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MAR 15 2001

**COMMANDANT'S ACTION
ON THE FORMAL INVESTIGATION INTO THE
CIRCUMSTANCES SURROUNDING THE**

COMMERCIAL DIVING ACCIDENT

**ONBOARD THE MOBILE OFFSHORE DRILLING UNIT
CLIFF'S DRILLING RIG NO. 12 ON MARCH 4, 1996
WITH THE LOSS OF LIFE**

ACTION BY THE COMMANDANT

The report of the Investigation into the subject casualty has been reviewed. The investigative report, including the findings of fact, conclusions, and recommendations, is approved.

ACTION ON RECOMMENDATIONS

Recommendation #1: Commandant should require bailout bottles for all commercial diving operations, regardless of depth. The bailout bottles should have sufficient capacity to supply a diver with an appropriate volume of air at the deepest depth being worked. The facts of this case do not strongly support a recommendation for bailout bottles. Nevertheless, all diving experts consulted by the Investigating Officer agreed that bailout bottles come in so many sizes and configurations, and are so inexpensive that every dive should begin with the presumption that a bailout bottle will be used.

Recommendation #2: Commandant should require all unused auxiliary gas ports on diver worn life support equipment to be capped or blanked during all commercial diving operations. This will remove the possibility of water entering a diver's helmet if he inadvertently opens an emergency valve.

Recommendation #3: Commandant should require a standby diver dressed out and with a separate air supply, ready to quickly deploy for all commercial diving operations regardless of depth.

Recommendation #4: Commandant should require diving stages for all commercial diving operations regardless of depth, except where they would be impractical. This will speed entry to the water for divers and rescue divers and remove the need for rescue operations to work from personnel baskets. In this casualty, the rescue operation was itself so slow that using a crane operated Billy Pugh basket, as rescue platform did not significantly add to the delay. Nevertheless, there is no question that a diving stage at water level would have speeded up the rescue.

Recommendation #5: Commandant should require the Diving Supervisor and the Master or Person-in-Charge to develop a site-specific rescue plan designating the equipment and personnel that will be used for a rescue or removal of an injured diver from the water for all commercial diving operations.

Recommendation #6: Commandant should require that, prior to any commercial diving operation, the Diving Supervisor describe the rescue plan to all members of the diving team.

Recommendation #7: Commandant should require the Diving Supervisor to complete a Job Hazard Analysis before every commercial diving operation. See IO Exhibit 57, ADC Consensus Standards, pg. 3-9 to 3-10b.

Recommendation #8: Commandant should require Diving Supervisors to complete a pre-dive safety checklist suitable to the type of diving equipment and procedures to be used, prior to all commercial dive operations. See IO Exhibit 53, Navy Dive Manual, pg. 4-37 to 4-49.

Recommendation #9: Commandant should consider changing Coast Guard regulations to ensure accountability of commercial diving contractors for maintaining records and logs for their diving equipment. Commandant should also make minor changes to Coast Guard regulations in addition to those described above to ensure Offshore Installation Managers play a more active role in pre-dive safety preparations. Present Coast Guard diving regulations place record keeping responsibilities on diving supervisors. Diving supervisors are appointed on a job to job basis and their designation ends when the diving job they supervise ends. Many of the record keeping responsibilities, however, are continuous and must be completed between diving jobs, away from the dive site. The following recommended regulation changes illustrate how the commercial diving contractor and Offshore Installation Manager could be given a more responsible role in the record keeping and pre-dive safety processes.

- a) At 46 CFR 197.204 [Definitions], Commandant should add a definition "Commercial Diving Contractor" to describe the person or business that provides commercial diving services.
- b) At 46 CFR 197.484 (a) [Notice of casualty], after the words "person-in-charge", Commandant should include the words "Diving Supervisor or Commercial Diving Contractor."
- c) At 46 CFR 197.486 [Written report of casualty], after the words "person-in-charge of a vessel or facility" Commandant should include the words "or Diving Supervisor or Commercial Diving Contractor."
- d) Commandant should change 46 CFR 197.210 [Designation of diving Supervisor] as follows:

"The Commercial Diving Contractor shall designate in writing a Diving Supervisor for each commercial diving operation. The Diving Supervisor shall present the written designation to the Master or Person-in-Charge."

- e) Commandant should change 46 CFR 197.402 (2) (i) [Responsibilities of the person-in-charge] as follows:

"Prior to permitting any commercial diving operation to commence, the Master or Person-in-charge shall examine the Diving Supervisor's written designation to ensure it is complete as required by Section 197.210."

- f) Commandant should cross-reference 46 CFR 109.109 [Responsibilities of master or person-in-charge] with 46 CFR 197.402 [Responsibilities of person-in-charge].

- g) Commandant should change 46 CFR 197.480(c) [Logbooks] as follows:

(c) The Diving Contractor and the Diving Supervisor conducting commercial diving operations from a vessel or facility subject to this subpart shall maintain a logbook for making the entries required by this subpart.

(d) The logbook required to be maintained by this subpart shall be taken to the jobsite for every commercial diving operation and shall be available for inspection by the Master or Person-in-charge, the United States Coast Guard or any other cognizant agency.

(e) The Diving Contractor shall retain the logbook required to be maintained by this subpart for a period of not less than three years.

- h) Commandant should change 46 CFR 197.482 (d) [Logbook entries] as follows:

(d) The Diving Contractor and the Diving Supervisor shall insure that a record of the following is maintained:...

(e) The Diving Contractor and the Diving Supervisor shall insure copies of each of the records required under paragraph (d) are included in the operations manual required by 46 CFR 197.420. The records required under paragraph (d) must be maintained by the Diving Contractor for a period of not less than three years.

- i) At 46 CFR 197.420 [Operations manual], Commandant should add the following:

(e) The operations manual must contain copies of the records required to be maintained by 46 CFR 197.482 (d) and (e).

- j) At 46 CFR 197.450 [Breathing gas tests], Commandant should change the words "The diving supervisor shall ensure that" – to

"The Diving Contractor shall ensure that -

- k) At 46 CFR 197.450 [Breathing gas tests], Commandant should add the following:

(d) The Diving Contractor shall maintain the above stated test records for a period of not less than 3 years.

Recommendation #10: Commandant should require the Dive Supervisor and Master or Person-in-Charge to execute a Declaration of Inspection verifying their respective duties have been completed before any commercial dive operation begins. See 46 CFR 35.35-30 for an example of the concept as it is applied to oil transfers.

Recommendation #11: At 46 CFR 197.204 [Definitions], Commandant should include a definition of "Diving Tender." Commandant should consider adopting the description of Diver Tender set out in the Navy Dive Manual. See IO Exhibit 53, Part 4-8.5.3.

Recommendation #12: At 46 CFR 197.204 [Definitions], Commandant should include a definition of "Dive Tending" or Tending.

Recommendation #13: Commandant should consider limiting the duties of a dive tender to only tending the dive umbilical during a commercial diving operation, as illustrated by the following wording.

At 46 CFR 197.432(c) [Surface-supplied air diving], Commandant should add the words:

: the person tending the diver shall have no other duties while the diver is under water;

Recommendation #14: At 46 CFR 197.204 [Definitions], Commandant should consider consolidating the definitions "Commercial diver" and "Diver" into one inclusive definition.

Recommendation #15: Commandant should establish minimum manning standards for all diving operations. Commandant should consider adopting the standards set out in the ADC Consensus Standards. See IO Exhibit 57, pg. 3-24 to 3-29.

Recommendation #16: Commandant should establish commercial diving qualification standards for Commercial Divers, Commercial Diving Tenders, and Commercial Diving Supervisors. Commandant should consider adopting the standards set out in the ADC Consensus Standards. See IO Exhibit 57, pg. 2-3 to 2-8.

Recommendation #17: In the absence of a diver qualification program, Commandant should publish criteria for OCMI's to use when reviewing SEILOD (Special Examination in Lieu of Drydocking) applications to evaluate qualifications of divers to safely conduct diving operations.

Commandant's Action on Recommendations #1 through #17: We concur with the intent of these recommendations. We are currently conducting a technical review of the Commercial Diving Operation regulations at 46 CFR 197. Upon completion of the review, the changes recommended in recommendations 1 through 17, will be included in an upcoming Notice of Proposed Rulemaking (NPRM) to the extent that they are warranted, feasible, and allowed by existing legislative authority. If necessary, we also may seek additional legislative authority.

Recommendation #18: Commandant should examine NVIC 12-69 and NVIC 1-89 to determine whether the older one should be cancelled and incorporated into the newer.

Commandant's Action on Recommendation #18: We concur with the intent of this recommendation. Both documents are being examined in conjunction with the review of the current requirements for commercial diving operations. Once the regulatory update is complete, a determination on whether one or both NVICs should be cancelled or combined will be made and up-to-date policy guidance will be provided.

Recommendation #19: Commandant should require dive operation inspection training for all marine inspectors.

Commandant's Action on Recommendation #19: We concur with the intent of this recommendation. Training on commercial diving operations will better prepare our marine inspectors and investigators to prevent and respond to incidents involving this sector of the marine industry. A Commercial Diving Orientation Course curriculum has already been developed. This new course will be formally incorporated into the Marine Safety training program for marine inspectors and investigators.

Recommendation #20: Commandant should remove the diving component from the MODU Inspector PQS workbook and establish a separate Performance Qualification Standards workbook for diving operations.

Commandant's Action on Recommendation #20: We concur with this recommendation. A separate Performance Qualification Standards (PQS) workbook for commercial diving operations is being developed in conjunction with the recently completed Commercial Diving Orientation Course curriculum.

Recommendation #21: Commandant should evaluate the adequacy of the MODU/SEILOD (Mobile Offshore Drilling Unit/Special Examination in Lieu of Drydocking) job aid, CG-840H-1 (9-92), to determine whether additional inspection items should be added to the diving checklist (pg. 20-22). See IO Exhibit 31.

Commandant's Action on Recommendation #21: We concur with this recommendation. An evaluation of the MODU/SEILOD job aid, CG-840H-1, is currently underway. The job aid's adequacy is being evaluated in conjunction with the commercial diving orientation training curriculum and the development of a performance qualification standards workbook (PQS) for diving operations. Appropriate modifications will be made when the evaluation is completed.

Recommendation #22: Commandant should publish guidance emphasizing that Coast Guard marine inspectors should not attempt to delegate dive safety enforcement duties to any third party, including classification society surveyors.

Commandant's Action on Recommendation #22: We concur with the intent of this recommendation. All guidance associated with dive safety enforcement duties is currently being evaluated in conjunction with the technical review of the Commercial Diving Operation regulations. When the regulatory update is complete, appropriate policy guidance, including clear delineation as to what duties may and may not be delegated to third parties, will be provided.

Recommendation #23: Commandant should require dive casualty investigation training for all marine safety casualty investigators.

Commandant's Action on Recommendation #23: We concur with the intent of this recommendation. We agree that it would be desirable for marine safety casualty investigators to have formal dive casualty investigation training in the event they were called upon to do such an investigation. However, diving casualties accounted for less than 4% of the total Coast Guard casualty investigation workload from 1995 to 2000. Given the limited training resources available to the Coast Guard, this level of frequency does not warrant formal training of all casualty investigators in this area at this time. However, several initiatives have been undertaken to improve the knowledge level of investigators in this area, including the development of a Commercial Diving Orientation Course for marine inspectors and investigators. Regarding investigations specifically, this diving casualty investigation was included as a case study at the 2000 Senior Investigating Officers (SIO) Conference. The case study was also included on a CD-ROM given to each attendee at the conference to be used at their field units for reference and local training on this topic.

Recommendation #24: Commandant should consider tasking Coast Guard divers to assist in the investigation of diving casualties. In this case, the IO was assisted by a former Coast Guard diver and a U.S. Navy Master Diver, both with exceptional insight. However, previous investigators to this casualty did not have those valuable resources. The Marine Safety Manual recommends that an IO investigating diving casualties have diving experience, but there are few IO's available with that background.

Commandant's Action on Recommendation #24: We concur with the intent of this recommendation. The Officer in Charge, Marine Inspection (OCMI) has the authority to use Coast Guard divers or U.S. Navy Divers to assist in any type of Coast Guard casualty investigation. The Office of Investigations and Analysis will encourage the use of these resources and will provide updated guidance to investigating officers in the Marine Safety Manual.

Recommendation #25: Commandant should consider seeking an agreement with the Navy Experimental Diving Unit and the U.S. Navy Diving School to provide assistance in Coast Guard diving casualty investigations.

Commandant's Action on Recommendation #25: We concur with this recommendation. The Coast Guard currently has a liaison at the Navy Diving School who has provided assistance to the Coast Guard in the past on investigations and we will continue to use our liaison. The Office of Investigations and Analysis will discuss the need for a Memorandum of Undertaking (MOU) with the U.S. Navy Diving program. Additional guidance on diving investigations will be provided in the Marine Safety Manual.

Recommendation #26: Commandant should establish a working group of industry experts to examine ways to improve safety practices in the commercial diving industry. The working group should consider whether the Coast Guard should adopt by reference the ADC Consensus Standards for commercial diving operations where they do not conflict with Coast Guard