

Operation PANTYHOSE

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Early this day, all went as if especially ordained. The sea was mill pond in character, and no less than 16 divers set forth on their assigned missions. By noon, radio reports were very encouraging, so I set about a little experiment planned some days previously. The equipment was finally in order, and our four volunteer subjects were currently unemployed. Accordingly, at 1330 hours, Operation PANTYHOSE got under way.

Since we had the one-time occasion to surface the PTC with human cargo a few of us have had deep concern about the reliability of the CO₂ scrubber system of the capsule. Looking ahead to the ever-present possibility that a loaded PTC might have to survive as long as eight hours without ventilation, we cast about for a passive system of CO₂ scrubbing, quite independent of electrical power. Clearly, a system of random scattering of Sodasorb within the habitat was untenable. Likewise, individual closed circuit breathing units seemed inadvisable. How about simply filling a few ladies' nylon hoses with absorbent, and handling them in the capsule? The idea had appeal, despite its naivete, so we launched the project, using two pairs of pantyhose, one black, one red, filled with a total of 8.6 kilos of sodasorb.



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supported actively by doctors from the Naval Submarine Medical Research Laboratory and maintains liaison with the National Guard, Army, Air-Sea Rescue and State law enforcement agencies in the event that evacuation or treatment of diving casualties is required. This arrangement provides patients with a specialized staff of diving medical officers, along with the complete support of the Naval Submarine Medical Center and its hyperbaric facilities.

The history of the escape tank has not been all smooth sailing. In 1969, the elevator shaft experienced a fire that required the combined efforts of the submarine base and municipal fire departments to extinguish. In 1977, the tank was given its first major overhaul, a task requiring 13 months to complete. During this period, the 135 foot tower, empty and acting like a gigantic sail, was threatened by adverse weather and extremely high gusts of wind. However, all turned out well, and as a final step of the overhaul, insulation and siding were added to the side of the tank to promote.

The escape training tank officially started training students again in July 1978, but only after a thorough instructor training period. Just six hours after receipt of formal systems certification, the staff commenced hyperbaric treatment on a civilian diving casualty. The tank has been in full operation ever since.

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For the actual experiment, we locked four volunteers (one female) in the inner lock of the Draeger chamber, with 3000-litre volume, supplied them with an O₂ monitor and a batch of Draeger CO₂ sniffer tubes, and left it up to the pantyhose array to do its bit. To provide for metabolic O₂ requirements, I maintained a constant flow of 2.5 litres per minute of oxygen, which perfectly kept their atmosphere at 21 percent throughout the procedure. Both CO₂ and O₂ levels were determined inside the chamber at 15 minute intervals, and recorded outside, while I maintained more or less constant visual and voice contact with our subjects.

As you might guess, Morgan Wells and I were a bit edgy at first, since the CO₂ levels in this situation could be expected to rise at a rate of 0.82% every fifteen minutes, which gives little leeway. Still, we had plenty of safeguards, so we started the show on time.

Both Morgan and I were a little stunned when the first 15 minutes reading came out at a fat 1.5 percent, and rose quickly thereafter to 2.25 percent. Still, we had some faith in the system, and stuck to our guns. Sure enough, as chamber humidity commenced to rise, the galloping slope simmered down, and after almost three hours stayed steady between 2.75 and 3.0 percent. By this time, we had already designed the Mark II pantyhose scrubber, capable of 75% efficiency, so we called the game and released our volunteers, none the worse for the experience. Tomorrow the MK II will be made up, sealed in plastic bags, and duly installed in the PTC.

Improvised, and at-the-scene experimental work is fascinating. I find it instills a sense of confidence in the aquanauts as well.