

Science Under Pressure: Chapter 2*Traveling in Vertical Space...*

Pacific Ocean: Monterey Canyon, September 12, 1985

Edie floated inside the bubble. At least that's what it felt like piloting the Deep Rover. She heard air bubbles trickling out the ballast tanks as they filled with water. The weight of the water caused the submersible to sink slowly. Edie was alone in the sea, once again.

Unlike the WASP, Deep Rover was not leashed to the ship. Edie was free to explore the ocean depths without feeling like a yo-yo. The entire submersible was about the size of a Volkswagen Bug. Inside the sphere, though, Edie had less room than the front seat of the car. She didn't mind, at 5'2" tall, she had more leg room than most people.

Edie turned off the inside lights and rested her stocking feet against the bottom of the sphere. Shoes scratched the plexiglass, so they weren't permitted inside the sub. The sphere was made of two pieces of plexiglass strapped together. At the surface, the sphere halves separated — like a clam shell — so the

pilot could squeeze inside.

Edie loved watching the sea change colors. She knew, just by the shade of blue, she was almost at 350 feet. The experienced explorer had learned to read the ocean's colors, as most people knew the time of day by reading the sun.

Senses, like smell, touch, even hearing, were less important inside the sub. Of course, Edie communicated with the ship through a headset, but few true ocean sounds made it through the thick hull that protected her. Occasionally, a whale could be heard through the sonar system. Today, Edie's hearing would save her life.

She listened to the sub's constant comforting sounds — scrubber fans cleaned the air, the whirl of the propellers, and the last of the air bubbles escaping the ballast tanks. But something was wrong. Underneath the usual noises was a high-pitched whine coming from the right (starboard) side of the sub.

Edie leaned toward her right listening and looking for the cause. She was sure it wasn't a

good sign. Leaning further and further to her right, she finally had to prop her feet on the sphere for balance. Unable to find the culprit, Edie sat back up, sliding her feet down the sphere. That's when her foot touched something horrifying — water.



WHAT COULD BE CAUSING THE WATER? HOW WOULD YOU FEEL IF IT WERE YOU? WHAT WOULD YOU DO NEXT?

With no time to waste, she radioed the surface, "There's water coming in..."

At the same time she "ballasted up", jamming the switch to refill the ballast tanks with air. By replacing the water in the tanks with air, the sub floated upward. She also engaged the thrusters, to push the Deep Rover toward the surface.

She, and the Deep Rover, might have already hit the point of no return. If she discovered the leak too late, the submersible may have already taken on too much water. Water is heavier than air. Refilling the ballast tanks with air and using the propulsion system may not enough to get her back

to the surface if too much water leaked into the sphere..

A few minutes earlier, she was delighted to be unleashed from the ship, now Edie wished for the safety the cable provided.

Water continued to scream in, but for the moment, the Deep Rover had enough power to travel slowly upward.

Another sound interrupted her thoughts, "...the seawater valve was left open. The handle is in the tool box..." someone from the ship radioed.

Because Deep Rover was a scientific vessel, it had a special valve to let the scientists collect seawater samples. No body wanted to try it at depth, though. They feared that once open, the valve couldn't be shut because of the powerful pressure of the water. Edie would now find out if the concern was real.

Edie piloted Deep Rover while straining to reach the cold metal toolbox behind her seat. Everything happened so fast, she hadn't even turned on the lights. Fumbling in the dark, she felt

for the valve handle. Frantically, she searched for and found where to attach the handle. With all her strength, she tried to shut the valve. She couldn't. The force of the water was too strong. It held the valve open. Water continued to rush inside.

Her only hope now was to reach the surface before the weight of the water overtook the sub. Twenty agonizing minutes later she reached the surface. When she was plucked from the ocean, several inches of cold seawater sloshed around the bottom of the sphere

Eddie's heart leapt when she heard the familiar creak of the sphere halves cracking open. A rush of water washed over the crew's feet and Eddie crawled out to see the still worried, but relieved faces of her friends. She was safe.

While the crew dried the Deep Rover, she found out what happened. It was a mistake — a mistake that nearly killed her.

Before the dive, Eddie had carefully gone through the safety checklist, which included making sure the valve was closed. Unbeknownst

to Eddie, and everyone else, when she climbed out to gather her equipment, a crew member had climbed into the sub. The valve handle was in his way, so he carelessly removed it, opening the valve in the process.

Though shaken, Eddie was determined to dive again as soon as the submersible was dried and thoroughly safety checked.

Within 2 hours, she and Deep Rover were back in the sea. Once again, she heard the soft sound of bubbles escaping the ballast tanks and the whir of the propellers. The ocean blues blended becoming dark and rich.

At 300 feet, Eddie heard it — a high-pitched squeak. Holding her breath, she carefully listened, then smiled. The sound was coming through the sonar system. It wasn't water, it was the killer whale swimming alongside the sphere.

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