

TRAINING



Occupational Health and Safety: Part 3

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DIVING OCCUPATIONAL SAFETY RISKS: BOAT OPERATIONS

Diving Occupational Safety Risks

Continuing with our examination of safety risks we are exposed to as dive professionals, we will look at risks in compressor use and gear handling.

COMPRESSORS

Noise

Compressors are noisy monsters, and operating them is a task that nobody loves to perform, but everybody needs the result. Only recently have operators in South Africa started wearing hearing protection when operating compressors. Even so, when they want to quickly top off just one cylinder, they do not wear it. Hearing damage occurs when a person is constantly exposed to noise levels of 85 decibels (dB) or higher.

For comparison purposes, normal speech is around 60 dB, a vacuum cleaner operates around 74 dB, a table saw cutting through wood can reach 85 dB, lawnmowers reach 94 dB, and a bulldozer operates around 100 dB. Decibels are measured by a logarithmic scale, so each increase of 10 dB is a tenfold increase in loudness!

Electric air compressors used to fill scuba cylinders operate around 81 dB, while gasoline-driven compressors operate around 87 dB. Operators are thus exposed to constant high noise levels. In many countries around the world, when noise levels

exceed 85 dB, people exposed to these levels are required to wear proper hearing protection.

Often enough, one set of hearing protection is used by a number of operators without being properly cleaned before use. Imagine the germs and other issues these people get exposed to. Ideally, every person should have a personal device, and it should be cleaned on a daily basis.

Cylinders

We all know that cylinders must be visually and hydrostatically inspected at regular intervals, but these intervals differ from country to country. The policy of the company we use is that when a cylinder fails testing, the cylinder must be destroyed. The owner gives permission for this possibility when we accept the cylinder for testing. This prevents the possibility of a faulty cylinder getting put back in use that may explode when it is put under pressure. I have seen pictures of the result of such an explosion, and the car in which the cylinder exploded was totally wrecked. Imagine what would have happened if a person had been standing next to the cylinder.

I know of one instance in which the servicing company that did the annual inspection inadvertently put a wrong-threaded valve into another cylinder, and the valve came out under pressure. This occurred when a friend of mine was filling cylinders on

Mozambique. It took 14 hours to get him to a hospital. Fortunately, he did not lose his hand, and very little blood loss occurred.

Is the life of an operator worth the money to have a cylinder that should have been scrapped put back into service?

Pressure

I think we covered the effects of failure under pressure to a great degree in the cylinder section; however, some operators may want to save a few bucks by not replacing damaged hoses or not having the compressor itself serviced at specified intervals. A burst pipe can cause serious injury to a person standing nearby, and don't forget that the loud noise that accompanies the burst could cause hearing loss.

Filter Changes

When were the filters last replaced? If an operator does not adhere to proper filter-change schedules, it is the customer who will suffer from air fills that do not meet breathing gas standards. Should this happen, the blame will always revert to the operator, not the owner.

Hot Surfaces

We all know that air under increasing pressure heats up, and compressors generate heat. If working conditions do not allow for cooling by means of open space, fans or air conditioners, operators can burn themselves or even suffer hyperthermia if they do not have sufficient access to comfortable temperatures and drinking water.

Next time you have your cylinder filled, do yourself a favor and ask to see the latest inspection or certification documents and the conditions inside the filling station. That will tell you a lot.

HANDLING GEAR

Manual Handling of Heavy Dive Equipment

Operators often handle customers' equipment without any assistance from the customers. And trust me, some customers can be very difficult, with an attitude of "I am paying you, so just get on with the job!" In a small operation, however, each customer's gear may be handled a minimum of seven times:

- 1) When collecting the equipment from storage and bringing it to the assembly area;
- 2) When loading the gear onto the boat and fastening it to the support rails;
- 3) When handing the equipment to divers at the dive site and when helping the divers to don their equipment (usually in unstable conditions, as the boat rolls in the swells);
- 4) When taking the scuba unit out of the water after the dive;
- 5) When taking the equipment off the boat back on land;
- 6) When disassembling and cleaning the equipment; and
- 7) When packing it away.

Multiply this by the number of divers on a typical dive boat (around 10), who may do four or five dives in a row on any given

TYPICAL GEAR WEIGHT

ITEM	WEIGHT
BC (average)	3 kg (7 lb.)
Cylinder (aluminum 80, empty; add 3.5 kg [7 lb.] full)	15 kg (32 lb.)
Regulator	2 kg (4 lb.)
Ballast weight (average per person)	5 kg (11 lb.)
Total	25 kg (55 lb.)

day, and this amounts to a staggering 350 times that the diving equipment is handled.

So now let us consider the average weight that has to be lifted each time, and add it all up (see table above): That's 25 kilograms (55 pounds) — not a lot, you think. That is about the limit that normal safe handling practices allow for any one person to pick up without assistance. So we are working right on the limits, not even allowing for bigger cylinders, heavier BCs or more weights.

But multiply this by the 350 times kits are handled, and the operator has to heft a staggering 8,750 kilograms (19,250 pounds) — more than 8.5 tons — on a daily basis!

OK, so not everything is handled by any one person, and the load is distributed, but let's be realistic: Even if the skipper had to handle the equipment for his passengers three times per day, it would still amount to a whopping amount of weight to handle.

This is where diving starts losing its shine, and people feel the effects after a number of years. As I mentioned before, many dive operators and their staff do not have access to medical aids or hospitals to assist them in alleviating the pains they eventually have to endure.

By the way, on a regular basis, operators also have to pull divers into the boat who cannot get back on by themselves, and they have to care for the boat and supplies, fill water and fuel, etc. The list goes on and on and on.

How many of us will lift that amount of weight per day, seven days a week, and still smile when a new customer arrives to dive with us?

Burns

Hot equipment lying in the sun gets very hot. We can assist dive operators by putting it somewhere out of the sun.

Washing of Equipment

Skin problems soon emerge with constant immersion in water. As divers, we go back to our comfortable rooms after our diving and have a refreshing shower, followed by sunscreen and body lotion. Dive operators may have no skin care available or no time to indulge themselves.

In the next article of this series, we will address some of the risks we meet as dive leaders and other more general risks we encounter as divers. Then we will follow up with a final, more technical article on risk assessment.