

“Don’t Panic, or You Will Die”

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It happened while I was stationed at the Consolidated Divers Unit (CDU) in San Diego. I was on a dive team tasked with installing a shaft wrap on a carrier, undergoing upkeep in Alameda, Calif.

A shaft wrap is designed to create a temporary seal around the propeller shaft from outside the ship so the permanent seal can be worked on from inside. A stern tube surrounds the shaft where it exits the hull to prevent waterborne debris from being sucked inside and damaging the seals.

Just another maintenance dive, right? And you probably think diving to 40 feet on surface-supplied air (with a Jack Browne) is easy. When what I’m about to describe happened, I was 40 feet below the surface, under an aircraft carrier, with zero visibility, and my dive rig knocked sideways on my face. I was choking on cold water, almost lost my self-control, and teetered on what I thought was the edge of imminent death.

Our dive plan included sending a 10-person dive team headed by a master diver and using the Fly Away Dive System One (FADS I) as our air source. The MK 1 band-mask was our primary dive rig. We also took the Jack Browne (you can guess how old I am), should we have to perform any enclosed-space diving, and a scuba bottle and regulator as the secondary air source for the diver going into the space.

Sealing a shaft includes using wooden plugs to plug all stern-tube deadlights (holes) from the outside and filling the two-inch gap—where the shaft exits the shaft end of the tube—with a home-made gasket. Divers aptly have named this gasket a “weenie.” It is a piece of Samson-braid line, cut to length and wrapped in cheesecloth, which has been



This is the Jack Browne rig the author was wearing during his harrowing experience. The Navy no longer uses this mask, which evolved from a 1938 design. The Jack Browne rig was the first commercially successful, full-face diving mask.

soaked in a brew of bees’ wax, paraffin, vegetable oil, and resin. Once temporary seals are in place, suction is taken on the stern tube by rigging an educator through a deadlight or through the gap between the shaft and the stern tube.

Water simultaneously is drained from the permanent seals inside the ship into the shaft-alley bilges. Sound-powered phones rigged between shaft alley and the dive station are used to communicate with the dive supervisor to inform him when the seals have stopped draining. During the wait, divers swim the length of the stern tube (more than 200 feet), to check for leaks in the free-flood area. They conduct

the checks by feeling for water flow through seams and holes; the process is time-consuming, to say the least.

An alternative is to enter the stern tube and wrap the shaft directly at its hull penetration, but this method also has its own problems. You have to unbolt an access cover that's been underwater for months, work in a confined space with limited visibility, and—most importantly—have a restricted egress point. While the greatest danger during any dive is loss of air supply, the possibility of entrapment multiplies the danger 10-fold.

The Jack Browne enclosed-space diving rig used for this dive consisted of a small, triangular-shaped, full-face mask, with an air valve on its right side and a spider-strap to keep the mask firmly on the head. However, with this high-speed, low-drag configuration, divers sacrificed communications. There was no way to talk with topside except through line-pull signals sent as a series of jerks on the air umbilical. Of course, when you're inside an enclosed space,



A Navy diver wearing the current MK 21 rig is shown in the dark confines beneath a ship during an underwater inspection. Darkness could easily contribute to panic in an unexpected situation as that described by the author.

these signals somehow never make it topside, so it becomes standard operating procedure for your dive buddy to tend your umbilical from outside the space and talk to topside for you.

When we arrived on station, the ship was moored starboard side to a pier that was an ant's nest of commotion as people, forklifts and cranes moved at a typically frenzied, shipyard pace. Moored as such placed the ship's No. 2 shaft (the shaft on which we were working) outboard from the pier. The best spot to set up the dive station was on the pier, which meant we had to swim past shafts 1 and 3 to reach our worksite. After locating our ship's liaison, the dive-safety sheet was routed, and the divers' danger tags were hung.

Diving operations began about noon on the first day, and, from the start, we realized this job would be difficult. Everything about diving around a CVN is magnified. Just to reach No. 2 shaft, in this case, meant descending to 40 feet, then navigating past the two starboard shafts and crossing the ship's centerline, a distance of about 200 feet from the pier. To make matters worse, pieces of line dangled from hull fittings along most of the route; these lines threatened to foul us as we swam to and from the worksite. We had decided to seal the shaft by plugging the stern-tube holes from the outside, but every ship is different, and, since there is no set amount of holes or seams to seal, finding all the deadlights in the stern tube proved to be a monumental task. We finally secured diving operations at 2100 without getting a seal.

The team arrived on station at 0600 the next day and splashed the first divers at 0700. Each group was good only for about three hours in the water, due to decompression considerations and water temperature. The second day evolved into evening—still with no joy—as water continued to drain into the shaft-alley bilge at the same rate. Finally, at about 2000, we decided to enter the stern tube to seal the shaft, so we broke out the Jack Browne rig.

This particular dive began about 2100. Water temperature was 55 degrees, and visibility was three feet. I was the enclosed-space diver, so I carried the scuba tank and regulator, while my dive buddy, who would tend my umbilical from outside the space, was in a MK 1 mask.

As we swam to the worksite, he was about 15 feet ahead, but all I could see of him was his dive light. Although we didn't realize it at the time, we



A Navy diver is shown with his umbilical from the surface that provides communications, air, and electricity for his MK 21 rig's helmet-mounted light. The helmet locks onto a neck ring on the diver's suit and cannot be dislodged like the Jack Browne rig.

had taken different routes. Apparently he swam over both starboard shafts, while I swam underneath them. When we arrived at the worksite, I entered the stern tube and placed the scuba cylinder on a steel support; meanwhile, my buddy tended me from outside. The upper third of the shaft was in an air pocket, and going from water to air made it difficult to see the seal opening. Holding my dive-light in one hand, I had to squeeze my body between the shaft and the surrounding bulkhead as I shoved the weenie into the gap. Eventually, I had it in place and thought I had a good seal, so I gave three tugs on my umbilical. My buddy took up my slack as I worked my way out of the space. I passed him the tools and scuba tank and squared away the worksite; he signaled by holding up four fingers that he was ready to surface. I returned his four, and we swam for home.

As we crossed the ship's centerline, a piece of line snagged one of my fins, and I paused to clear it as my buddy swam on. Looking up, I could see his light in the distant blackness, and I caught him just in time for us both to pass under the No. 3 shaft. As we swam, a growing tension on our umbilicals

pulled us closer together until we couldn't go any farther. My head was stuck at his weight belt, with less than an arm's length between us. In our dark swim from the worksite, he had gone under the shafts when he should have gone over, and, when I stopped to clear my fin, our umbilicals must have crossed and ended up in a knot.

After five minutes of twisting and turning, I began to get frustrated with the lack of distance between us and our inability to talk. He must have felt the same way because we started to struggle against each other, and he accidentally elbowed my mask sideways on my face. As luck would have it, I just had exhaled and suddenly found myself sucking in a mouth full of water! As I wrenched the mask back into place and cranked up the air full blast, I was on the edge of panic.

Trying to catch my breath, I screamed at myself, "Don't you panic, or you will die!" I was 40 feet underwater, under an aircraft carrier's centerline, and would have to swim 100 feet to clear the hull. At the same time, my dive buddy realized what he'd done and started to frantically grope my head and trying to put my mask back on. This almost pushed me over the edge.

I knew if I panicked I would head straight up, even though there was a large ship between me and the surface. To gain control, I grabbed his arm and gave it one hard squeeze. A one means stop, which he did. I took several deep breaths and told myself, over and over, that I was OK. Once I calmed down, I remembered we had a scuba jug with us, but my buddy was holding it. I promptly took it from him and told myself that, no matter what else happened, I had something to breathe and could make it to the surface.

Our main problem, because of our fouled umbilicals, was we were so close together. We blindly tried to untangle ourselves, and he kept bumping into me; I knew it was just a matter of time before he knocked my mask completely off my head. The only solution I could come up with was to unhook the spinnaker shackle from my dive harness, which would give another two feet between us and, hopefully, would let my mask stay in place. The problem with disconnecting the shackle is that it's designed as the pull

point between the umbilical and the divers harness; it's ultimately the only thing linking the diver to topside, and, if it's jerked hard enough when it's disconnected, the diver may lose his dive rig—his only link to the surface. Such a consideration is important, especially when you're under an aircraft carrier at night. I knew this, but I also knew my panic level was very high, and I didn't want to risk another breath of saltwater. Besides, I had the scuba tank and could follow the hull to the surface if the worst happened. So, I tightly gripped my umbilical below the mask to keep it from being pulled off my head and unhooked the shackle. Suddenly we had plenty of elbow room. My buddy then led me over to the No. 3 shaft and we sat down on it to wait.

We spent the next hour sitting on the shaft, with me asking my buddy—by squeezing his arm four times—if we could go to the surface. He responded by giving me a single return squeeze, meaning I should sit tight. Experience told me the standby diver had been splashed and was in the water, looking for a way how to best untangle us. Time passes slowly in a situation like ours, and, as I sat there, shivering in the black, I wished I could talk with someone to help me forget the cold.

Trying to catch my breath, I screamed at myself, "Don't you panic, or you will die!"

My buddy eventually gave me one more squeeze, and he swam off. I figured topside had told him to move out first, meaning the standby diver was doing his job, but I suddenly felt lonely. I now was by myself, having no one to even squeeze. I reattached my spinnaker and waited for the standby diver to get me. I was about ready to "lose it" when—finally—I felt a pull on my umbilical. As I swam toward the surface, I realized just how twisted a path my buddy and I must have taken to get to the worksite. Following the strain, I went over, under and around shafts and struts until the lights on the pier eventually came in sight.

I never was so glad to get out of the water! The guys topside said my eyes were like saucers when I surfaced. The cold that night had soaked me to my bone marrow, and I didn't stop shivering until I had



Two Navy divers decompress while slowly surfacing in their open-circuit rigs. The civilian equivalent of their MK 21 helmets is the Superlight 17, which differs in that Navy MK 21 helmets have different regulators allowing for higher airflow.

had a hot shower and had climbed into a warm bed for a good night's sleep.

The next morning, we arrived on station, only to find that, despite the previous day's work and adventure, the shaft still leaked. We eventually found half a dozen deadlights about 250 feet forward and finally got a seal on the third day.

During my 20 years as a Navy diver, this dive was, by far, the scariest. I attribute my surviving to tell you this story to superior dive-school training, and to the master diver and my fellow divers who were on station that harrowing night. ☺

If any of your shipmates out in the fleet have stories similar to this, or something you think might be of interest to the diving and salvage community, submit your article to: SAFE-Divesalvage@navy.mil—Ed.