

THE MAVERICK BULL



**The Newsletter
of the Maverick
Grotto**

**Volume 18
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January, 2005

Maverick Grotto Information

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The Maverick Bull is the monthly newsletter of The Maverick Grotto, an internal organization of The National Speleological Society (NSS G-322). The editor invites all individuals and other grottos to submit articles, news, maps, cartoons, art and photographs. If the material is to be returned, a self-addressed stamped envelope should accompany it.

Reprinting Articles: Internal organizations of The National Speleological Society may reprint any item (unless copyrights belong to the author as stated in the byline) first appearing in *The Maverick Bull* if proper credit is given and a complete copy of the publication is delivered to the editor at the time of publication. Other organizations should contact the editor of *The Maverick Bull* at the address herein.

Exchanges: The Maverick Grotto will exchange newsletters with other grottos. Contact the editor.

Complementary Newsletters: The Maverick Grotto will provide complementary newsletters to persons or organizations that provide cave access (i.e. landowners) or otherwise provide assistance to cavers. The Maverick Grotto will provide one free issue to persons interested in becoming members.

Subscription Rates: Subscription rates are \$15.00 per year for non-members and free for members.

Membership Policy: Any individual with interests, beliefs and actions consistent with the purposes of The Maverick Grotto and The National Speleological Society is eligible for membership. Acceptance of new members is based on payment of dues and a mandatory three trip requirement with at least three different grotto members. These three members shall act as sponsors. At least one sponsor must attend the meeting at which the membership vote is taken. A two-thirds majority vote of the members present will be required for acceptance.

Meetings: Meetings are held the second Tuesday of each month at Bodacious BBQ, 1206 E. Division St., Arlington. The time is 7 p.m., and the food is good.

Carbide: Currently carbide is unavailable.

Library: Support your Grotto Library. Dennis Welch will be accepting books and magazines on cave-related topics, copies of homemade cave videos, etc. for our library. We wish to thank Dennis for his efforts to bring and set up the Grotto Library.

Photos & Map Credits

Cover Photo: Bill Tucker-photo of Francie Tucker at Sac Actun cave system in Mexico

Page 4,5& 6: Bill Tucker

Back cover: Tammy Cox

Visit Our NSS Award-Winning Web Site! Butch has done an excellent job at constructing the grotto web site and keeping it up-to-date. You'll find information about getting into caving, trip photos and the PDF version of this newsletter (with color photos!):

[Http://www.maverickgrotto.org](http://www.maverickgrotto.org)

Cave Rescue: Call collect: (512) 686-0234

Next meeting, January 11th, 7:00 pm

Bodacious BBQ

1206 E Division St.

Arlington, TX. 76011

(817) 860-4248

Program:

Lex Cox III will show a short video taken at Devil's Den cave in Arkansas in a section called Satan's Maze. He will talk about the type of camera and lighting he used.

Be sure to show up at 7:00 p.m.

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December Meeting Minutes submitted by Bill Steele

The Maverick Grotto met on December 14th at Bodacious BBQ, on E. Division St. in Arlington. There were seven members and four visitors attending.

Program: Videos Beyond the Lost Waterfall, about a wet West Virginia cave, and some home-movie-type video by Mark Gee of the Hard Bargain Cave dig.

Reports from Officers: Mark Gee told us that he cut his finger cutting potatoes.

General Announcements: Diana Tomchick announced that she has the Texas Cavers Texas Women calendars for sale. Dennis Welch congratulated Diana on a good year as TSA chair, and to Bill Steele for being elected TSA chairman for 2005. Diana said, "It was good, it was fun, it was only one year."

Old Business: The grotto needs someone to design tee shirts.

Trip Reports, Show and Tell, and Announcements:

* Diana Tomchick reported on the December 4th Maverick and DFW Grottos cleanup of Jester Cave, Oklahoma.

* Visitor Kenny, a friend of Dennis and Sharon Welch's, reported on going to Hardin Ranch Cave. They saw isopods and had an adventure with a snake in a 30 foot pit.

* Dennis Welch reported they had also went to Colorado Bend, and Sharon sent chicken and pecan pie. They went in Gorman's Cave, and in the Austin area visited Whirlpool and Maple Run caves.

* Dan Smith reported on the Sonora restoration weekend in November. Removing rocks from Devil's Pit is almost done, but will require at least one more year.

* Bill Steele passed around a dozen stereo cave photos along with a stereo viewer, shot by his friend Mike MacEachern of Alabama.

* Steele also passed around a map of Jester Cave, Oklahoma, as well as a stack of heart-warming letters with drawings from the third grade class at Irving's Sloan's School, where he gave a slide show about caving recently.

Diana Tomchick reported on the upcoming trip to Mexico that she and Bill Steele are going on.

* Bill Steele showed a type of cave crawling technique with a mechanized toy Santa stuck in the entryway of an igloo, announcing that he had seen Mark Gee stuck like that in a crawlway, and kicking his legs in midair.

* Upcoming events and caving trips announced were: Honey Creek Cave on January 15.

Hard Bargain Cave dig also on January 15.

TSA Winter Meeting in Austin on January 22, with a party that night at the TCC headquarters.

The meeting was adjourned at 9:00 p.m.

Caving Events Calendar

Second Saturday of every month Hilltop Project (Capitan, NM):

Ridge walking and digging in windy blowholes on USFS and BLM lands, about 5 miles south of Fort Stanton Cave, NM. Meet for Cave Diggers Breakfast on Saturday between 7:30 to 8 a.m. at the Smokey Bear Restaurant in Capitan. **Contacts:** Lee Skinner (505) 293-5723 skinner@thuntek.net or Dick Venters (505) 437-3712 cavedigger@msn.com

Jan 22 TSA Winter Business Meeting: This years meeting hosted by the TSS at 2:00 pm Saturday at building 18A of the UT Pickle Research campus, Austin, TX. Bill Steele has arranged for Saturday night camping at the TCC HQ in Cedar Park. There will be a party at the headquarters Saturday night with refreshments provided by Dave McClung and his blender of wonders. **Contact:** Jim Kennedy jkennedy@batcon.org or Bill Steele Speleosteele@aol.com

Jan 29-30 High Guads Restoration Project (Carlsbad, NM):

On-going work amid spectacular scenery in beautiful caves of the Lincoln National Forest. Last weekend of the month. Permits often include Three Fingers, Virgin, Pink Dragon, Pink Panther, Hidden, Wonderland, and Black Cave. Activities vary from month to month. **Contacts:** Susan Herpin or Jennifer Foote highguads@yahoo.com

Feb 02-06 7th Mexican Congress of Speleology & 5th Congress of FEALC (The Speleological Federation of Latin American and the Caribbean) (Monterrey, Nuevo León, México): "Legislation and Protection of the Subterranean Environment." Cost: US\$50 until October 1, 2004, US\$100 later. **Contact:** Rodolfo Gonzalez rogonzalez@cydsa.com

March 5, 2005 - Spring Board of Governors Meeting - San Antonio, TX.

Will be hosted by the Texas Cave Management Association and Bexar Grotto of the NSS at the Edwards Aquifer Authority located at 1615 N St Mary's St. <http://www.caves.org/nss-business/president/spring2005.pdf>

March 5-6, 2005 - Mammoth Cave Restoration Camp - Mammoth Cave National Park.

I think it will be a very interesting year and I hope to see many of you at the camps. For more information visit the website:<http://mcnprestation.com/rfc.html>

April 8-10, 2005 Colorado Bend State Park Project: longtime favorite of Mavericks, pretty close to home, semi-regular schedule, second weekend of the month. This is a terrific project for beginning cavers. **Contacts:** Terry Holsinger (512) 443-4241 trhli@sprynet.com or Dale Barnard Barnard-dale@yahoo.com

April 29 - May 1, 2005 - Spring VAR will be held at the Greenbrier County WV state fairgrounds and hosted by Bubble Cave LLC. Some of the major caves in the area include Scott Hollow, Organ Cave System, McClung, Bone-Norman System, Portal-Boar Hole System, Friars Hole System, just to name a few.

A limited edition guide book is being prepared.

There will be numerous trips scheduled, including a kids trip and a teen trip. There is everything from horizontal beginner on up to vertical caving to be had.

For information contact John E. Pearson at jpearson@rcc.com or 304-497-3939 Days, 304-497-3803 Evenings

Caving in the Yucatan - by Bill Tucker
April 2004

The cave floor is pristine white and tan, covered in places with several inches of paper-thin calcite wafers. No footprints mar this floor and its fragile formations. The ceiling is covered with thousands of sharp, frail stalactites, hanging only inches apart. We move slowly and carefully. Our

bubbles rise and spread through the formations overhead.

No one could walk through here without destroying this beautiful sight several hundred meters into a water-filled cave system. We are only able to explore *Sistema Sac Actun* (Mayan for white cave system) because it is filled with



water, allowing us to swim weightlessly among its columns, carefully avoiding the delicate floors and ceilings.

We have been away from our favorite caves for five years, and Francie and I are both excited to be back. A previous visit was marred by an accident that left Francie with a broken leg, but that's another story. There are hundreds of cenotes, or eyes into the underground river systems of the Yucatan peninsula of Mexico, but we will only have time to reacquaint ourselves with a few of our favorites in a week-long trip.

We exited at Grand Cenote, one of several entrances to the system. It is an oval collapse feature with sheer 15-20'

walls dropping to a landfall surrounded on 3 sides by water. It now has a nice, fairly safe wooden stairway, but just a few years ago the only access was by climbing a lashed-together tree limb ladder with all our gear. On one previous trip in the early 90's Lonnie Ledbetter broke a ladder rung



while about half-way up, and crashed through several more rungs during his rapid descent with scuba gear on his back. Luckily the succession of breaking rungs slowed his fall enough to prevent severe injury, but it left him bruised and sore. With the ladder destroyed, Lonnie, Sandra and Francie were left wondering how they would escape from the cenote before the mosquitoes finished them off. I was already out, so the whole situation was much more amusing from my vantage point. I was able to borrow a hemp rope from the Mayan landowner, but this was not the quality of line that most of us are used to climbing. I pulled up the diving gear, which thankfully only consisted of single tanks instead of doubles that day. The rest of the group used the rope and exposed tree roots to climb out.

The famous Sistema Na Hoch Na Chich, maybe the second longest underwater cave in the world, was the next day's quest. On our last visit here we had to arrange for horses to carry our equipment from the road over a long and rough trail to the cenote. Now there is somewhat



of a road, and we were able to drive to within 100 meters of the entrance. Francie really likes diving here but it wears me out. While she took the rugged trail down into the deep cenote, I began my *first* trip down carrying her double tanks. As she relaxed at the water's edge and watched the colorful tropical birds, I made another trip with my doubles. By then she was ready to go diving, but I was ready to catch my breath and cool down for a while. Did I mention that each diver is using about 120+ pounds of gear? Why do I carry hers? Well, I am really just a great guy, and love to dive with her. Remember that she broke her leg about 5 years ago... don't want that to happen again.

Na Hoch is a labyrinth of passages with many different characteristics. I won't even begin to describe them all, but one area had several large clusters of helictites that had formed, along with the other speleothems, when the caves were dry. The area we dived was very shallow, which allowed us to stay for a nice long dive. When approaching the cave exit from underwater you begin to see the daylight from maybe 100 meters due to the perfect



clarity of the water. It begins as a faint deep blue glow, and as you progress further toward daylight becomes the most magnificent color of blue you can imagine.

Our evenings were spent on beautiful Akumal Bay. The diving gear does not easily get from cenote to automobile to room. After all that on top of the diving, I was content to just sit on the patio of our little rented condo by the sea, and enjoy the sunsets with a drink.

Francie and I decided to forego some of our other favorite dives and seek the adventure of finding something new to us. I remembered an interesting little place I had seen 5 years ago, but did not get to dive. Francie was laid up back at the room with the broken leg, and my remaining dive buddies, Shelby and Toya Martin, did not like the looks of the little hole in the ground. I described the sight to Francie as a water hole about 6 feet in diameter, filled completely with water up to the ground level. Another of the typical Mayan ladders appeared to make for easy water entry and exit. She agreed that it sounded interesting, so we headed out toward Tulum, and then turned north-east toward Coba to find Vaca Ha (cow water). I may have forgotten to mention to her that the water in the pool was surrounded by a cattail swamp which looked like a perfect home for crocodiles. Oh yeah, another thing... you could only see about 12 inches down into the water.

Well, luckily for us there were no large reptiles, and by the time we reached the bottom of the 8 foot ladder, we were able to see the small cave entrance off to one side. Entering the low opening carefully to prevent stirring up the floor of decaying vegetation, we were soon into nice clear water. After 20 feet or so the small winding tunnel opened up into large and beautiful cave passage – quite a contrast to what you would expect after seeing the marshy pool from which we began. The first 600 feet is decorated with numerous columns and speleothems, and then the cave changes character into a phreatic fracture for the next 800 feet. It turned out to be a great dive, averaging about 65' deep. We will definitely go back again to see more of this place. Down the dirt road from Vaca Ha we found another water hole called Tortuga. It was similar in surface appearance, but with a larger pond full of hungry little fish that loved our fingers. We dived it the next day, finding a beautiful and complex cave system. We had our first glimpse of remipedes, interesting little swimming critters that resemble small terrestrial centipedes. Most of the main cave passage is in the freshwater zone and nicely decorated, but dropping below 80' there are underlying passages in the salt water zone without the speleothems. There was far too much to see in one dive, and we vowed

to return here on our next trip. These little out of the way places see very few visitors, and exploring them seems more adventurous and satisfying to us.

July 2004

We returned to the "Riviera Maya" in July with our four granddaughters, daughter and son-in-law in tow. Ashley is 13, and had just completed the pool and classroom part of her diving certification course back home. I would finish up her open water training from our ocean-side base in the tranquil little village of Paamul. We stayed in a comfortable thatched roof palapa on the beach, and loved this serene little place that is overlooked by almost everyone else. Not many distractions here, so we proceeded to dive-dive-dive. Ashley loved every minute of it and turned out to be a terrific diver. Mary and Rachel, our 6 and 4 year old mermaids, loved snorkeling and playing on the beach. They are already looking forward to scuba diving.

Emma, only 6 months old, was content to play in the sand.

There are lots of critters to see diving from shore,

including the resident 5 foot long pet barracuda. He dashes out alongside the dive boat upon its departure every morning to amuse the passengers, and then retires to the shallow water near the beach to spook the snorkelers for the rest of the day. He does that job quite well. Most of the good dive sites are just a short boat ride away, and are loaded with lots of fish and large sea turtles.

As much fun as we were having with the ocean diving, we couldn't stay away from the cenotes and caverns. Ashley has been caving a couple of times with us and was looking forward to cavern diving. (Cavern diving is actually entering underwater caves, but staying within 130' of the open water surface and in sight of daylight.) We decided to go to Grand Cenote since it has some of the best formations within the cavern zone. She was amazed at the beauty of the cave and the exceptional clarity of the water.

We all had a great week of diving, snorkeling and family companionship. Ashley fell in love with the ocean and its inhabitants, and was fascinated with the mysterious cenotes. The younger girls can't wait to try scuba diving here. That makes Francie and me very happy. Looks like we will have to go back for more in 2005.

Did I mention that I got to carry 3 sets of diving gear out of Grand Cenote?



Texas Speleological Association Winter Meeting

Saturday, January 22, 2005

Location of meeting:

Texas Speleological Survey (TSS) office, Austin, Texas. For directions and information see <http://www.utexas.edu/depts/tnhc/.www/tss>.

Time schedule:

The TSA Winter Meeting will begin sharply at 10:30 a.m. We will break at noon for lunch. At 1:30 p.m. a TSS presentation/tour/open house/work session will begin and last until 4:30 p.m. There are many cave leads to be found in the TSS files, so serious cavers will want to be familiar with the place.

TSA business to include:

- * State of the Association message from Chairman Bill Steele
- * 2005 TSA Budget proposal
- * Nomination and election of TSA Land Fund Trustee
- * Introduction of and goals for the year from new standing committee chairs:
 - Publications
 - Membership
 - Conservation
 - Safety and Rescue

* Reports with recommendations from temporary committee chairmen:

- Bill Mixon, Bylaws
- Allan Cobb, Projects

* Information on TSA Spring Convention

Camping

Camping is available both Friday and Saturday nights at the headquarters of the Texas Cave Conservancy in Cedar Park (just north of North Austin). For detailed directions see <http://www.texcc.org>.

Party

There will be a TSA party on Saturday night at the TCC headquarters (see Camping above), beginning at 7:00 p.m. Planned highlights of the party include:

- Liquid refreshments provided by "Dave Cave" McClung
- Hall of Texas Cavers (bring a photo of yourself in a cave)
- Batman piñata full of cave food candy.

Available at the TSA Meeting and at the Saturday night party:

The first in a series of three TSA 50th Anniversary commemorative posters, this one of the Tom Culverwell drawing done in the 40s and titled "First Descent by NSS Members of Devil's Sinkhole." They will cost \$5 each, with the proceeds benefiting the fine work of the Texas Speleological Association.

For information e-mail Bill Steele at leosteele@aol.com, or call 214-770-4712.

So You Want to Shoot Cave Video By Butch Fralia, Pete Lindsley, Dennis Welch

NOTE: This article is based on a series of e-mails between Dennis Welch, Pete Lindsley and myself. Dennis was looking to buy a video camera and sought recommendations from Pete and I. There was an e-mail chain that went on for quite some time. We discussed at the end that it might be a good newsletter article and resource for someone else wanting to buy a camera. Dennis gets to be the straight man and listen (read) to the comments of two old techies. There were a lot of web links passed around that I omitted because it's been my experience that if you print them, they are usually gone by the time someone gets around to looking at them.

Here's how it started out between Pete and Dennis:

Dennis: Now for my questions...I hope you can help. I want to find my niche in caving and am convinced it's in videoing caves and cave trips. The one you did on Jester was outstanding. Bill Steele recommended I contact you for advise on equipment. I am clueless, having never owned a video camera. The new Sony PC330 looks as if it would be great for caving because it is small, lightweight powerful & low/no light.

Pete: What's right about this one is it's miniDV format, and Sony is the most popular company, which means most of the format interface issues (if any) are probably not a problem. What's wrong about it is the \$1400 price. I just bought a Canon ZR-60 for use as a small vacation camera (\$300 at Fry's, on sale through tomorrow) and would rather see you invest \$300 than a bunch more for a cave camera. There may be some similar deals on Sony video cameras, and I would rank Sony just over Canon.

I think your requirements should be:

- 1) miniDV,
- 2) Firewire interface,
- 3) low light capability
- 4) wide angle is more important than telephoto zoom
- 5) tripod socket
- 6) ability to use additional battery packs
- 7) small compact size. But the ability to "fit" your hand and "feel right" (not awkward) is more important than small or tripod socket.

Most of the videos done in caves before were done with larger Sony "Hand-cams" that cost \$500-800. These smaller

cameras were \$1000 or more and it didn't make sense to take them into caves.

Fry's is a good place to look. They often have numerous cameras on display and you can try shooting under the counter to compare their low light capabilities. Fry's often has the best prices, but you can probably always beat their price on the internet.

Dennis: What do you think of the PC330?

Pete: too expensive

Dennis: Are these kind of cameras fairly moisture resistant?

Pete: No, you need a box

Dennis: Do you do something special to protect your camera from humidity? From moisture? From water splashes?

Pete: I use a Pelican Box with foam inserts to fit the camera I am carrying. Don't buy a video to take still pictures. Even 3MP ones. Don't buy a digital camera to take moving pictures, even an 8MP one. If you want to do both, just get 2 cameras. The cheapie ZR60 I just got doesn't do still pictures on a card at all. You can always just grab a still picture from a single sharp video frame. (I did that on the Jester movie - the bat at the end.)

Dennis: What about temperature changes going from Texas summer heat into a 60degree cave.

Pete: You have to let the temperatures stabilize slowly, and if it fogs you just have to wait until it clears up.

Dennis: I scuba also, so buying an underwater housing is an option, but a very expensive option. Do you use a housing?

Pete: No, but I think because of the price the single most important requirement for YOU is the UW housing. Price the housings, THEN get a miniDV with Firewire that is appropriate.

Dennis: If so, what brand & why? This Sony is suppose to be great for stills, but I'd need a strobe & maybe some slaves. Do you have any experience in this area?

Pete: The best slave is the FireFly, usually advertised in the classified at the back of the NSS News. Most of my digital cameras are Nikon Coolpix. I am presently using a CP-5000 (5MP) in the cave (John Brooks also uses one). My son just bought a CP-8700 with 8MP! But it is on the large size for me to carry into a cave. You should look for a 3-5 MP digital. I like the Nikons because of their quality, and because they focus closer than most other digital cameras.

Dennis: How much/what kind of lighting does it take to shoot video in caves?

Pete: For the Jester film Mike Pearson and I just improvised. I had a 24 LED helmet light I built a few years back that was good. I also had a small bright flashlight for fill-in. My Sony "movie light" was not reliable when mounted on the hot shoe - may have been the moisture. Mike had some sort of extra movie light. You could make something, or maybe even just use one of the cheap 12 V yard light replacements from Home Depot.

Dennis: How do you protect your equipment in the cave when not shooting?

Pete: keep it in the Pelican

Dennis: What specific camera adjustment/controls will I need to access in a cave? (Some of the housings don't allow much control access & the PC330 uses a touch screen menu on the LCD to access some of the menus/controls which none of the housings seem to give access to.

Dennis: What else should I be concerned about?

Dennis: What equipment do you use?

Pete: Sony, Nikon, and now Canon. My wife also has a small 3MP Pentax that fits into an Altoids Can!

Dennis: If you were to upgrade, what would you purchase & why?

Pete: Nikon, because it's often a "full system" that offers additional accessory lenses, etc.

Dennis: My camera budget is about \$1500-2000 for everything to shoot in the dry (camera, case, lights, strobe, lens, spare batts, etc.).

Pete: You didn't mention computers yet. What made the Jester movie easy for me was the Macintosh iBook iMovie software.

So here's a possible budget:

ZR-60 - \$300

Sony (may be better for low light) - \$400-700

iBook with iMovie - \$1000-1400 depending on what you want

Pelican box - \$20-30

Tripod - \$20-40

Wal Mart special bright flashlight - \$30

rechargeable spotlight from Fry's or Home Depot, etc. - \$20-30

Parts for home made lights - \$20

FireFly Slave - \$120 (2 @ 60?)

two small cheap strobes - \$50

Digital camera - \$300-600.

Scuba housing - \$1000-2000

Nikonos Underwater camera (used from eBay, Nikonos 1, 2 or 3) - \$300

Don't buy it all at once. Just get a video and a box and go from there.

Here's where I got brought into it:

Dennis:

Good Morning Butch,

Below is the email exchange between Pete & I on video things. His advice seems sound, but he promises me you WILL have more to add! PLEASE add your \$2.00's worth. I have made my text blue and Pete's red. Please don't get patriotic on me and make yours white because then, of course, I would never see it...HoHo! Thanks a million.

I definitely wanted to come to the TSS function this morning, but have to go to OK this morning instead.... Hope to hear from you soon.

Pete: Dennis, I think for a cave camera probably one of the more important things is the low light sensitivity. You'll get better color with minimal light sources that way. I used a Sony TRV-17 for the Jester Cave footage. It has a 1/4" CCD with 500 lines of resolution, and is listed as a "zero lux" light sensitivity. The PC-330 has a 1/3" CCD with 530 lines of resolution is better, but I don't think you would be happy with it's light sensitivity of "7 lux".

Butch: I'll respond here to yours and Pete's e-mail at the same time.

Pete, I checked several places for specs on your camera. The specs at the site you referenced below are incomplete, your camera has 5 lux minimum sensitivity with zero lux night shot. Five lux is pretty sensitive for a video camera, both my cameras are seven Lux. I've got a two lux VHS camera and it's too sensitive, doesn't do good outdoor shots in bright sunlight but still needs about the same amount of light in a cave as a seven lux. 5-7 lux is about right for all round video work. I had a seven lux VHS camera that did a pretty good job inside a cave providing there was some reasonable light available (more on that later).

If you're into the idea of doing videography in caves and on cave trips, I applaud your interest and will do what I can to help as I'm sure Pete also will. It's one of those things where you can't just throw money at the problem and solve it. A little creativity goes a long way and offers great personal satisfaction.

First let's address night shots, it's cool to play with but there isn't much practical use. If you want to shoot more than about 15' you need an external infrared light source.

Those are available but unless you're really into wild life photography at night (I guess maybe some bat work in a cave in the day time), the average person doesn't get much benefit from it.

Now with that said (my opinion only - .02) what's a Lux? Lux - The International Standard (SI) unit of measure for luminous flux density at a surface. One Lux equals one lumen per square meter. That doesn't say a lot either unless you're really in to scientific terminology. Basically one Lux is the amount of light put out by one candle at one meter of distance, i.e., one candlepower. In reminding myself of this definition I came across a comment that the original definition was coined about 1917. In the 1940's, scientists developed the instrumentation to determine that different candles produce different amounts of light. Knowing a little about specmanship, I'd guess that camera specs are probably defined from a heck of a big candle. I guess that says you can do some pretty good photography with five to seven candles.

You don't really have to spend a lot of money on a video camera to get good results. Looking at camera's in the range of \$400 to \$800 should get you a camera that produces as good a result as the really high dollar ones. I keep looking at the 3 CCD Sony for \$2,900 but can't justify it. If I was going to spend that kind of money, I'd probably wait for a high definition camera. I said that so you'd know we all get the more expensive itches at times.

The camera you're referenced in your link does 3 MP photos and that's running up the price of the camera. The CCD in the standard digital camcorder will naturally produce a one megapixel photo, that's what it takes to get the 500+ lines of resolution. Putting a CCD that produces more pixels runs the price up because the extra resolution is only necessary for the larger still picture. Having the still capability isn't all bad, if you look at the TCR pictures on the Maverick website, they were mostly taken with my Sony TRV730 digital camcorder. I took a lot of video and while I was at it, I also used the same camera to take some pictures that I thought might look good on the website. I was using the camera anyway. The benefit of using the video camera to take stills is the good Carl Zeiss lenses on the Sony and the optical zoom that isn't usually available on conventional digital cameras.

After that digression, I agree with Pete that in most cases it's better to have a separate digital camera, especially if you aren't planning on doing video. Even the smaller camcorders are bulky to carry around compared to a standard digital still camera.

Something that does make a difference is the size of the CCD. The cameras that I have and the one that Pete has use a 1/4" CCD. Seems like you get a little better picture quality than some of the cameras with a 1/6" CCD. I guess you could draw an analogy to film cameras. The bigger the film, the better the picture. In the olden days it was because of film quality but in this day and time has more to do with the reduction in size of the light

I'm partial to the Sony cameras because of the lenses they use. They are sharp and while you have to look close to see it, there is a small difference. I don't have any particular recommendations at this time. I'll wait until you buy something and say you should have looked at this or that. Like Pete, I'd rather see you invest in a less expensive camera. A little experience with a camera will tell you how far you really want to get into it as well as what type of camera you'd like to have for what you're doing. Find something that feels good to you when you pick it up, hold it and look through it.

As for carrying cases, enclosures and such I'll leave that to you and Pete. I use a plastic bag in areas where I want to keep away from splashes and such and don't go into areas where I have to submerge the cameras.

Lighting is one of the trickiest areas in cave videography. In smaller caves, you may get away with just using a helmet light. The problem with most lighting is getting a diffused light as opposed to a spot. If you want to light up a large area, you need a light with a lot of diffusion and without hot spots. Something I've seen used effectively and currently use something similar are track lights. You can get the bulbs for about \$12.95 at Home Depot and Lowe's. They are 55w Halogen lamps with good diffusion so the light is spread pretty evenly. They power off of 12 volts so it's easy to get gel cell batteries you can use at places like Fry's. You can get nearly an hour's worth of light out of them. If you light up a significant area, you'll need more lights, which means you'll need more people to operate the lights for you. It isn't always easy to find people who share the same interest as you do.

Once you get the video, what are you going to do with it? Very seldom will you have a raw video that people are willing to sit down and watch for hours with you. That means editing the video into something you'd want to watch yourself. When stripped down to it's essentials, two hours of video may turn into a 15-30 minute production. That means you have to have some kind of editing set up and the means to put it back onto DVD or VHS tape. With most digital cameras, you can write back to the camera and use the camera as a VCR for display on a standard television.

I want to add a note here on VHS. The VHS standard only allows for 275 lines per inch of video resolution. You're television handles 550 lines from broadcast stations but only display 475 lines per inch of that. A digital video camera is typically better than broadcast quality so anything above 500 lines is as good or better than broadcast quality.

Getting good video is only part of the problem. I'll quit there and let you and Pete figure out if any of this is good information.

Pete: Well, I think we have the workings here of a good article on "Digital Video for Caves". We should keep adding our comments and Dennis should keep asking questions as he homes in on the best choice (for this month at least) of a cave video camera. I'm sure Diana would love to have the article for the newsletter of the day..... (To be continued in next months issue)



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