

It is commendable that there is this open call for comments and recommendations. I am grateful to you and to the NOSAC for allowing me to participate in it, and I thank you for being open to comments.

I sincerely hope you will take into consideration our recommendation to improve and include accountability verbiage in the Operational Duties section of the proposed regulations to include clients. This would put us on the same level field of excellence as the HSE. The client needs to be held accountable and should not be allowed to turn a blind eye to improper and unsafe practices by its winning bidder. This would force them to better balance cost and safety and not sacrifice safety for the sake of saving a few dollars. I respectfully urge you to look at the wording in HSE and NORSOK, both of which make it clear that safety is the responsibility of all, but the company and the client hold a larger stake in setting the right environment and culture where safety is a priority and not just empty rhetoric.

#### Recommendation on QUESTION 1 SCUBA

When an agency proposes regulations or to update existing regulations it is to improve safety, and to reflect industry *best practices*; spurred into action because they feel there are costs being incurred from lack of safety, costs which usually affect others, instead of the responsible parties. There is no specific rule that can be applied to determine whether a problem is large enough to justify government action, but consideration is given in part to the ability of the affected group to take action themselves to address the problem.

We have not addressed the problem. We continue to have serious injuries and fatalities which could have been easily prevented. Since 2008 one of NOSAC's first recommendations was to remove SCUBA diving entirely from the USCG regulations as it should not be used as an offshore commercial application. The NOSAC (of which I am a member since 2013) has issued a second and updated set of recommendations, and continues to push for the removal of SCUBA diving from USCG regulations.

In your in depth analysis for the proposed rulemaking, you show a table which shows USCG regulated commercial diving by Type and Firm composition. Your own estimate for SCUBA diving in offshore applications is 5%. Simply put, 5% of the industry is responsible for enough fatalities to clearly underline the fact that SCUBA should not be allowed in offshore activities.

**“Since we are aware that SCUBA continues to be used in commercial diving activities regulated by the Coast Guard, we believe SCUBA diving should continue to be addressed in our commercial diving regulations in order to maintain established minimum safety standards for that mode of diving.”**

I respectfully disagree. Neither the HSE nor IMCA permit SCUBA for Offshore applications. The NORSOK Standard does not endorse it but merely requires it in the training of commercial divers. Continuing to permit something simply because some still prefer to do it, does not mean it is being done safely by all. It means continuing to permit rule bending, and fudging.” Under your current regulations, SCUBA can be performed under conditions such as currents less than 1knot, visibility greater than 3 ft. If your regulations were to be followed to the “T” conditions like these can be hard to forecast, therefore a job bid for and planned as SCUBA may not necessarily fall under those conditions on the day of the evolution.

It is likely that regulation or not, instances resulting in fatalities were probably already in violation of existing regulations to begin with. Both OSHA and USCG make no mention of required communications

with the SCUBA diver. OSHA mentions line pull signals only. Yes, both require the diver to be line-tended, one to greater extent than the other, and that a standby diver be available (not “at the ready”- just available), etc. OSHA even makes specific mention of the points which I noted; and I quote: “Because a SCUBA diver has a limited breathing supply, does not usually have voice communication, and often is not monitored or controlled by surface-support personnel<sup>1</sup>...” they go on to say that for these reasons they are being more conservative with the regulations, but that is debatable. As for the flexibility of manning, current regulations do become vague in the manning of SCUBA, and companies purposely further blur that line. The USCG waffles on reserve air supply. I would interpret it that any SCUBA diving requires reserve breathing supply, but at one point it says it’s only required if diving deeper than 130ft. My point here is that as they stand, the regulations are open for interpretation as well, meaning incidents can occur and it would all still be in compliance of regulations and business as usual.

My thoughts on SCUBA is that when you have a diver who can’t communicate and runs into trouble, tended or not, there will be a delay in knowing s/he needs assistance. In S/S air our protocol is not to splash the standby diver until we have ascertained we are not placing him in danger as well- so how do you know with SCUBA? If you followed all the regulations, he may not be using an AGA, and he may be entangled so there are no line pulls to aid you, therefore you have no way of knowing what the potential issue may be before you splash your standby. Now you are endangering two people instead of one. This is backed up by the fact that there are, indeed, quite a few incidents where the rescue diver or even *divers* encountered trouble, becoming injured or also dying in the process. There are incidents where there were two divers in the water acting as buddies and both died or were injured.

Your proposed rule simply asks that one comply with the 6<sup>th</sup> Edition of the ADCI section 4.2 which is in contradiction of the manning requirements you set forth (and which we all support) in the proposed new section 197.290. It is also only requiring diver carried reserve air lasting 4 minutes at anticipated depth. NOSAC recommended 5 minutes. Not much difference but still enough to show there is disagreement on what is considered robust safety measure. The ADCI also makes no mention of minimum visibility, something the USCG has noted in its current regulation. Because ADCI does not require the BCD to be inflated from an air source separate from breathing gas supply, the diver is now carrying three cylinders (granted, each of different volume).

In addition, with the debate about applicability of USCG regulation their regulations are currently focused on offshore application, as was the focus of the NOSAC in issuing its own recommendations. However the jurisdiction of the USCG includes any USCG inspected vessel in the US and navigable waters of the US This then includes many lakes and rivers. What this confusion means to me is twofold: One, if the USCG is so convinced that their regulations only apply to deep water and offshore work then SCUBA should **not** be included, TWO, because of the inspected vessel, I know for a fact many inland companies reference and follow USCG regulations and include them in their Conduct of Diving. For this reason I include here details of fatalities which occurred inland as well. No matter how you look at it, this *is not* industry best practice. In my opinion SCUBA is questionable in any commercial diving application, but definitely in offshore regulation SCUBA is just not the best option, period.

It is not the best option because all schools do is issue recreational certifications. I ask you, how does a PADI or NAUI open water certification fit into commercial offshore diving? Some may argue that the diver is commercial diving trained, but we all know that as long as the regulation stands, some entities will opt for SCUBA because it is cheaper, not because it is safer or the best option.

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<sup>1</sup> [https://www.osha.gov/OshDoc/Directive\\_pdf/CPL\\_02-00-151.pdf](https://www.osha.gov/OshDoc/Directive_pdf/CPL_02-00-151.pdf)

I posit that removing SCUBA would make clients less likely to accept a SCUBA as a proposed method to do a job, forcing both client and contractor to more carefully assess a job and plan it with a safer mode instead. Companies and individuals will be less likely to blatantly disregard a regulation if it is prohibited than if it is permitted with limitations; this just creates a grey area and permits some to find loopholes.

The USCG should be familiar with this. All they need do is look into their files on accidents during SCUBA operations, including two of their own in 2008, to understand that SCUBA is not as safe as many claim it is. No matter how redundant the air supply (with a backup air bottle), it is a finite air supply. Unless specified, which it is not, communication with the diver depends on line pull signals, unless the company is gracious enough to use AGA masks.

Though most military and scientific diving is done on SCUBA it is outside the jurisdiction of the USCG and OSHA and military and scientific diving (for which I do have some statistics by the way- and ironically also two SCUBA deaths from the USCG) follow a different methodology. Teams are generally bigger than our manning minimums. But even so, as much as they claim to have fewer incidents, we have the reports to prove that they do not. In 2013 there was a double fatality in the NAVY which made the news<sup>2</sup>. I dare say maybe there are fewer incidents in general because of the more rigorous regulatory oversight, including swift investigations and punishment when events do occur.

I include here some examples where it is clear SCUBA did not act as mitigation to the already existing risk, but created another gap in the defenses we must consider when undertaking an activity that will always pose inherent risk. Of course the majority of the cases end up with a "drowned" as the cause of death. Also, the majority of the deaths occur due to entrapment, entanglement and dP. Common hazards in commercial diving, hazards which I've witnessed as a diver but which did not result in death because the divers had a continuous supply of air, for a start. Please note many of these incidents do not involve a lone diver.

- 42 year old, just North of the Hood Canal Bridge, using a drill u/w to install buoy anchors, entangled, apparently drowned Saturday when the hydraulic drill he was using tore away his air line and entangled him 50 feet under water. Reported in the Spokesman review and Moscow Pullman Daily News<sup>3</sup>.
- Aged 41, Contract diver working for the St Paul Regional Water Services, in Vadnais lake, cleaning water plant intake filter, at end of dive he and his partner left the job site but he failed to surface, apparently got caught in some weeds and cables. His body was recovered about three hours later. Drowned. No explanation. Reported in Star Tribune (MN)
- Drowned in a drainage pipe, no lifeline or standby diver, scuba gear minus straps, he was holding or dragging his air tank along the 36-inch-wide drainage pipe when he drowned.
- Employee of the State water dept., part of a volunteer team of approx. 12 divers who inspect/maintain the water system, died in an aqueduct, Dos Amigos pumping station, 5 mph current, tethered together, reported as not sucked onto the inlet grating, but no explanation, double fatality (Crawford) fined \$16,120 for the two deaths.
- Aged 34, Trapped for about 15 minutes by water flow through a coffer dam, lost air supply, initially thought to be recovering, died 4 days later "the diver got stuck when flowing water forced him into a void between the cofferdam and the gate, which was open and releasing water. A partner working with him was able to tie a rope to the trapped diver's equipment but was not able

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<sup>2</sup> <http://archive.armytimes.com/article/20140115/NEWS06/301150008/Court-martial-begins-Navy-diver-training-deaths-case>

<sup>3</sup> <http://www.peninsuladailynews.com/apps/pbcs.dll/article?AID=2003304140306&template=printart>

to pull him free. When the diver was eventually pulled up, the air hose he was using to breathe had been knocked from his mouth. Officials were uncertain how long he had been without air”.

- 46 year old from Conklin, New York, diving contractor out of New York, drowned Tuesday in Panguitch Lake, Utah. Failed to surface at about 1 p.m. He was removing a temporary dam his team had installed to allow water to be pumped out of a channel that crews were trying to dig deeper, Garfield County sheriff's deputies wrote in a statement. Other divers on the team found the diver under 18 feet of water.
- Aged 45, Specialist Lake and pond clearing contractor working at the Baxter health Care campus where there are a string of retention ponds. Diver got into difficulty, a second diver went in to aid him (he was hospitalized with hypothermia) but unable to pull him out. Recovered from the pond bottom 45 minutes later by fire department rescue divers, helicopter to hospital but pronounced dead. "Air hose had broken".
- Paraphrased from press reports:- "A 28 year old diver from Arlington died at about 09:45 this morning while working inside a nearly full City of Richmond municipal above ground water storage tank in Richmond this morning. The diver worked for a contractor who was performing routine (Two yearly silt removal) maintenance on the 500,000 gallon tank, which is about 50 feet tall and was three-quarters filled with water. The diver descended into the tank in SCUBA gear (09:15) and went to the bottom (09:18) was vacuuming the bottom of it to clean it. His partner who was outside the tank on the top noticed the diver's tether line became slack (09:28). He then also put on scuba gear and went into the tank to find what was wrong. He found the man unresponsive with his mask off but started having regulator problems and surfaced. The Richmond fire Department responded and recovered the diver's body (10:50)". Declared dead. Houston Chronicle.
- American, aged 30, off duty fireman, working for "Pioneer Hydro" of Ware, Massachusetts, down a tunnel inspecting a turbine, got trapped underwater, tugged on his lifeline, but ran out of air.
- Hired by the US Army Corps of engineers to inspect a 130' deep shaft at the Hills Creek Reservoir dam. Two divers went to 90' in basket, Second diver then went to 130' to inspect the bulkhead, returned to 90' basket and both ascended to 10' and then second diver climbed onto the wall to remove his gear. Diver one's lifeline went slack and was pulled up, no diver was on the line. Second diver got a fresh cylinder plus spare and went back into the water, down to 90'. After he had been there about 5 minutes, surface team reported that his bubbles suddenly got larger and then stopped. Basket recovered but second diver was dead. Diver one's body was recovered from 130' by two SCUBA divers Commercial divers who completed the inspection work the following day.
- American, aged 33, employed to remove cars from 2210 feet long, 13 foot diameter irrigation canal tunnel "syphon", trapped by flowing water, ran out of air, drowned. Two man team, no stand-by divers/equipment. Two firemen died trying to rescue them, quadruple fatality.

And not just in the US.

- Brazilian, Canoa Quebrada hydroelectric plant at Lucas do Rio Verde, arm sucked up an 8" diameter pipe; three dive team members could not free him. A week later officials were still discussing whether to lower the water level in the lake in order to free the body.

## QUESTION 2

On the issue of having a DMT, the logical and best answer is yes. For starters we require doctors with hyperbaric knowledge to clear an individual to dive. Operational Experience has shown that illnesses not properly assessed by a doctor with understanding of the impacts of diving can lead to injury or fatality.

The National Plan for The Health and Safety of Divers issued by the NIOSH in 1976 already recognized the need for divers to have appropriately trained doctors. In an injury or event, the first minutes and the proper application of triage is the most important to the survival of the individual. A trained DMT can do this.

As with any regulation being forced on operators, if cost is the biggest pushback, then consider the remoteness of where the work will be taking place, and apply it, just as with depth limitations on modes of diving, as the deciding factor on whether a DMT is necessary or not.

### Jurisdiction of USCG

I respectfully approach you here to voice my opinion and recommendation. Throughout the process it was often repeated that the applicability of the USCG regulations pertains to offshore activities, and the NOSAC's entire focus was also on offshore diving. However, we know that the jurisdiction of the USCG will include some inland areas, so why are we leaving inland diving behind? Why do we continue to accept this distinction, when water makes none whether it is 130 ft deep offshore or 130ft deep down a hydro?

Of all the recommendations, though this is not in the realm of what you asked for or are focused on, I ask you to give this due consideration and remember that there are **more fatalities in inland diving than offshore and that the inland divers need our support in improving oversight and regulation of their safety.**

I know I am not the only one pushing for the consolidation of jurisdiction and for a concerted effort to ensure one agency is the one in charge of investigating injuries and events, therefore better able to provide properly trained and knowledgeable inspectors and ensure the industry has an opportunity to learn from each other's experiences.

However this does tie in with your request for recommendations on third party investigators. If the jurisdiction is consolidated, a third party investigator can ensure the above requirements. As is, a TPO would only reduce the ability of the industry to truly regulate itself and share operating experience. You end up looking like you are pushing your responsibility off on other and depending on them to do your work. With all due respect.

### QUESTION 3. Alternative Approaches

My field of experience is inland diving, but we had to deal with the USCG because we worked on inspected vessels on Lake Michigan. My field of experience now is nuclear, and in the nuclear industry we rely heavily on self-regulation, transparency and auditing. We see merit in TPOs performing audits. However, for example, in one year I can have my program inspected by the NRC, as well as by our third party which is in addition to the government agency. Granted, nuclear is different and more stringent, but the drawback with a TPO could mean slack and infrequent oversight if not managed well.

Your second alternative seems like a step back. Your own analysis shows on Table 10, Incident Links to the Proposed Rule, that audits would likely have uncovered issues; issues which if addressed, could have potentially prevented the event under investigation.

Lastly, you are graciously open to our comments and input regarding cost and merit. Permit me to say that though you have applied the VSL to your analysis, in the end when someone's son is injured or killed, is that not more costly to his family and to the company who is now being sued that to make these small changes and save lives?

Other Comments and Recommendations regarding Docket:

Pg 40. Exhibit 1: Trends in Commercial Diving Fatalities and Injuries is nearly impossible to understand and a very vague graph.

Pg 44. Case Review Examples 1 and 2, used for the demonstration that one more diver might have made all the difference are not clear on the number in the crew in the first place.

Pg. 49 your example using the VSL of 9.1 and the annualized cost is wrong. It is not 218 years but 208.

I am curious as to how such exact figures are reached in the Cost section (starting on pg34) and on Table 7 Average Cost per Firm.

§197.201 Definitions: Commercial Diver: should include wording to make it clear a diver engaging in underwater work for hire MUST be properly trained and qualified.

Is there a reason why the new regs would not define surface supplied air diving but they do define saturation, mixed gas, and scuba diving?

§197.220 Commercial Diving operations: Addition of drill requirement: excellent for ensuring training of crew and preparedness in case of an event. Some massaging of the wording and requirements needed, but otherwise I believe it is a much needed improvement. Though some may cite cost and time, this is essential to well versed and prepared personnel.

§197.250 Medical Examinations: I would recommend wording about a physician knowledgeable in hyperbaric medicine clearing a diver to dive after any illness which falls under the prohibited list for diving. This is in addition to the yearly physical. There is operating experience out there of divers being cleared to dive by a physician unfamiliar with the impact of diving on the condition they just cleared someone to return to work, causing further injury.

Respectfully,

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