

FORMAL INVESTIGATION INTO THE COMMERCIAL DIVING ACCIDENT ABOARD
THE MOBILE OFFSHORE DRILLING UNIT CLIFF'S DRILLING RIG NO. 12 ON
4 MARCH 1996, WITH LOSS OF LIFE

4 March 1996

25. On the evening of 3 March 1996, [redacted] contacted [redacted] and [redacted] to send them to a hull inspection job on Rig 12 out of Sabine Pass, Texas. [redacted] initially refused the job because he believed [redacted] was inexperienced and he did not know [redacted]. [redacted] reasoned that the team would be too small and [redacted] responsibilities would be too great.⁶³ "... I figured I was going to be the only one out there doing everything or shouldering everything. And I didn't want any part of it."⁶⁴ [redacted] testified that after his initial refusal, [redacted] called back to promise Texas NDE would supply two additional divers. The dive team would total five: [redacted] and two divers from Texas NDE. Only [redacted] then did [redacted] accept the job.⁶⁵
26. [redacted] testified that after talking to [redacted] and [redacted] on the evening of 3 March 1996, he went to the G&G facility to prepare a load out list of equipment needed for the Rig 12 job.⁶⁶ Among the equipment on the list, two umbilicals were slated by [redacted] to be taken on the job. [redacted] stated that [redacted] arrived at G&G about 30 minutes later and together they gathered the equipment and loaded it into the bed of [redacted] Nissan pickup truck. [redacted] said that during this process, he went into the office to get timesheets and dive logs to be delivered to [redacted] says that while he was in the office, [redacted] finished loading and checking the equipment to ensure it matched the loadout list. [redacted] instructed [redacted] to meet [redacted] at a roadside stop on Interstate 10 between Houston and Sabine Pass at 0500 hours the next morning.⁶⁷
27. Coast Guard regulations require that a diving supervisor be appointed in writing and the appointment be given to the person-in-charge before diving begins.⁶⁸ The diving supervisor is required to provide an operations manual to the vessel's person-in-charge before diving begins; the manual is required to be at the dive location when diving begins.⁶⁹ According to [redacted] would customarily designate the dive supervisor for G&G diving jobs by inserting an appointing letter under the plastic cover of the operations manual sent to the dive location. [redacted] did not appoint a dive supervisor or send a company dive operations and safety manual to the Rig 12 dive location.⁷⁰ He testified that he expected a Texas NDE employee to be dive supervisor for the job.⁷¹

⁶³ [redacted] testimony, Vol. 1, pg. 265.

⁶⁴ [redacted] testimony, Vol. 1, pg. 172

⁶⁵ [redacted] testimony, Vol. 1, pg. 171-172

⁶⁶ USCG Investigation, Vol. 4, IO exhibit 15, (G&G equipment list)

⁶⁷ USCG Investigation, Vol. 4, IO exhibit 40, ([redacted] statement, pg. 56-57)

⁶⁸ 46 CFR 197.210

⁶⁹ 46 CFR 197.420

⁷⁰ [redacted] testimony, Vol. 1, pg. 147-148

⁷¹ USCG Investigation, Vol. 4, IO exhibit 40, ([redacted] statement, pg. 104-105)

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28. Early on the morning of 4 March 1996, [redacted] met [redacted] on Interstate 10 as directed. They drove in [redacted] truck to Sabine Pass where they were to meet a crew boat to take them to Rig 12.⁷² [redacted] testified that he expected a three-person dive team to meet them in Sabine Pass, but instead they met only [redacted]. Nevertheless, the group did not talk about the problem or make any effort to call for more divers. No one appears to have stopped to examine whether there were enough divers to proceed safely. [redacted] testified that he did ask [redacted] where the other two divers were, but did not remember [redacted] response. [redacted] testified that he was angry about the situation, nevertheless, he did nothing about it.⁷³ The team made an aborted attempt to reach Rig 12 on a crew boat too small for the sea state, which was described as choppy with two to four foot seas.⁷⁴ After returning to the dock and boarding a larger vessel, [redacted], and [redacted] arrived at Rig 12 at about 1100 hours.⁷⁵ Upon their arrival at Rig 12, the group waited two hours to unload their gear because another dive team was loading its gear to depart the vessel.⁷⁶
29. On 4 March 1996, Coast Guard inspectors arrived on Rig 12 at 1030 hours and worked on the vessel until 1630 hours.⁷⁷ During that time, although they knew commercial diving operations were underway, they did not visit the dive operation or inspect the dive station, its manning, or equipment.⁷⁸
30. When the Coast Guard inspectors arrived on Rig 12, they met with the class society surveyor and rig personnel to plan the day's inspections. According to the break-in marine inspector that day "[w]e agreed that ABS would handle the entire inspection with regards to the underwater portion of the exam. *The meeting left me with the impression that ABS would also inspect the topside diving gear as well as the underwater progress of the diving operations.*"⁷⁹ At the time of the Rig 12 inspection, the break-in marine inspector had completed the basic marine inspector course at the Coast Guard's Reserve Training Center in Yorktown, VA. Diving operation inspections were not taught in that course. He had not attended the outer continental shelf inspector school taught jointly by the Coast Guard and industry to Coast Guard marine inspectors.
31. Contrary to the break-in inspector's perception, the class surveyor did not believe dive supervision was an area of overlapping responsibility with the Coast Guard. The ABS

⁷² [redacted] testimony, Vol. 1, pg. 180

⁷³ [redacted] testimony, Vol. 1, pg. 180-181

⁷⁴ [redacted], testimony, Vol. 1, pg. 39-40

⁷⁵ [redacted] testimony, Vol. 1, pg. 181-182; [redacted] testimony, Vol. 3, pg. 115

⁷⁶ [redacted] testimony, Vol. 1, pg. 182-183

⁷⁷ [redacted], testimony, Vol. 3, pg. 114, 116-117

⁷⁸ [redacted], testimony, Vol. 1, pg. 269; [redacted], testimony, Vol. 2, pg. 239

⁷⁹ USCG Investigation, Vol. 6, IO Exhibit 00, (Statement of [redacted] n dtd 12 May 1999) [emphasis added]; Near the end of the hearing, ABS objected to admission of this exhibit unless [redacted] was made available for cross-examination. At the time, neither the IO nor the Parties in Interest were disposed to examine LT (jg) [redacted] so late in the process. The IO agreed not to enter the statement. After further consideration, the IO determined that this information is relevant and necessary.

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surveyor (who had performed well over 100 SEILODs) had no expectations of supervising the dive because diving operation inspection was not within the mandate of ABS. ABS surveyors do not inspect diving operations as an ordinary part of their work and the ABS Rules have no provisions for inspecting dive procedures or equipment. Furthermore, the ABS surveyor had never inspected a diving station, nor was he familiar with diving operations.⁸⁰

32. At the hearing, the Coast Guard senior marine inspector for Rig 12, LT [redacted] agreed with the ABS surveyor that the Coast Guard, not ABS, was responsible for inspecting dive operations. At the time of the hearing, three years after the inspection, [redacted] vaguely remembered being on board Rig 12 on 3 March and believed that no diving operations were underway that day. But, he had no memory of visiting Rig 12 on 4 March.⁸¹ [redacted] testified that he would typically inspect a diving operation, if one were underway when he performed a MODU exam. To do this, he would use the Coast Guard's MODU/SEILOD job aid, CG-840H-1 (9-92) and ensure that all the items listed in the job aid were on board and available.⁸²
33. When the team dive team reached Rig 12, the vessel was in the bottom-bearing mode in 37 feet of water at West Cameron Block 83.⁸³ The vessel was approximately eight miles south, south-east of the Sabine Pass East Jetty Light, 9.8 miles from the closest point of land. When the group reported aboard, [redacted] presented himself to [redacted] and [redacted] coordinated a meeting between the supervisor of the other dive team, American Oilfield Divers, (AOD had cleaned Rig 12's legs and was familiar with the layout of the mat and legs), the ABS surveyor, and [redacted] to plan the upcoming job. Based on [redacted] conduct, [redacted] and [redacted] believed [redacted] was the dive supervisor even though [redacted] did not deliver the diving operations and safety manual to [redacted] as the dive supervisor is required to do.⁸⁴ [redacted] did not ask for or examine the diving supervisor's designation, as he is required to do by 46 CFR 197.402 (a) (2) (i). Neither [redacted] requested the safety and operations manual or diving supervisor written designation from [redacted] or [redacted] also assumed [redacted] was the dive supervisor based on past inspection jobs [redacted] had performed for [redacted].⁸⁵
34. [redacted], on the other hand, did not consider himself the dive supervisor. He considered himself only a diver and NDT expert. He expected only to dive to do the magnetic particle

⁸⁰ [redacted] testimony, Vol. 2, pg. 327-328, 350

⁸¹ [redacted] testimony, Vol. 2, pg. 130 - 131

⁸² [redacted] testimony, Vol. 2, pg. 156-157; See USCG Investigation, Vol. 4, IO Exhibit 31, (MODU Drydock Inspection Book, pg. 20-22, Diving Supervisor appointed in writing, Live Boating variances, Log Books, operating manual, equipment, etc . . .)

⁸³ N 29-34.7/W 093-41.5; See USCG Investigation, IO Exhibit 69 (Canadian Workers' Comp. Bd. Study) for some discussion of commercial diving dangers in this depth of water.

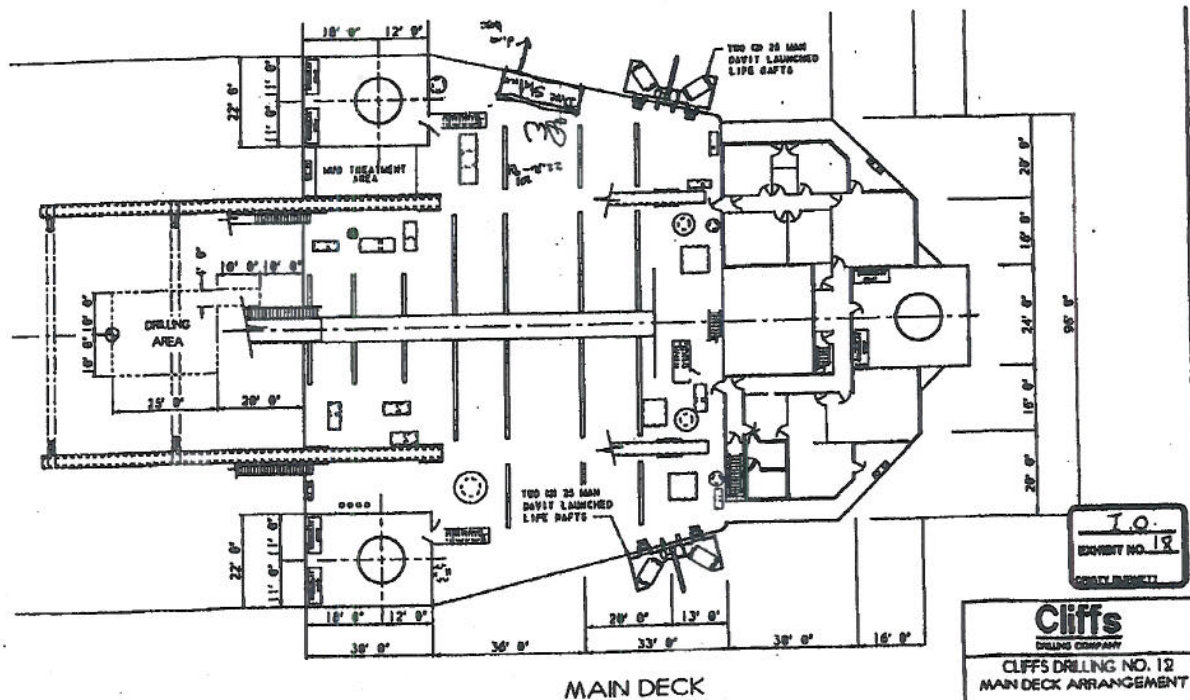
⁸⁴ [redacted] i, testimony, Vol. 3, pg. 145; See too 46 CFR 197.420

⁸⁵ [redacted] testimony, Vol. 2, pg. 18, 20, 25, 36

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testing, but expected to have no other control over the diving operations. "I was the – to look for terms, I guess, would be the prime contractor; and I subcontracted two divers from G&G."⁸⁶ While talked to ' and , and set up the dive station on the port side of Rig 12 (See Figure 4 below).

35. The dive station (See Figure 5) consisted of a Quincy 325 air compressor connected by a 30-foot air hose to a 30-gallon volume tank. The volume tank was connected to an air manifold (a.k.a. air rack). Two high-pressure air bottles also were connected to the air rack to provide a secondary air supply if needed. The umbilical leading from the air rack to the diver's helmet consisted of an air hose, a communications line, a pneumofathometer, a lifeline, and the line from the NDT probe to the NDT monitor.⁸⁷ Next to the air rack was the communication box with batteries. Located nearby was the NDT scope used to interpret thickness readings measured by the probe operated by the diver.⁸⁸ The team set the compressor air intake upwind from the exhaust of the compressor's diesel engine.⁸⁹



⁸⁶ , testimony, Vol. 2, pg. 225

⁸⁷ See USCG Investigation, Vol. 4, IO Exhibit 51, (Photograph of umbilical)

⁸⁸ testimony, Vol. 1, pg. 191

⁸⁹ testimony, Vol. 1, pg. 253

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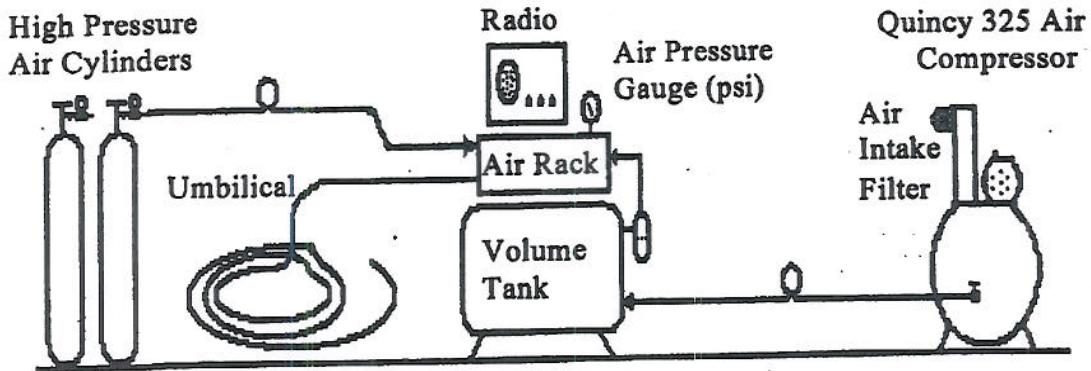


Figure 5: Schematic representation of Dive Station

36. Before the first dive, the dive team discovered their video cable was incompatible with the video equipment on board. They also discovered they had only one dive umbilical on-scene. [redacted] called [redacted] to request a compatible video cable be sent to the site. [redacted] did not raise the issue of the missing second dive umbilical or request another umbilical be sent to the dive site.⁹⁰
37. [redacted] a decided the team would begin ultrasonic testing while waiting for the video cable to be delivered.⁹¹ [redacted] decided to send [redacted] down first to conduct the underwater portion of the ultrasonic testing. Ultrasonic testing was the least technical part of the dive and best suited for the less experienced diver. The testing required [redacted] to carry a lightweight probe called a transducer to pre-selected spots on Rig 12's hull. [redacted] was to hold the probe against the hull while an operator on the surface, [redacted] interpreted the readings. One of the tools attached to [redacted] dive belt was a roofing axe secured by a three-foot lanyard.⁹² The axe was used to clean barnacles and rust from the hull so that the probe could be placed against clean metal. It could not be secured except at the end of the lanyard. [redacted] explained that when the diver worked underwater, he would hold the axe and transducer in one hand and pull himself along with the other. If the axe dropped, it fell to the diver's feet.⁹³
38. While preparing to dive, [redacted] discovered he had forgotten to bring his weight belt. [redacted] testified that he was angry about the lapse and expressed his anger to [redacted]. Nevertheless, [redacted] loaned his weight belt to [redacted] so that the dive could begin. There was little discussion about using a bailout bottle. [redacted] testified that his personal bottle was available, but was set up to connect to his own helmet. [redacted] testified that [redacted] could

⁹⁰ USCG Investigation, Vol. 4, IO exhibit 40, ([redacted] statement, pg. 60-61)

⁹¹ [redacted] testimony, Vol. 1, pg. 197-198

⁹² [redacted] testimony, Vol. 1, pg. 239

⁹³ [redacted] testimony, Vol. 1, pg. 239, 242-244

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have used ...'s bailout bottle, but "I chose not to mess with it because the dive was so shallow and seemed so easy."⁹⁴

39. At about 1330 hours, ... entered the 65 to 70 degree water for the first time.⁹⁵ ... wore a neoprene wet suit and his own Kirby, Morgan SuperLite 27 Dive Hat (See Figures 6 & 7).⁹⁶ He also wore ...'s weight belt and a harness with a quick release to which the umbilical, a knife and axe were attached. A three-foot lanyard attached the roofing axe to the diver's belt.⁹⁷

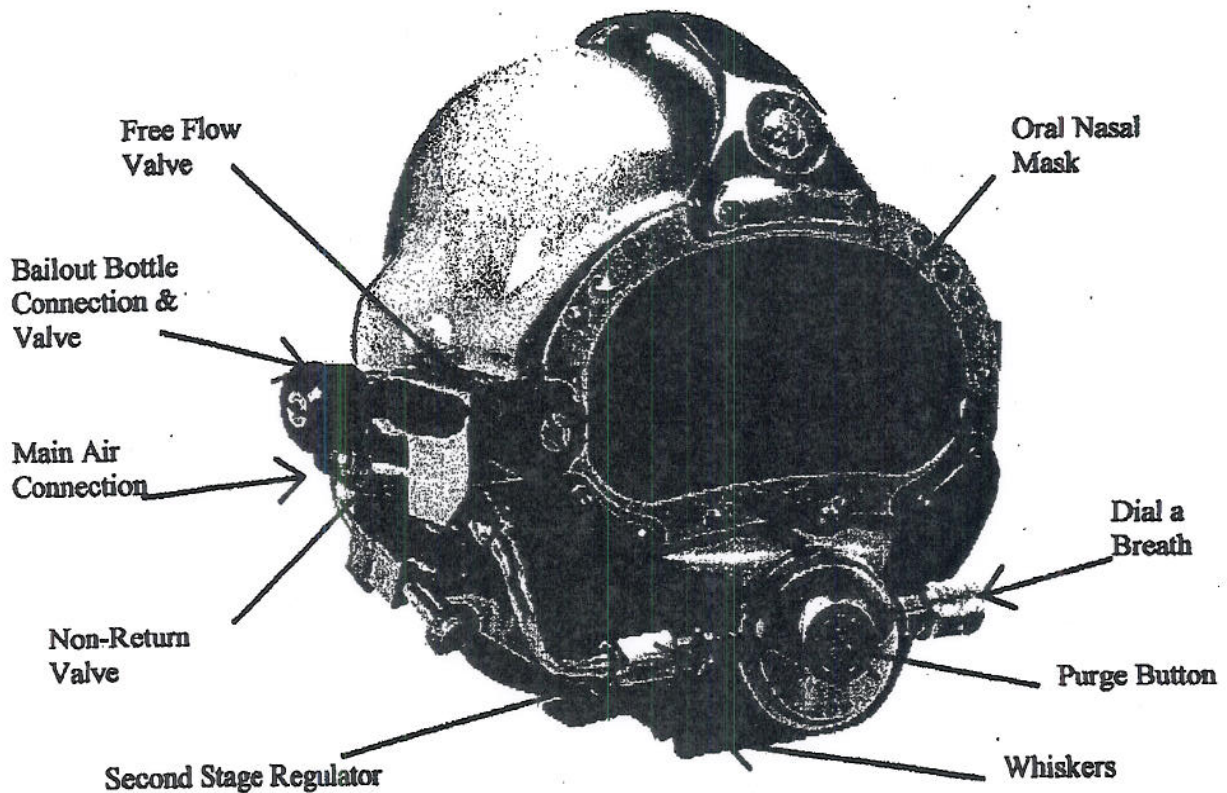


Figure 6: SuperLite 27 Dive Hat

40. Due to the gap between the deck of Rig 12 and the water, ... was lowered to the surface in a personnel basket (also known as a Billy Pugh basket) attached to a crane operated by rig personnel. Rig 12 had three legs, two at the stern and one at the bow. An AOD diver had attached a down line to the mat of the rig and relayed to ... "that the

⁹⁴ ... testimony, Vol. 1, pg. 315-317

⁹⁵ See USCG Investigation, Vol. 6, IO Exhibit 67, (Second MC96003402)

⁹⁶ Serial Number 50609

⁹⁷ ... testimony, Vol. 1, pg. 315 - 330; 270 - 300

Investigation dated 17 August 1998,

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down line was tied to the bow leg . . . when in fact it was tied to the stern, or vice versa.⁹⁸ During the investigation, no one was able to explain why AOD had been hired to clean the 40 test spots and Texas NDE -- with its own set of divers -- was hired to do the testing. Since [redacted] had not dived on a MODU before, he relied on [redacted] to give him directions to the test sites. Misunderstanding about the orientation of the dive line confused the initial dive attempt and [redacted] ordered [redacted] to abort the dive so that the team could start again. When [redacted] reentered the water, he began conducting ultrasonic gauging at about 1345 hours. The gauging continued for about three hours with [redacted] periodically moving from one area to another. The work was described as "light," requiring little effort from the diver other than moving from one spot to another.⁹⁹ [redacted] continued to talk to [redacted] by radio; he testified that [redacted] periodically reported that he felt fine and that the work was going well.¹⁰⁰ [redacted] described the sounds he heard over the communications line as the normal sounds connected with a dive. [redacted] heard a background "whoosing" indicative of air free flowing in the helmet. "Just kind of -- he [redacted] probably just had it [the free-flow valve] cracked open a little bit. I mean, you can hear a free flow when it runs, and he had it running definitely. . . . But obviously not to the extent that I thought he did."¹⁰¹ [redacted] did not actively tend the umbilical. "I don't recall if I was standing on it with one foot or had somebody else holding it for me, . . ." Meanwhile, [redacted] was monitoring the NDT instruments and not involved in supervising or tending the diver.¹⁰²

41. [redacted] testified that when Compressor 2 was first put on line, the gauges showed 150 psi. Three or four times during the dive, however, [redacted] noticed that the pressure dropped to 90 psi.¹⁰³ Each time [redacted] saw the pressure drops, he told [redacted] to close his free-flow valve to allow the compressor to regain pressure (See figure 6).¹⁰⁴ According to [redacted] "You open this valve up [free flow valve] and you get quite a bit of air flow [in the helmet]. . . . It gives you a little extra air if you feel like you need a breather. Some guys need it -- I always leave mine on just a little bit to keep everything defogged, keep everything circulating. Some guys really hog it on. . . . [meaning] [j]ust leave it too far on. And you're kind of overflowing the compressor's capability."¹⁰⁵

98 [redacted], testimony, Vol. 1, pg. 204
99 [redacted], testimony, Vol. 1, pg. 210
100 [redacted], testimony, Vol. 1, pg. 213-214
101 [redacted], testimony, Vol. 1, pg. 206 - 209
102 [redacted], testimony, Vol. 1, pg. 262-265
103 [redacted], testimony, Vol. 1, pg. 194, 215, 219
104 [redacted], testimony, Vol. 1, pg. 196
105 [redacted], testimony, Vol. 1, pg. 217