



Committee Work Group

GOM Diving Safety Work Group

COMMITTEE WORK GROUP

Recommended Minimum Dive Team Manning

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DISCLAIMER

This US GOM DSWG document is not meant to be all inclusive, and not every rule and regulation is contained herein. The US GOM DSWG does not issue policy or create regulations. The reader should consult additional resources and subject matter experts for more detailed information as required.



Committee Work Group

Minimum Dive Team Manning

The GOM Diving Safety Workgroup is a US GOM focused, non-competitive and non-commercial group of oil and gas operators, transmission companies, commercial diving companies, supporting sub-contractors, organizations and industry stake holders. The group will provide a unified voice to promote and improve diving safety, through the following:

- identification and sharing of best practices
- identify and seek solutions to industry challenges and issues
- review and comment of existing and proposed standards and guidelines
- provide input to the regulators and industry associations

Purpose of Committee

This document has been prepared by the US GOM DSWG as guidance for:

Minimum Dive Team Manning

Committee Chairman	Martin Cox
Executive Sponsor	Ted Roche

Committee Members (Names Only)	
John Hocutt	Steve Lambert
Bruce Humberstone	James Matherne

Committee Work Group**The document is divided into seven sections:**

- **Part 1: Executive Summary**
- **Part 2: Definition**
 - Defines the activity that is being evaluated and provides definitions from regulatory or industry groups that are associated with the activity.
- **Part 3: Regulatory and Industry Gap Analysis**
 - Identifies regulatory and industry association requirements to perform the activity or operation and provides a visual aid to determine the consistencies between these groups as it relates to the activity
- **Part 4: Past Incidents**
 - Identifies past near misses, incidents, and fatalities and provides causal factors and the root cause of the incident in order to provide supporting documentation for the hazard analysis in Part 5.
- **Part 5: Hazard Analysis**
 - Identifies the hazards of the activity or operation, Identifies the risks associated with the hazards, and provides specific mitigation considerations for each hazard to reduce or eliminate risk
- **Part 6: Drills and Preparation**
 - Provide a list of drills that should be performed to prepare the crew members for possible emergency situations
- **Part 7: Appendix**
 - Please do not alter the template, in order to maintain the consistency of the document as it relates to other committees, but please add additional documentation, reports, drawings, etc. in this section that may provide more depth or relevant information to the report.

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Part 1: Executive Summary of Committee

Offshore and Inland Diving operations can present potential risk for serious injury or fatality if not properly manned with the safe complement of Supervisors, Divers, and Dive Tenders. There is quite often debate on what the “Minimum Dive Team” size should be while working in relatively shallow waters.

This Committee was formed and the following guidance has been developed to assist with the management of crew sizing with the ultimate goal of achieving safe execution of shallow water diving operations.

Practicality needs to be exercised when choosing a diving crew with regard to many factors such as specific job scope, client needs and expectations, and the skill set of the individuals who are working for the diving contractor. However, practicality should not take precedence over safe diving operations.

It is suggested that divers engaged in diving activities should maintain a minimum crew of the following compliment.

- 1 – Dedicated Supervisor and/or Diving Supervisor
- 2 – Divers
- 2 – Tenders

Part 2: Definition

Minimum Dive Crew Manning is defined as the minimum recommended crew to safely execute underwater diving operations in the Gulf of Mexico (GOM) and the surrounding Inland waters.

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Part 3: Regulatory and Industry GAP Analysis

The following documents were referenced in development of this Guidance or provide additional information and guidance for Minimum Manning. The latest revision of each of these documents should be referenced when planning Dives.

- *IMCA AODC 48*
- *ADCI – Consensus Standard Rev.6.1 - Section 4.3.1.1 “Minimum Personnel Requirements”*
- *OGP – appendix 3 – 12 (pg35)*
- *U.S. Army Corp Of Engineers - EM 385-1-1*
- *OSHA 1910 Sub Part T (Standards -29 cfr) 1910.425 (c) (4) (i) (ii)*

Item	Description of Item	IMCA	ADCI	USACE	OSHA	OGP	Comments
1	Minimum manning	5	3*	4	3	5	*The ADCI’s allowance for a three man dive team revolves around the performance of shallow water applications or non-decompression dives only. Planning must take into consideration not only the direct requirements of the work to be performed, but also additional factors either known or suspected that may lead to complications during the conduct of the intended operation.

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Part 4: Past Incidents

Year	Location	Manning Level	Details	Fatality
1997	USA	Three man	Dive team on spillway job. Apparent gate valve leakage trapped diver. Crew confused whether to open / close valve. Valve presumably closed on divers umbilical	1
1997	USA	Single SCUBA	Scuba diver in Municipal water system became fouled on ladder	1
1997	USA	Presumed Two Man	Diver jetting utilizing a "hookah rig" entrapped in soft mud. Surface unable to retrieve diver	1
1997	USA	Two man SCUBA	Two SCUBA divers entrapped in irrigation pipe. Fire rescue divers intervened. One diver entrapped one diver to hospital then expired	2
1997	USA	Four Man	Diver drowned while hand jetting. Umbilical single member pulled into jet pump between casing and shroud	1
2002	USA	Three Man	Diver ditched gear	1
2002	USA	Unknown	Apparent Delta P. Diver trapped for long period of time. Some reports indicate once freed diver was surfaced rapidly and suffered embolism	1
2003	USA	Unknown	Diver trapped in power plant piping when pump was started	1
2004	USA	Two Man	Diver trapped in irrigation canal pump due to failure of lock out tag out procedures and lack of training	1
2004	USA	Presumed Two Man	Diver and buddy attempting to salvage boat	1
2007	USA	Unknown Presumed Two Man	Two divers died well inspecting underwater equipment at water plant (SCUBA)	2
2007	USA	Presumed Three Man	Diver lost hat while dredging under barge	1
2007	USA	Presumed Three Man	Diver was pulled from city water pipe with his helmet removed	1
2008	USA	Presumed Three Man	Water storage tank inspection / Pumps activated Delta P	1
2010	USA	Unknown	Diver pronounced dead after he was brought to the surface after comm. were lost.	1
2010	USA	Unknown	Diver chipping old cement piles was found unconscious on bottom	1
2011	GOM	Unknown	Diver working on vessel cleaning removed hat and drowned	1
2012	USA	Unknown	Diver died performing ships husbandry operations	1
2013	GOM	Three Man	Diver died well hand jetting in 5 feet of water 10 feet below mud line Umbilical became fouled diver attempted to return to surface after ditching helmet	1

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Part 5: Hazard Analysis

Item	Hazard Identified	Risk Associated with hazard	Mitigation Considerations
1	Incapacitated/Trapped/Fouled Diver	Lack of personnel to support recovery operations	Ensure that there are enough trained personnel to supervise, tend, and provide assistance to the incapacitated/Trapped/Fouled diver.
2	Dive Team Understaffed	Rotating the supervisor position to reduce the risk of fatigue on team	Provide 5 man team to provide consistent and safe diving operations, ensuring the rotating supervisor is properly designated on the operation and is qualified/credentialed for the position

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Part 6: Drills and Preparation

Diving Drills:

Upon initial set up of the dive spread on location and periodically thereafter, diver recovery drills based upon probable emergency scenarios, shall be conducted to simulate what may happen in an emergency situation. All dive team members as well as support crew including applicable barge/vessel personnel, client personnel, and other involved subcontractors should be included in the drill or made aware of their potential roles in supporting an actual emergency. Properly planned and executed drills will identify shortcomings in procedures, insufficient resources (personnel or equipment), or training deficiencies which provide opportunities for improvement on subsequent drills.

Item	Drill Name	Describe Drill
1	Diver Recovery Drill	Execute prescribed drill to remove an injured diver from the water utilizing a 5 man dive team to find gaps in the procedure, to improve the procedure and to determine the time associated with the task.

Part 7: Appendix

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