

Section 29

Diving Operations

29.1 Scope

This section establishes requirements for Bureau of Reclamation and contractor diving operations.

29.2 General Requirements

29.2.1 Reclamation Diving Operations

Reclamation divers shall meet requirements in the Diving Safe Practices Manual (DSPM) located on the Reclamation Intranet, *Reclamation Safety and Health Standards* (RSHS). The DSPM shall be the baseline diving policy and referred to for all Reclamation diving activities to ensure employee safety and regulatory compliance for underwater inspection and maintenance programs. Additional instructions shall be prepared for any operations extending beyond the scope of the DSPM and maintained by the dive team performing dive operations. The instructions shall be submitted for approval by the Regional Diving Advisory Committee (RDAC) and the Reclamation Diving Safety Advisory Board (RDSAB) prior to implementation.

29.2.2 Diving Safe Practices Manual

Reclamation's DSPM procedures and requirements shall comply with Occupational Safety and Health Administration (OSHA) 1910, Subpart T, *Commercial Diving Operations*, the U.S. Coast Guard 46 CFR 197, Subpart B, Department of the Interior (DOI) Manual, DM 485, Chapter 27, *Underwater Diving Safety*, and applicable U.S. Navy standards. A copy of the DSPM shall be available at every Reclamation dive site and all divers shall have access to this manual.

29.3 Responsibilities

29.3.1 Regional Directors

29.3.1.1 Shall ensure compliance with all applicable dive safety regulations and requirements within each region.

29.3.1.2 Shall appoint a RDAC if their region has a diving program. The regional director shall comprise the majority of the RDAC with divers who shall implement the DSPM at the regional level to assure an efficient and safe underwater examination and inspection program. The RDAC shall have at least five members and shall include the regional safety manager and the regional dive team leader.

29.3.2 Area Office Managers

29.3.2.1 Shall ensure the applicable staff perform diving operations in their responsible locations according to the DSPM.

29.3.3 First-Line Supervisors

29.3.3.1 Shall approve employees to participate on the dive team and ensure employees complete the required training outlined in the DSPM Section 4.1, *Training and Experience*, and complete medical examinations in DSPM Section 5.2, *Dive Medical Surveillance*, if they are a member of the dive team.

29.3.4 Regional Safety Managers

29.3.4.1 Shall support the RDSAB for diving activities in their region.

29.3.4.2 Shall be part of the RDAC if their region has a diving program.

29.3.5 Reclamation Contracting Officer's Representatives (COR)

29.3.5.1 Shall approve the contractor's Safe Practices Manual, diving plan, and dive hazard analysis in coordination with the RDSAB.

29.3.5.2 Shall record divers' names, qualifications, and ensure divers are at least 18 years old prior to initiating diving operations.

29.3.6 Reclamation Regional Dive Team Leaders

29.3.6.1 Shall be a senior dive team member with the experience and training necessary to conduct diving operations safely according to this section and regulatory requirements.

29.3.6.2 Shall have the experience and formal training in dive planning, diving procedures, CPR, first aid, etc., to conduct assigned diving operations.

29.3.6.3 Shall have experience in conducting underwater inspections of Reclamation structures and adequate expertise to manage dive operations.

29.3.6.4 Shall have a working knowledge of this RSHS section, any additional DSPM responsibilities identified in DSPM Section 3.1, *Regional Dive Team Leader*, and Reclamation management policies.

29.3.6.5 Shall maintain training records for all dive related training courses outlined in DSPM Section 4.2, *Documentation of Diver Training and Qualifications*.

29.3.6.6 Shall ensure their employees complete the required training outlined in the DSPM Section 4.1, and complete medical examinations in DSPM Section 5.2, if they are a member of the dive team.

29.3.7 Reclamation Dive Supervisors

- 29.3.7.1** Shall be an experienced diver trained extensively in dive operations, dive planning, diving emergency procedures, and dive safety.
- 29.3.7.2** Shall have completed training to the journeyman diver level and shall be responsible for specific diving activities as assigned by the regional dive team leader.
- 29.3.7.3** Shall have a working knowledge of this RSHS section and any additional DSPM responsibilities identified in DSPM Section 3.2, *Dive Supervisor*.

29.3.8 Reclamation Journeyman Divers

- 29.3.8.1** Shall meet the qualifications and experience outlined in the DSPM Section 3.3, *Journeyman Diver*.

29.3.9 Reclamation Divers

- 29.3.9.1** Shall be at least 21 years of age and complete the required training outlined in DSPM Section 4.1.
- 29.3.9.2** Shall complete medical examinations performed by a licensed physician with experience in diving medicine as outlined in the DSPM Section 5.2.
- 29.3.9.3** Shall have a working knowledge of this section, any additional DSPM responsibilities identified in DSPM Section 3.4, *Diver*, and Reclamation management policies.

29.3.10 Human Resources Officers

- 29.3.10.1** Shall maintain any medical examination results, clearance documentation in the employee's medical folder according to 29 CFR 1910.1020(d)(1), *Access to Employee Exposure and Medical Records*, and the Privacy Act of 1974 (P.L. 93-579), and provide the regional dive team leader with the clearance results as requested.

29.4 Contractor Diving Operations

29.4.1 General Requirements

Conventional hardhat and lightweight surface-supplied, and self-contained underwater breathing apparatus (SCUBA) diving operations must conform to Federal OSHA 29 CFR 1910, Subpart T, *Commercial Diving Operations*. Contractors shall provide an onsite dive supervisor overseeing dive operations, employees, and decompression procedures.

29.4.2 Diver Qualifications

Contracted divers shall be at least 18 years old and have the training and experience outlined in OSHA 1910.410, *Qualifications of a Dive Team*, to perform assigned tasks in a safe manner. Divers must have a certificate of training from a recognized diving school or

certified record of past diving experience and documentation that they have been cleared for diving by a physician, preferably by a hyperbaric physician, or other licensed physician knowledgeable in the physiology of diving within the past year.

29.4.3 Safe Practices Manual

The COR must review the contractor's Safe Practices Manual, dive plan, and dive hazard analysis to ensure they meet Reclamation requirements prior to bringing any equipment to the dive site. The Safe Practices Manual must be available to all divers at each dive location and meet the requirements in OSHA 1910.420, *Safe Practices Manual*.

29.4.4 Pre- and Post-Dive Procedures

Contractor procedures shall meet the requirements in OSHA 1910.421, *Pre-Dive Procedures*; OSHA 1910.422, *Procedures During Dive*; and OSHA 1910.423, *Post-Dive Procedures* to implement safe diving procedures.

29.4.5 SCUBA Diving

Contractors shall meet the SCUBA diving limits requirements and procedures in OSHA 1910.424, *SCUBA Diving*.

29.4.6 Surface-Supplied Air Diving

Contractors shall meet the surface-supplied air diving limits requirements and procedures in OSHA 1910.425, *Surface-Supplied Air Diving*.

29.4.7 Contractor Diving Equipment

Contractors shall meet the following equipment procedures and any additional requirements in OSHA 1910.430, *Equipment*:

- equipment modification, repair, test, calibration, or maintenance service,
- air compressor system,
- breathing gas supply hoses,
- buoyancy control,
- compressed gas cylinders,
- decompression chambers,
- gauges and timekeeping devices,
- masks and helmets,
- oxygen safety, and
- weights and harnesses.

29.5 Reclamation Diver Training

29.5.1 Training and Experience

Reclamation divers engaged in SCUBA diving or surface-supply diving must have experience and training as outlined in DSPM Section 4.1, *Training and Experience*.

29.5.2 Diver Proficiency

Each diver must make 12 dives annually in the modes of diving for which they are qualified, with at least 1 dive every 6 months. Each diver shall perform at least 1 under the supervision of the regional dive team leader or their representative every 12 months and meet any additional requirements outlined in DSPM 4.3, *Maintaining Eligibility as a Reclamation Diver*.

29.6 Reclamation Recordkeeping

All training records shall be kept in the Department of the Interior's approved repository and managed in accordance with the Information Management Handbook as referenced in Reclamation Manual Directive and Standard, Information Management (RCD 05-01). Regional Dive Team Leaders will also keep training records for each qualified regional dive team member as outlined in DSPM Section 4.2, *Documentation of Diver Training and Qualifications*.

29.7 Reclamation Dive Planning

29.7.1 Dive Hazard Analysis (DHA)

Dive supervisors must prepare the DHA for approval by the regional dive team leader, RDAC regional safety and occupational health manager, and one other RDAC member. DSPM Section 6.1, *Dive Hazard Analysis* addresses the minimum required plan elements.

29.7.2 Job Hazard Analysis (JHA)

The responsible facility representative must develop a JHA when diving around structures where local facility support personnel are operating cranes, man-skips, motorized equipment, vessels, etc., or when non-divers are involved in the diving activity. Reclamation requires a JHA in addition to a DHA.

29.7.3 Dive Planning

The dive supervisor must complete a dive plan as part of the DHA. The dive plan must include goals, desired results, and diving tasks required to achieve the objective. The regional dive team leader, RDAC regional safety and occupational health manager, and one other RDAC member must approve the dive plan. DSPM Section 6.2, *Dive Planning*, addresses additional required elements for the DHA and dive plan.

29.8 Reclamation General Diving Requirements

DSPM Section 6.4, *General Diving Requirements and Guidelines*, covers the minimum procedures below to use during diving operations depending on the nature of the task:

- water entry and exit,
- confined space or ladder entry,

- communications,
- dive log, and
- air decompression policy.

29.9 Post-Dive Requirements and Guidelines

29.9.1 Physical Condition Check

The dive supervisor will assess the physical condition of each diver checking for symptoms of decompression sickness, arterial gas embolism, trauma, environmental exposure, and general well-being.

29.9.2 Flying After Diving Rules

Ascent to altitude after diving increases the risk of decompression sickness. Reclamation follows DSPM Appendix H, *Altitude Correction, US Navy Sea Level Equivalent Depth (fsw)*, regarding flying after diving. The waiting time required between the last dive and flying depends on the repetitive group of the diver after diving. DSPM Appendix H2 lists the surface interval allowed between the last dive and flying.

29.10 Open Circuit SCUBA Diving Modes I and II

Divers and dive supervisors must have a working knowledge of the equipment, equipment limitations, diving procedures, and any other tools that may apply to SCUBA operations. Prior to leaving the surface, supervisors must brief divers on maximum depth, times permitted on the bottom to remain within the no-decompression limits, and the required decompression obligations if divers exceed the planned bottom time. Refer to the DSPM Section 7, *Open Circuit SCUBA Diving – Modes 1 and II*, for additional requirements.

29.11 Surface-Supply Air Diving (Lightweight) Mode III

Air for surface supplied diving operations must meet the purity requirements outlined in DSPM Section 10, *Diving Equipment Standards and Maintenance*. Refer to the DSPM Section 8, *Surface Supply Air Diving (Lightweight) Mode III*, for additional requirements.

29.12 Definitions

Commercial Diver	A diver for hire who performs work tasks underwater or any diving operation that involves construction, demolition, repair, maintenance, search, underwater inspections, placing and removing heavy objects, or other similar tasks.
Dive hazard analysis	Written document that contains emergency information and phone/cell numbers, planned depths and no-decompression limits, mode of diving, altitude and altitude depth corrections, environmental conditions, currents,

visibility, temperature, natural or man-made hazards, activities that could interfere with the dive or pose safety hazards to the dive team, and an analysis of required hazardous energy control at the facility as appropriate.

Dive plan	In accordance with Federal OSHA 1910.421, the plan shall contain operational objectives, dive site description, diving mode selection, surface and underwater conditions and hazards, air supply requirements, thermal protection, diving equipment and systems, required support equipment, dive team assignments and responsibilities, no-decompression limits, emergency procedures, and evacuation procedures and recompression treatment procedures.
Dive Site	The physical location of a diver during a dive. A dive site may be on the surface or underwater.
Diver	Refers to diving employees including journeyman divers, divers, standby divers, lead divers, and dive supervisors who participate in diving activities or exposed to hyperbaric conditions.
Diving Mode	A type of diving requiring specific equipment, procedures, and techniques (e.g., SCUBA, surface-supplied air, or mixed gas). Mode I = Open Circuit SCUBA, Mode II = SCUBA-Tethered, and Mode III = Surface Supplied Air.
Repetitive Dive	Defined specifically as a dive 10 minutes after surfacing and in less than 12 hours. A repetitive dive is another dive occurring before the diver can completely off gas from the first or subsequent dive.
SCUBA Diving	A diving mode independent of surface supply in which the diver is a free swimmer using a self-contained underwater breathing apparatus, breathing from a supply of air (gas) carried by the diver.
Surface Supplied Air Diving	Includes those forms of diving where air is supplied from the surface to the diver by a flexible hose.

29.13 References

- Department of the Interior Departmental Manual, Part 485, Chapter 27, *Underwater Diving Safety*. [485 DM 27 - Underwater Diving Safety \(doi.gov\)](https://www.doi.gov/485DM27)
- Federal OSHA 29 CFR 1910.410, *Qualifications of a Dive Team*. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.410>
- Federal OSHA 29 CFR 1910.420, *Safe Practices Manual*. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.420>
- Federal OSHA 29 CFR 1910.421, *Pre-Dive Procedures*. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.421>
- Federal OSHA 29 CFR 1910.422, *Procedures During a Dive*. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.422>

Federal OSHA 29 CFR 1910.423, *Post-Dive Procedures*. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.423>

Federal OSHA 29 CFR 1910.424, *SCUBA Diving*. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.424>

Federal OSHA 29 CFR 1910.425, *Surface-Supplied Air Diving*. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.425>

Federal OSHA 29 CFR 1910.430, *Equipment*. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.430>

Reclamation Diving Safe Practices Manual, Underwater Inspection Program, February 2021.
[DivingManual.pdf \(usbr.gov\)](#)