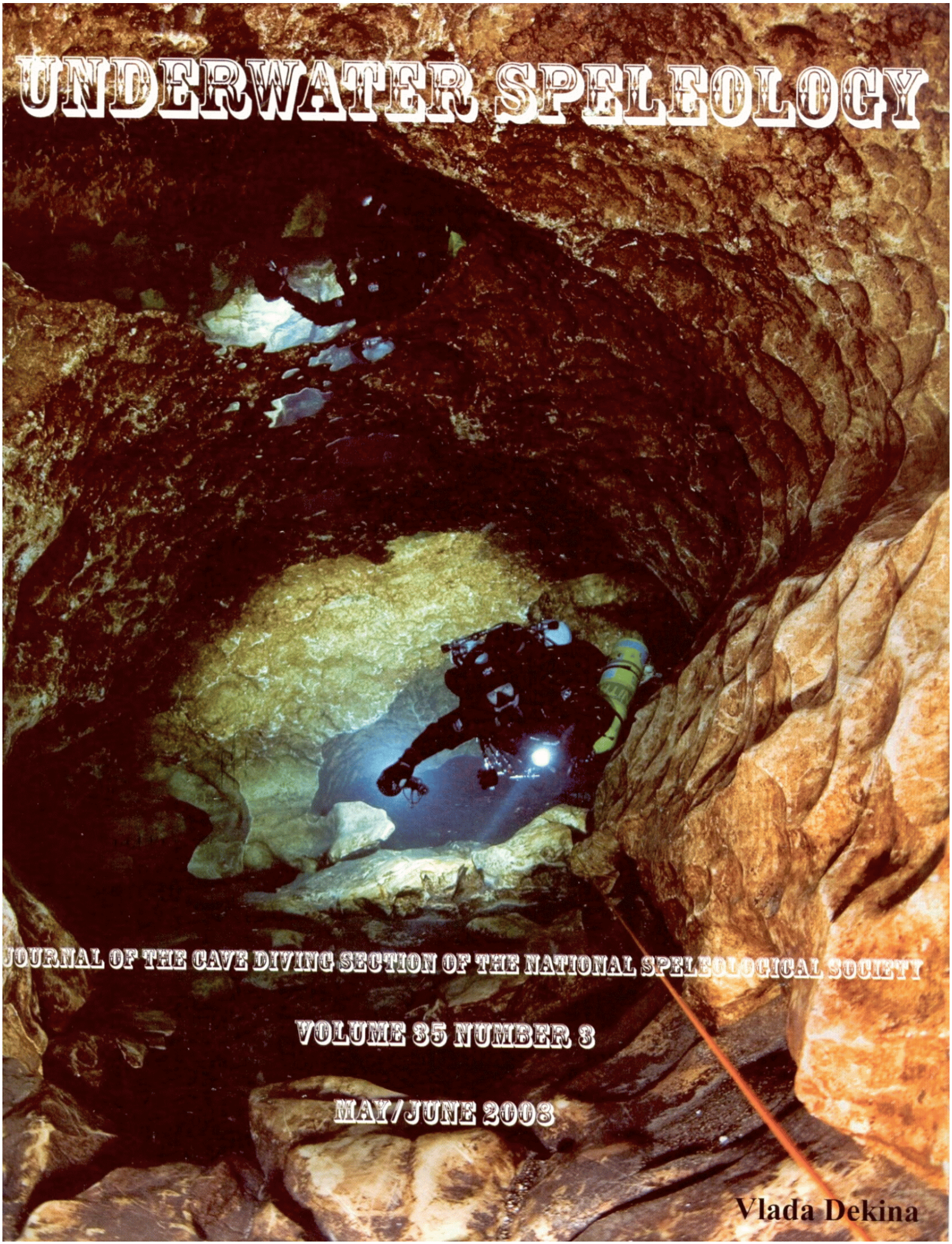
UNDERWATER SPELEOLOGY



JOURNAL OF THE CAVE DIVING SECTION OF THE NATIONAL SPELEOLOGICAL SOCIETY

VOLUME 35 NUMBER 3

MAY/JUNE 2008

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Utah's First Diveable Underwater Cave System Discovered

By Wendell Nope

When one thinks of karst springs, Florida automatically comes to mind. Yet, an extensive karst system also exists in the limestone and dolomite geology of Logan Canyon, Utah. Extensive dye drainage studies have been conducted in this region by the US Geological Survey and the US Forest Service. Numerous springs and sumps have been identified, but to-date, none have ever been found to be sizeable enough for underwater caving. *That was then and this is now!*

I wouldn't expect anyone reading this article to know who I am, so may I introduce myself? I currently reside in Salt Lake City and I am a State Police Officer, working as a trainer at the Utah Police Academy. I also train the Utah Department of Public Safety Dive Team. It was there that I developed a curiosity about cave diving. After completing my NSS-CDS Cave Diver certification, I realized that a poor state cop won't make it to Florida very often to dive the Devil's System, Peacock, Little River, etc. My only option seemed to be to find a wet cave in Utah to enjoy my passion. Everyone I spoke to told me there were no wet caves in Utah. I just couldn't believe it. This article reveals the result of a year's worth of interview after interview, checking out sites, the disappointment of failure after failure, even the criticism of naysayers ... then the extreme elation of being more than rewarded for all the time and effort.

As a preface, there are many hundreds of dry caves in Utah. In fact, the discovery of the Main Drain Cave in Logan Canyon has recently received NSS attention as being one of the deepest dry caves in the USA. Downward exploration has stopped in Main Drain because it has reached a terminal sump at a depth of 1,227 feet (which may also become another story later on).

An interview one day in March 2007 with USGS hydrologist Larry Spangler produced another lead. Larry has researched Logan Canyon drainage for years and some of his work may be seen at the following web page: http://water.usgs.gov/ogw/karst/kigconference/les_delineation.htm. Larry is, himself, an accomplished dry caver. He is active in the local NSS Grotto and has put in many hundreds of hours underground. Larry stated that once, when the water table was far below normal, he had been able to see into the opening of Ricks Spring as it flowed out of the rock. He felt a diver might be able to get in there if some of the blockage was removed from the mouth of the spring. After further discussion, we decided to go and determine the status of the entrance and the outflow. The photo below says it all! Larry, Richard Lamb (a local cave diver) and I then went to Ricks Spring. The water flowing out of this spring is crystal clear. It's also cold - on the first visit it was 43°F. After several hours of clearing rocks out of the throat at a depth of 14', there was enough clearance to enter the cavern zone. When I made it through the very first time, I looked around with awe, realizing that I was looking at something that no human being had ever seen before. Each subsequent dive has produced that same feeling as we have pushed further into the

Ricks Spring is located at MM477 on Hwy 89 in Logan Canyon, about 17 miles outside Logan City. The spring boils up from the rear of this open cavern, flowing from 3cfm-30cfm, depending on the time of year and the previous winter snowpack. Over one million sightseers have stopped here to enjoy the picturesque view and see the fault-line which is clearly visible at the top of the cavern.

Utah's first diveableunderwater cave is discovered! Wendell Nope was able to shine a light into the entrance and confirm a passageway. The opening was practically choked shut with baseball- to basketball-sized rocks and it took 2-1/2 hours to clear out enough rocks to penetrate. The darker shadow to Wendell's left is the slope to the entrance.

The entrance opens up to a cavern just beyond the initial restriction. The main passage gets bigger as it goes.

system. On this first effort, we laid only 200' of line. It wasn't because of a lack of interest to go farther, but rather, the presence of numerous side passages in the first 200'. There are five off-shoot passages: two back-mount, one side-mount, and three no-mount.

The water clarity in the main and side passages remained crystal clear throughout the penetration phase of the dives that day. There was next to no silt on the rock floor and walls of the main passageway due to a rather strong flow. We had agreed with Larry to only penetrate 200' and then report our findings to him. One thing that no amount of training can prepare a cave diver for is the heavy percolation that a virgin cave may produce. After tying off the exploration line on the "first push" Richard and I turned the dive. As soon as we began the exit, our lights shined into what appeared to be a snowstorm white-out. Visibility went from 100'+ to 1' as soon as we headed into the downstream flow. I had a flash thought that we maybe had stirred up the bottom on the way in, but I knew better. Something was different about this silt-out. Training kicked in and we initiated a Bump & Go exit procedure. As we got to the primary tie-off point in the cavern zone, we made a three minute stop. Our maximum depth had been 70' and no deco was necessary. In that short space of time, the percolation

Richard Lamb enters Ricks Spring cave system on a subsequent dive. The opening is no longer a major restriction and accessible for all but the largest back-mount cave divers.

The Rabbit Hole Tunnel leads away from the main passage and then re-connects at a later point. It is back-mount accessible for most cave divers.

The Eye Socket Tunnel has a back-mount opening on the right side and a side-mount opening on the left. It is unique geology!

dissipated, being blown out the cave entrance. We were once again in crystal clear water. We exited safely, and as we surfaced, Larry was standing right there, almost waist-deep in the frigid water, with a grin from ear-to-ear and 20 questions.

Larry Spangler has one of the bubbliest personalities I have ever known. He grilled us on the geology, passageways, water flow, and several other hydrology-type issues. I felt like he was as excited as we were to make this unique find. Larry then explained to us that the ability to go upstream in this cave system had enormous impact on an issue that he had been researching for years now - the Ricks Spring water source. Some years ago, the US Forest Service placed dye in the Logan River above Ricks Spring. When the dye showed up in the spring, a declaration was made that this was not a true spring, but rather, an underground diversion of the river. To me, this is not an issue, but I'm only a diver and not a hydrologist. The assertion has been made that Ricks Spring begins at a point where the fault line crosses the river and ends at the point where it reaches the boil itself.

Larry has done dye tests of his own and found that dye placed in a high mountain glacial lake named Tony Grove (5+ miles away and 2000' higher elevation) also exited out through Ricks Spring. If Ricks Spring is only an underground diversion of the river, it may end at about 1500' distance, as that is where the fault intersects the Logan River. Larry's research suggests there is a confluence at some point, where the Tony Grove drainage and the fault-diverted Logan River water combine and flow to Ricks Spring. This is hopefully the case, since this would mean a cave system with both unique qualities and possibly a tremendous distance! Finding the confluence would be as exciting as the initial discovery of the cave system! At a future date, when the confluence is found, we will place flow meters, etc. to evaluate the two discharges throughout the diveable portion of the year.

On the second push, another local cave diver named Randy Thornton joined Richard and me. We pushed the distance out to 500', finding even more passages along the way. At about the 250' point, the geology of the main passage changes from a fault-line type tunnel to a bore-hole configuration. In this new section, there are few places to pull-and-glide, so kicking is the only option. The amount of flow along this 250' stretch will certainly be a limiting factor for the distance that we'll be able to penetrate in future exploratory dives. What a great problem to have, considering our greatest problem previous to this was not having any cave to dive in at all!

A couple weeks later, Richard Lamb and I returned for a couple more dives. We laid new line from 500'-800'. The geology along this section changes from bore-hole back to fault-line configuration. There was not much flow on this dive and the only reason

we stopped at 800' was that we came to a large air pocket, big enough to either stand up or sit down. We both immediately realized this might be used as a location for future extended penetrations involving stage bottles or even just resting. On our next dive we collected an air sample to test for toxic gasses, etc. The air is indeed breathable but the oxygen content in this small air space may be diminished by multiple divers within a short time frame.

As of this third push, we have named several side-passages and geology features. About 75' from the cave entrance is the Rabbit Hole Tunnel, which actually leads back to the main passage. At about 140' is the Eye Socket Tunnel, which has two side-by-side openings and a column in-between. As you might imagine, the openings seem somewhat like eye sockets on a skull. Anyway, this is a side-mount tunnel which is as yet unexplored, but appears to open up into a room after a distance of about 30'. Back in the main passage, just about 150' from the entrance, is the Honey Hole - a cork-screw shaft that starts at 30' depth and descends to 70'.

Next, one encounters the Slippery Slide Tunnel, (bore-hole configuration) so named for the lack of pull-and-glide points. Beyond this, the main passage changes back from bore-hole to fault-line configuration. At about 750', one encounters the Tibby's Table Obstruction, which is a 4'x6'x6" slab, jammed at a about 60° angle in the main tunnel. Large back-mount divers may find this obstruction challenging, even impassable, as was the case with one diver on a subsequent exploration dive.

As of this writing, only exploration line has been laid and there is no line in any side passage. Once we have reached a distance of 1000', gold line will be put in, as well as a sign at the end of the cavern zone. Prior to this article, the existence of Ricks Spring Cave System has not been publicly disclosed nationwide. Not very many cave divers reside in Utah, but neither do the surrounding states have numerous wet caves, so it is anticipated that more divers will begin showing up, once the US Forest Service grants access, subsequent to the initial exploration phase.

The air pocket at 800' in the main passage is large enough for divers to rest or even stage gear for further exploration. It has multiple layers of well-defined strata which are almost hypnotizing.

There is always a bit of humor whenever grown men are giddy with excitement. On the second push, Randy Thornton sneakily stashed a slate well into in the main passage so that I'd find it on the third push dive. The slate had written on it, "Wendell, you're not the first person to dive this cave!" When I found it, I was momentarily stunned and confused. Then I thought, "Wait a minute ... (just like Larry the Cable Guy) ... how would somebody know I'd be the one to find this? This is a setup." It was a cruel and evil thing to do!

On August 12 2007, Richard and I returned to video the main passage up to

Utah's First Diveable Cave System

The Tibby's Table obstruction leans across the passageway as if placed there purposefully. Back-mount divers must rotate on their left side to squeeze past. Once past, the passage opens up to another large room before heading up towards the air pocket.

the Air Space. Using a video camera setup that any redneck would be proud of (eBay bargain-basement housing and four light cannons), I was successful in acquiring reasonably decent footage. It has now been edited such that the video fits on a regular CD. A special segment shows Richard as he maneuvers through the Tibby's Table obstruction. Photos of Tibby's Table and the Air Space were taken and the best quality image is included herein.

There are more fascinating aspects of this cave's geology. The Slippery Slide Tunnel has a slight upward angle. During almost the entire penetration in this tunnel, the diver can see breathing exhaust bubbles race ahead along the ceiling. Initially, this caused percolation to cloud the way, but by now this has decreased considerably. Also, the Slippery Slide Tunnel ends at a large chamber, at least large for this cave system. Each dive so far has produced considerable percolation as we enter this chamber, so its detailed characteristics are as yet unknown.

At the far end of the Air Pocket, one can see the passage continuing. The opening has the appearance of a gaping maw, as it is viewed from the beginning of the air pocket. Yet, upon arriving at the opening, it becomes obvious that the passage makes a turn such that this is only an optical illusion. The main passage continues on in a horizontal and vertical serpentine fashion until a second air pocket is encountered. This air space is much larger than the first and has some incredibly beautiful geology in the ceiling. Ever-present moisture on the ceiling gives this airspace the appearance of glistening layers of rock strata. It is an awe-inspiring sight.

Continuing on and after a distance of just over 100', a third air space appears. This is even larger and has a dome-like configuration. It also reveals strata layers that are similar to giant growth rings of a tree. Again, the sight is breathtaking! This air space has a small sandy beach which might provide a temporary staging spot, if an urgent pause in the dive was necessary. There is also a visual deception in this air space ... your eyes are attracted to the fascinating beach and beautiful dome. If you don't look for a cave passage continuing on from here, you might not spot it easily. As you come into this dome-room, your eyes are drawn to the left and upward. The underwater passage actually continues to the right and downward. When you finally spot it, it is incredible! This unique geology we have named "Jim Wyatt's Elbow." The passage now opens up into a large and wide Florida-type underwater cave passage. Silt covers the floor and the water is a brilliant pale cobalt-blue. The water appears different than the first 800' or so, causing me to wonder if we have passed the confluence of river intrusion water and snow-melt drainage. When I first saw this sight, I literally gasped in my regulator. It is truly breathtaking, compared to the passage up to this point, which is very slightly brown-tinted water.

Jim's Elbow now leaves the dome-room, slopes sharply downward, and somewhat levels off for another (horizontal) 150' to an even more stunning sight. As the passage gradually becomes more shallow, another air space seems apparent due to reflections of the surface bouncing light back to us. The shock sets in as soon as the divers' heads breach ... this is not just another air space but actually the opening to a huge dry chamber! The water passage turns into a stream running through this dry cave. On this first visit, we couldn't see the other end of the cave, even with our 10W HID lights. A subsequent dive revealed the cave to be about 250' long, 30'-50' wide and at least 50' high. There is even a beautiful waterfall. On our first dive to this point, Richard Lamb and I were so stunned by the view that we just stared. Our conclusion was to return later with digital and video cameras to document the discovery. We tied off the exploration reel and started the exit procedure. As we headed out, I shook my head in disbelief of what we had found.

It is a genuine privilege to find the first diveable underwater cave in Utah. The 1300' of easy-access passageway exceeds my wildest dreams. Finally, the wet-cave-dry-cave-sump engenders a true explorer attitude. I can hardly imagine what else Ricks Spring Cave holds for us as we explore the cobalt-blue-water passage that continues beyond the dry cave. But, that will likely be another article!

Wendell Nope (NSS-CDS #58109) authored this article, which was then approved by Richard Lamb, Randy Thornton, Mike Robinson, and Larry Spangler. Special mention must go to Tibby Petrescu, who selflessly moved rocks from the entrance on each outing and remained at the surface for logistical support. This was truly a team effort by all - the way it's supposed to be.