottom or the other side of the room. We tied off the line at the edge of the balcony and headed out.

We decided to do another single stage and check out the left tunnel. Again we tied off another line at Grand Central and dropped through a slightly small restriction on the left side. As before, it opened up at 200 ffw, but not quite as large as the right tunnel had been. This tunnel arced about 80 feet to the right and opened as a balcony into another enormous room. We looked at each, not believing that there could be two rooms this big; either one of these had already made the once imposing Pleasure Dome seem like a broom closet.

We ran another 100 feet of line off the balcony along the left wall. We were swimming about 30 feet off the left wall when we saw spires of limestone rising up from the floor 70 feet below us. These spires rose up like a mountain chain in the middle of the room.

We tied off on the top of a spire at 230 feet and headed out.

### Issues and Planning

After that dive, I sat down and sketched out the tunnels. I showed the rough map to Dave and we wondered if these two balconies opened to *the same room*. Based on the layout, it looked possible.

On the next dive, we lugged two stages through the low stuff and headed for the first tunnel explored. After checking a false lead, we went left off the balcony in hopes of spotting our other line coming off the balcony. We



made the connection; the balconies were only about 60 feet apart. Then, we swung back and ran line along the right wall to see if it was going to start curving to the left and close off the



C. Bowen

room. We put in another 100 feet past the balcony with no sign of the wall curving back to the left. With both of us at thirds, Dave tied off on the wall and we headed out. After a grueling deco, with three bottles banded together over heads for an hour in the shaft, Dave and I agreed that we were going to need some help.

few stories, it took little effort to get their support. Over the coming months Bill Main and Steve Straatsma joined the project to help out as the set up dives became more and more critical.

Some of the gas planning foundations that Dave and I had laid in the first dives were now codified and distributed

to all the project members. This way, everyone would have the “rule book” to minimize miscommunications. Additionally, we standardized decompression tables based on swim times, more accurate depths, and the “official” gases. Because of the progressively deeper steps in the system, our stages bottles would do double duty as travel and deco gas on the way out.

A special strategy was chosen for double stages which had become the new standard for exploration and extended surveying. The first stage would be breathed to thirds and the second would typically be dropped before thirds. On the way out, the second bottle (the one farthest in) would be breathed all the way out (until it was empty); this would leave the first bottle with two thirds left for decompression.

We had dubbed the area that opened to the new stuff and the Pleasure Dome “The Beach.” All stages used between the entrance and the Beach would be EAN 29. This mix would give us a PPO<sub>2</sub> of 1.4 ATA at 130ffw which was the cruising depth from the Fracture to the Beach. We chose Trimix 18% O<sub>2</sub> 35% He (Tx 18/35) for pushes into Middle Earth. The rules for trimix selection was a PPO<sub>2</sub> of 1.4 ATA and an END of 130 ffw.

On one of the next dives, Tom Stock

and Dave did a double stage of EAN 29% with Tx 16/40 to drop straight down off the Near Earth Balcony to see just how deep Middle Earth was. This section was also of interest because the wall cut back under itself at about 240 ffw. On TX 16/40, we felt the team could easily handle a quick drop to 300 ffw, if it became necessary.

They dropped down into an enormous cavern section cutting in from the left wall of Middle Earth. The bottom was covered with large slabs of break-down and leveled off at 280ffw.

As the depths and times continued to increase, decompression obligations were mounting. In other systems this wouldn't matter much more than deciding what magazines to strap to your O2 bottle. At Twin Ds, decompression is one of the most dangerous phases of the dive.

At 40 ffw, divers can remain in the Staging Room and move around in comfort. At 30 and 20 feet, both divers have to be in the shaft, stacked one above the other. The bottom man, in a crisis situation, could not unilaterally go to the surface without cutting his way through the first diver. In any situation, both divers would be without surface support.

Interdependency and redundancy became the framework for deco strategies. One strategy, Dave's approach, was to go up the shaft with a single bottle of EAN 70 equipped with a Y valve; this bottle was used from the 40 foot stop through the 20 foot stop. At 10 feet, where the shaft opened to a pit, an O2 bottle hung for the remainder of deco. My approach was to go up with two bottles banded together, each equipped with a yoke mounted regulator for switches if necessary. I preferred this method because it allowed me to go on O2 at 20 feet.

The relining and surveying dives gave us the opportunity to get everyone on the project familiar — and comfortable with — transporting bottles and operating in the low tunnel and extended silt outs. With everyone ready and all the existing line, old and new surveyed, we were ready to see if we could wall out Middle Earth. Dave and I did another double stage and went out along the left wall off the Near Earth Balcony. We swam over the spires, now nicknamed The Misty Mountains. As we swam further, two spires rose from the floor

up to 200ft. It was like swimming through a canyon with the spires looming to our right and the wall of Middle Earth to our left.


The inefficiency of swimming at depth was forcing us to reevaluate the option of bringing scooters into the system. Dave, Larry, and I had the new Gavin scooter built by George Irvine. These would afford us with control and agility in the small areas, along with depth capability and neutrality.

After two set up dives, the stage was set to run a circuit line around Middle Earth. One stage bottle sat at the bottom of the shaft for Dave and I to start with; a second waited in the Breathing Room to take us to the Beach. At the Beach sat our scooters. Dave and I had dropped off the scooters the day before; it was surprising, after pushing the scooters through the first 100 feet of the cave, we were able to ride them through almost all the sections leading to the Beach.

We picked up our scooters, headed through the Far Earth tunnel and tied off on the end of the line along the right wall. After about 50 feet the wall finally started to arc back to the left. Dave laid the line at about 230, and I followed slightly behind and about 10 feet above him watching for possible leads off the room. As Dave made a tie-off, I noticed the edge of the Misty Mountains and knew that our other line should be near. I spotted our line ending about 10 feet above me a 20 feet above where Dave was running the line. After signaling Dave, he tied them together and we went back to check a possible lead.

On a subsequent dive, Dave and Bill Main used scooters to survey the Middle Earth circuit line. Middle Earth turned out to be about 320 feet long (from the balconies to the far end of the room) and about 150 feet across, yielding roughly a 1,000 foot swim around the room.

Since we saw no obvious leads in the 230ffw zone, we decided to go deep and add to the line to the left of the Near Earth balcony. The dive plan was to drop down, tie off on the old line and follow the edge of the alcove around at floor level until, presumably, we returned into Middle Earth near the Misty Mountains. Then we'd bring the line back up and complete the deep circuit. Dave and I, diving TX 16/40, tied off and



*Jeff Peterson and Tom Stock setting stage cylinders and Super "Gavin" Scooters at 130 ft. for the next days push into the deep section.*

began swimming along over large shelves of breakdown. The edge continued to cut farther in from Middle Earth; we swam around an especially large sheet of breakdown and immediately saw a huge Eagle's Nest style tunnel heading off to our left. We made the turn, both of us knowing intuitively that completing the deep circuit meant nothing compared to seeing if this tunnel was going to really go. It did. It also appeared — even for the huge size of the tunnel — that there was flow from silt movement at the tie-offs.

A few weeks later, setup teams placed all the gear for a triple stage (two EAN 29s and one mix bottle) and scooter push in the Alph Tunnel (also from Coleridge's "Kubla Kahn"). This time Larry and Dave were the lucky ones. Bottom mix was TX 15/42 to allow for deeper excursions, since the trend from the section Dave and I explored seemed to average about 290ffw.

Because of the cave constraints on deco, we stayed with two man teams. The battle plan called for Dave to lay the line and Larry to follow behind and survey on the way in.

This dive gave us a total penetration off of Middle Earth of 800 feet at 290 ffw with no end in sight for the tunnel. The tunnel was broader than it was high with the floor to ceiling height governed by the amount and positioning of breakdown; widths averaged about 40 feet. It is distinctly different from Eagle's Nest in two respects: the limestone is a deep maroon on the surface, as if the top layer had been scorched by a flame thrower, and there is very little silt deposits, possibly indicating that the system has never siphoned this far in and any upstream surface connections are extremely distant.

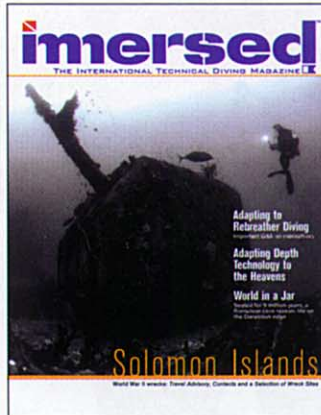
## THE FUTURE

This summer, we will continue pushing the Alph tunnel and do a more focused assault on Weeki Wachee Spring. Weeki Wachee's flow will be its lowest in the summer, when it drops to triple the discharge of Ginnie Springs. Exploration at Weeki Wachee will offer its own daunting set of challenges. The hyperflow coupled with zig-zag overhead configuration of the fracture that drops down to 170 ffw will make access and subsequent decompression unpleasant.

As we continue exploration at both sites and compare this information with the data from Diepolder, Eagle's Nest and some lesser know springs in the area, we will be able to develop a better understanding of the mechanisms that have driven cave development in the Hernando County area.

Weeki Wachee Project would like to thank Dive Rite MFG, Depth Perception Dive Center, and Weeki Wachee Springs for all their contributions. 🙌

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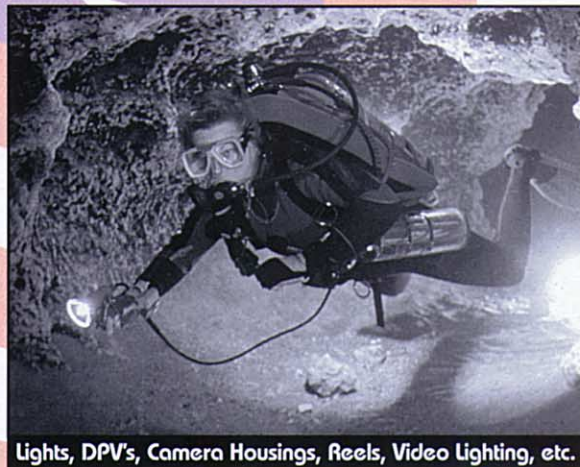
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