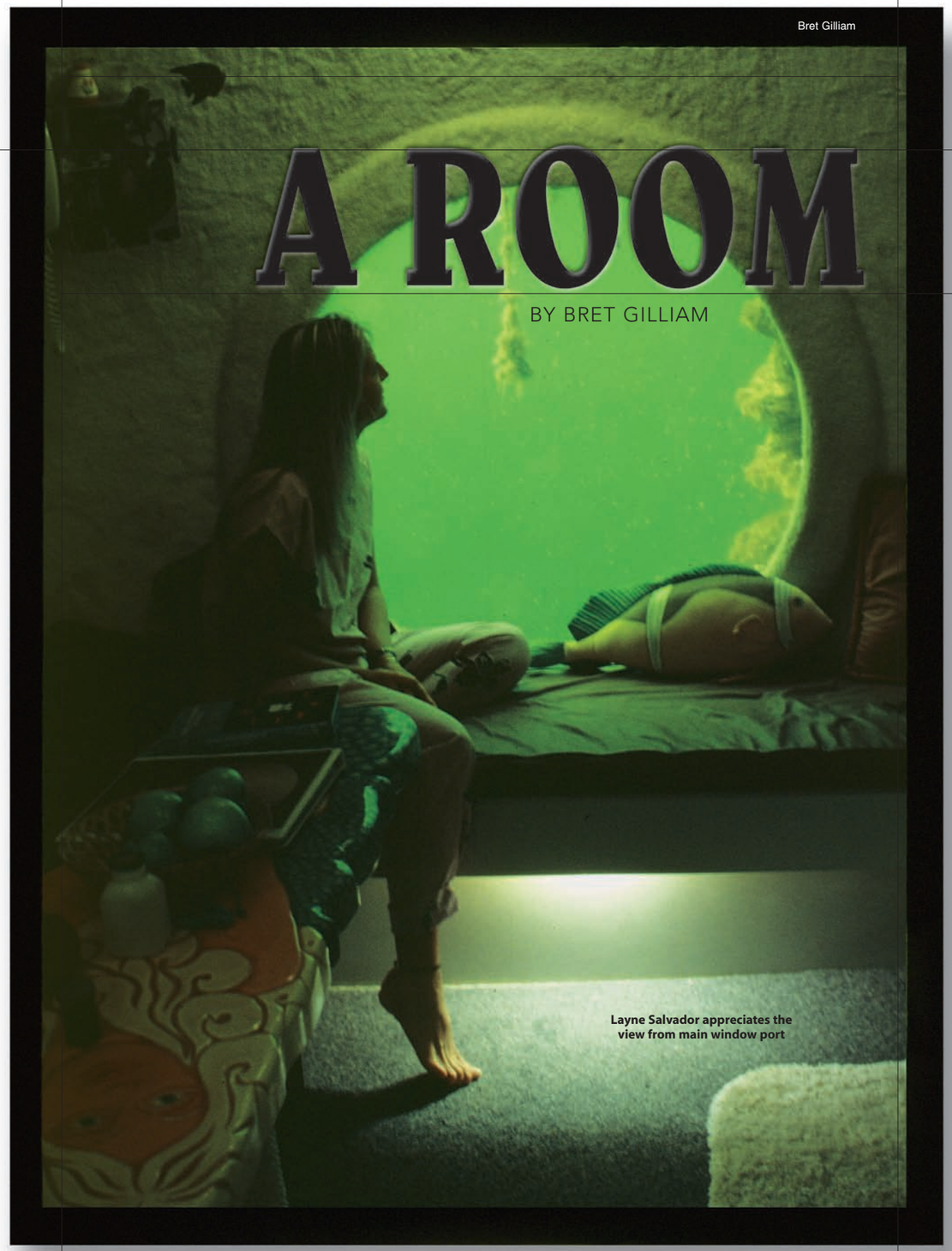


A ROOM

BY BRET GILLIAM

Layne Salvador appreciates the view from main window port

with a view

Nearly 35 years ago I had the chance to spend some time in an ambitious underwater habitat project known as *La Chalupa* placed on the sea bottom off Puerto Rico. My host was Mike Kilbride (son of the BVI's infamous Bert Kilbride) who was hired on as a project diver after finishing up a commercial underwater blasting job we had both worked on for Hess Oil Co. in the Virgin Islands in 1972.

Ian Koblick and Bret Gilliam, Puerto Rico, 1973

"You've really got to see this operation to appreciate it," he said over the phone. "There's some real bright guys running this thing that are veterans from the Tektite saturation program. You'll get a kick out of what they're up to. And you have to meet my boss, Ian Koblick."

So I was off to San Juan on the next plane from St. Croix. Arriving at the remote site, Mike was quick to fill me in. "We're set up to handle five divers in saturation for a month at depths up to 106 feet. But what really makes this different is that *La Chalupa* can operate up to 10 miles from shore with a minimum of surface support. That's never been done before and we've added a few other twists that are pretty innovative."

Koblick, an aquanaut and engineer for both *Tektite I* and *II*, had designed the habitat and provided joint sponsorship from his Marine Resources Development Foundation (MRDF) with the Puerto Rican government. He wanted a habitat that would offer more mobility, more independence from topside infrastructure, longer and deeper mission durations and flexible contingency plans to handle decompression and life support emergencies. While most other habitats of this era were fairly conventional-looking, using various designs of spherical compartments linked to shore or shipbased umbilicals, Koblick departed from tradition in his approach for *La Chalupa*. Essentially, he enclosed two cylindrical chambers inside a bargelike structure that allowed the entire system to be towed to an operating site and then sunk.

He incorporated large flood tanks located inside the barge which could be used to raise or lower the system by pumping seawater in or out and other unique submergence control trim tanks to stabilize the habitat during deployment. By adding 75 tons of concrete ballast, he achieved a net 22 tons of negative buoyancy when the entire structure was flooded and set in place. Another design breakthrough was the addition of four hydraulic legs that could be raised flush with the barge bottom for towing, but extended five feet to raise the habitat off the sea floor when in place.

The two 8x20 -foot cylindrical chambers provided space for living compartments, labs, electronic equipment, and galley amenities. These were separated by a nonpressurized "wet room." This 10x20-foot rectangular area allowed aquanauts to enter the habitat from an opening in the floor, large enough for several divers to utilize simultaneously while fully dressed in scuba equipment. This area also allowed dive gear to be stowed inside the compartment and contained the shower and toilet facilities. A large stainless steel work table was added to provide lab space for sorting scientific specimens and maintenance.

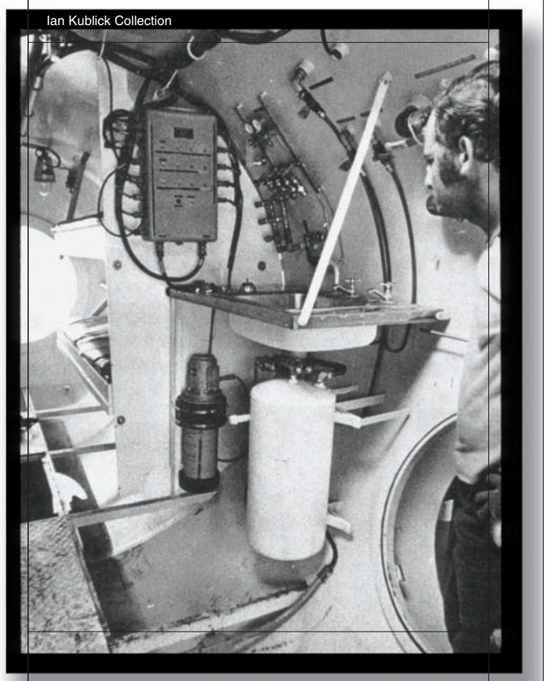
***La Chalupa* at surface ready for towing to saturation site 1972**

Altogether, over 600 square feet of space

was available. Living conditions, while markedly improved over such habitats as *Hydrolab*, were still primitive at best, featuring steel walls, exposed wiring and plumbing, and little in the way of creature comforts. None the less, the diving crew was pumped up over more square footage and the opportunity to test applications of deeper, remote living conditions underwater.

An unmanned 36-foot life support boat (LSB) containing generators, compressors, air conditioning, and communications systems was moored overhead and designed to sustain heavy storm conditions. It also stored 1,000 gallons of fresh water and 800 gallons of diesel fuel for the generators. This could provide over a week of surface support even if ocean conditions prevented landbased crew support and re-supply.

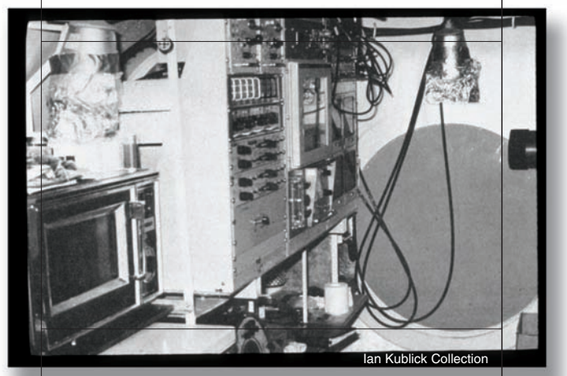
Inside *La Chalupa* were further back-ups in



Aquanaut enters habitat birthing area, 1973

case the LSB was blown away or rendered inoperable. This included emergency batteries to operate lights and carbon dioxide scrubbers for 48 hours. Extra breathing gas cylinders, food, CO2 removal systems and fresh water were provided in the habitat to support life in total isolation for up to 10 days.

"Yeah, but what if the storm lasts more



Main viewport area in science lab, 1973

than 10 days?" I asked.

"Oh, Ian thought of that, too," Mike assured me. "Look in the overhead of each compartment. These hatches provide access to the two PTC's that can be used for escape if everything else goes down the tubes." Every operation like this seems to love acronyms like PTC for Personnel Transfer Capsule, PUTS for Portable Underwater Talking Station, etc.

Eyeing the tiny escape pods, I asked for further explanation. Mike provided it, "Each PTC is equipped with a mating flange that can be docked with the shorebased decompression chamber. All you have to do is climb in, release the PTC from the habitat and it will float to the surface. Once you activate the EPIRB signal, a helicopter will pick you up. In theory, anyway."

Mike seemed a little tentative on this subject. I decided to press him a bit.

"Now let me get this straight," I queried. "The life support boat has failed or been blown away in a storm bad enough that no one from shore can get out to help. You've used all the back-ups in the habitat and are still in saturation and have to come up. You're telling me to climb into this little coffin and blow myself up to the surface where a helicopter just might find me bobbing around in 12-foot seas 10 miles offshore?"

"Yeah, that part of the plan might need a bit more work," Mike admitted. "But Ian says that it's operationally sound and that test runs have confirmed his theory." He was looking less confident by the minute.

I noticed a hand-stenciled inscription on one of the escape pods. In large bold letters it read: KSC. Now I knew what PUTS, LSB, PTC all meant but I hadn't run across KSC before in other saturation facilities like *Hydrolab* or *Tektite*. I scratched my head and asked what it meant. After much hemming and hawing he explained.

"It's sort of an unofficial acronym the aquanauts use when Ian's not around. We don't

really like to talk about it. But KSC stands for 'Koblick's Suicide Capsule.' Hey, come on, Bret, you know our storms never last longer than a week or so in these latitudes. I can't believe you even brought the subject up."

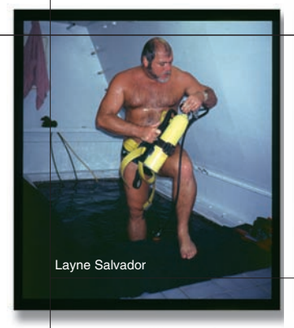
He looked hurt that I would raise such a depressing issue among friends. I diplomatically dropped the subject. He visibly brightened when I gave him an opening to expound on the features of the toilet system. Mike loves his work.

La Chalupa operated in its Puerto Rican location for three years between 1972 and 1974 with a total of 11 two-week missions by over 50 aquanauts. During that time scientists conducted studies in reef ecology, geology, ocean engineering and diving physiology. Koblick took advantage of the habitat's mobility to vary the mission

Ian Koblick, 1993

saturation depths from 50 feet to over 100 feet. To counteract the long-term exposure to pulmonary (whole body) oxygen toxicity, he employed special nitrox mixtures with less than normal percentages of oxygen. Aquanauts are subjected to slight loss of vital capacity, irritation in breathing, and annoying cough conditions after long periods breathing oxygen in excess of .5 atmospheres absolute (ATA). By reducing the oxygen in the breathing atmosphere to 8 percent for the 50-and 60-foot missions and 5 percent for the 100-foot projects, Koblick kept the partial pressures of oxygen within tolerable ranges.

During the two deep missions, the aquanauts experimented with the vertical "excursion tables" developed by Dr. Bill Hamilton and others in 1973. (Hamilton is still actively involved in applications of diving physiology today and later



Bret Gilliam surfaces in renovated moon pool, 1993, and right, the original moon pool, 1973

became a prime consultant to the technical diving community for custom tables beginning in the mid-1980s.) These deep missions were known as *PRUNE I* and *II* for Puerto Rican Undersea Nitrogen Excursion. But Koblick also admits that it applied to the diver's skin condition after the long excursion dives.

On dives made from "storage depth" at 100 feet, the aquanauts used conventional compressed air (21percent O2, 79 percent N2) from scuba units or 150-foot-long hookah rigs from the habitat. The experiments wished to validate the depths to which a diver in saturation could ascend briefly from the deeper pressure without decompression sickness. A total of 23 upward excursions were made as shallow as 25 feet without incident except for some transient "niggles" reported by one diver. Experiments with downward excursions allowed dives from storage depth as deep as 265 feet for up to four hours with no required decompression. "These new procedures promised diving scientists additional latitude for exploring the top third of our continental shelf without requiring exotic breathing mixtures and equipment," Koblick reported. He also implemented testing of innovative new rebreather units during this time.

La Chalupa completed her final mission on June 6, 1974. She remained in Puerto Rico until 1976 when it was towed to Miami and virtually abandoned in a local shipyard. Koblick was not out of ideas for his pet project and re-purchased the habitat in 1980 with the intent of restoring it to service in a site that would allow the sport diving public access to this fascinating technology.

REINCARNATION

In 1986 Koblick and partner Dr. Neil Monney debuted *La Chalupa* in her new role as a state-of-the-art underwater habitat/hotel at their Florida facility known as Key Largo Undersea Park. "To live beneath the sea was once just a dream of science fiction writers... now it is a reality," says Dr. Monney.

"Waking up to view a pair of angelfish looking in your bedroom window is a moment

you'll never forget," Koblick relates with a smile. With over 50 years of combined ocean research and industry experience, the two veteran aquanauts named their undersea retreat in honor of Jules Verne, author of *Twenty Thousand Leagues Under the Sea*. Now re-christened as Jules' Undersea Lodge, the habitat lies in 30 feet of water inside a protected lagoon only minutes from the open ocean in the Florida keys. I decided to revisit my old digs again in 1993.

Completely refurbished with an accent on luxury, the habitat had undergone a startling transformation for anyone who spent time in her as a working scientific base in the 1970s. I am more than a little overwhelmed to revisit after two

Guests enjoy living room entertainment center

The Emerald Lagoon site where Jules' Undersea Lodge is submerged in Key Largo, Florida

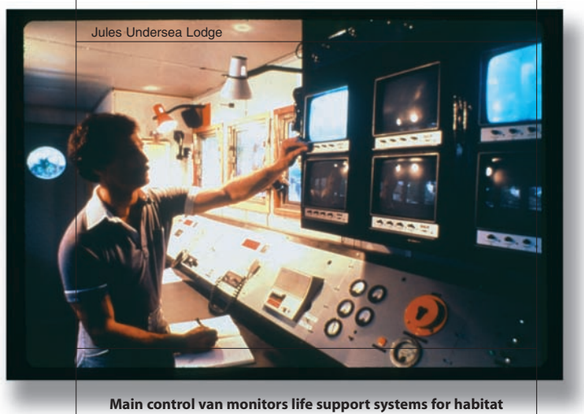
decades. My dive partner, Layne Salvador, an aerospace engineer from Alabama, and I are ushered to the float to don pony tanks for the short swim down to the entrance "moon pool" in the wet room.

The changes effected are noted immediately. In 1973 the wet room was a dank and dark staging area half flooded to the ceiling to allow aquanauts in clumsy double tanks to swim in and stand up. Now we surface into a spotlessly carpeted and tiled room painted white and bathed in soft light. We doff the small cylinders in a gear rack and duck through an access hatch to inspect the living quarters.

Gone are the spartan, subsistence living conditions of my youth. Koblick has contracted with the award-winning firm of Richard F. Geary as interior decorators. All extraneous equipment has been removed and the habitat surfaces covered in pastel carpet. Immaculate hardwood partitions separate the sleeping compartment into two luxurious bedrooms fitted with double beds, personal stereo and VCR/TVs, and a 42-inch round window to the sea. A school of damselfish peer in at me. I stare back thinking that this place is nicer than a lot of places I lived in fulltime during the 70s.

Layne calls from the other compartment and I cross over to what used to be the lab. Now I'm in what can pass for a penthouse living room. A huge entertainment center is built-in to one side opposite a long comfortable couch settee running almost the length of the "room." A fully functional bar and kitchen are arranged tastefully on one end. Hidden indirect bulbs provide a wash of muted illumination. Another huge window port

Layne Salvador in one of two spacious bedroom compartments



Main control van monitors life support systems for habitat from surface station. Communications are maintained by intercom, VHF radio and telephone

its original "bare bones" configuration. We look inside to the pipe berths and metal plate deck and decide that this must be the Motel 6 equivalent for those less fortunate. After poking around some interesting artifacts from the famous *Atocha* wreck we retreat to the sanctity of our quarters where we have time for a hot fresh water shower before dinner.

Yeah, that's right. This ain't beans and rice like the old days. Mike Smith, the habitat engineer, pops up in the moon pool at the stroke of eight o'clock to prepare filet mignon beckons my gaze back to the lagoon as the late afternoon light dances through from the surface.

Hey, this is not what I expected. I had told Layne about the hardships of living and working underwater, the privations we endured, the hazards we braved. I had confided in my best one-eyed squinty pirate growl, "Aggrrh, them that died, they was the lucky ones, they was..."

Now I sink into an opulently cushioned seat by the port as she puts Jimmy Buffett in the stereo and starts popcorn in the microwave. Mike Kilbride should see me now. Screw him.

We decide to explore the lagoon on the hookah rigs and encounter a variety of curiosities including another small habitat left in

Bret Gilliam

and lobster tails. We eat while watching *The Hunt For Red October* on the giant-screen TV. There is something a little surreal about chowing down in this atmosphere and I glance up at the wall-mounted depth gauge periodically just to confirm that I'm actually underwater.

Mike tidies up and bids us farewell. We can communicate with him in the control van by radio, intercom or regular telephone if we need anything later, he advises.

"Like what," I think, "a bottle of Dom Perignon and a couple of quaaludes?"

This aquanaut stuff has certainly gotten considerably more upscale than I remembered. I doze off in the couch watching the last rays of the sunset filter down to me as a school of snapper parade before the window.

I snap to attention as Layne breaks into my slumber. "Do you want key lime pie or a chocolate sundae for dessert?" she challenges me. In 1973 I would have crucified my fellow aquanauts for a soggy Twinkie. But now I'm getting used to this. Not one to make a rash decision in such serious circumstances, I consider all the options.

"Is that with real hot fudge for the sundae?" I counter skeptically.

"Yeah, real hot fudge," she replies poking around the spacious refrigerator. "And there's whipped cream for the pie!"

Opting "to leave no dessert behind" we devoured both offerings and finished a bottle of fine red wine. I've never slept better in my life.

Future larger Jules' Lodges are on the drawing boards. "We have been approached by many developers from around the world. The basic design has been completed. Future hotels will feature an original design using concrete and acrylic. They will be substantially larger and provide gracious comfort with spectacular views through six-foot diameter windows," says designer Dr. Monney.

Yeah, probably with dancing girls and a live band. Where do I sign up?

Bret Gilliam is *Fathoms*' founder. He began diving in 1959 and has been professionally involved in the diving industry since 1971, logging over 17,000 dives around the world. He has authored over 800 articles in the U.S. and international diving press. He spends six months a year on diving expeditions and film projects. He lives on an island in Maine.

bretgilliam@clinic.net

Location: Key Largo, Florida (Mile Marker 103.2); Atlantic Ocean in Largo Lagoon, adjacent to the Koblick Marine Center. Depth 30 feet (5 fathoms). **Contacts**: www.jul.com | 305-451-2353 | **Rates**: from $95 per person for a day visit to $295 for overnight