Crew SCUBA Diving Recommendations and Requirements

Actsafe Safety Bulletin #7

This bulletin provides guidelines to keep the underwater crew safe while working with SCUBA diving equipment. For performers working underwater refer to safety bulletin #7a Principal Performers Using SCUBA Diving Equipment.

The production must also consider the hazards contained within safety bulletins #17: Water Safety, #23 Working with Lighting Systems and Other Electrical Equipment, and if applicable #15 Watercraft Safety.

HAZARDS

Hazards when working underwater may include the following:

- Drowning
- Pressure related injuries (e.g., ear, vertigo, reverse block, lung over-expansion, compressed gas issues, decompression sickness, sinus block)
- Hypothermia and hyperthermia
- Equipment malfunction (e.g., out of air)
- Hazardous mechanisms and structures (e.g., intakes, pipes, tunnels, pressure differentials, etc.)
- Entanglement and entrapment (e.g., hoses, natural elements, set pieces, overhead environment, etc.)
- Electrical hazards
- Adverse weather conditions

PRE-PRODUCTION RESPONSIBILITIES

A risk assessment covering all hazards associated with the activity should be carried out by a qualified member of the dive team, and adequate controls identified. This will include any potential hazards such as the environment, sets, stunts, special effects, etc.

The selection of an underwater location must consider the health and safety conditions of the location as determined by production in consultation with the dive team. When appropriate, the Dive Supervisor must consult with the Electrical Department to ensure that all electrical equipment in close proximity to diving operations pose no hazards.

Before diving commences, production must receive a detailed plan of the diving operations from the Dive Supervisor.

DIVE SUPERVISOR'S RESPONSIBILITIES

Each diving operation must be controlled by a Dive Supervisor who has complete responsibility for the operation and must be knowledgeable and competent regarding the diving operation, emergency procedures, as well as the physics, physiology, and medical aspects of diving. Their duties include evaluating the hazards and the safety of the equipment, planning the dive, briefing the crew, and suspending diving operations if conditions become unsafe.

Prior to each shooting day the Dive Supervisor must brief the dive crew about the diving conditions and the plan so that they arrive with the appropriate equipment. The Dive Supervisor must remain in the area during operations and delegate supervisory

Crew SCUBA Diving Recommendations and Requirements

Actsafe Safety Bulletin #7

responsibilities to another Dive Supervisor, if required to enter the water.

A Dive Supervisor must ensure that all occupational divers on the crew meet the minimum requirements and are trained in accordance with CSA Standard Z275.4-97 Competency Standard for Diving Operations and are competent to use the diving equipment.

DIVER'S RESPONSIBILITIES

Each crew diver must satisfy the Dive Supervisor that they fully understand the signals and procedures in use. A diver must be thoroughly trained in the use of the equipment and diving apparatus. A medical alert tag or bracelet stating the diver's status and indicating the possibility of decompression sickness or other diving illness, must be worn for at least 24 hours after completion of a dive.

The diver must inform their diving partner and proceed to the surface under any of the following conditions:

- if any malfunction in equipment occurs;
- on receipt of any signal which cannot be understood;
- at the onset of any symptoms of physical or psychological distress;
- on receipt of a recall signal;
- when the main air supply is near depletion;
- if any emergency apparatus is being used;
- in the event of excessive leakage to a dry suit which may affect the diver's buoyancy.

Communication

SCUBA divers must employ the buddy system, where 2 divers remain in constant visual or physical contact, and both must surface immediately if they lose contact. A third person must always stay on the surface as a Dive Supervisor.

OCCUPATIONAL DIVER(S) ASSIGNED TO PERFORMER(S)

An Occupational Diver must:

- Accompany each principal performer in or under the water while performing on SCUBA.
- Assess the principal performer's ability to perform the required underwater shot.
- Assess each principal performer for competency with the equipment they will be required to use during the dive sequence.

All Occupational Divers must be duly certified in SCUBA and any alternate air supply that they must be equipped with, such as an octopus regulator or bailout bottle.

STANDBY DIVER

A standby diver must be on the dive site and able to render assistance at all times when diving operations are in progress. They must be trained and equipped to operate at the depths and circumstances of the dive, and able to enter the water within one minute. A standby diver on the surface may also perform other duties provided such duties do not compromise the standby diver's

Crew SCUBA Diving Recommendations and Requirements

Actsafe Safety Bulletin #7

ability to promptly render emergency assistance to the divers.

Two divers in the water may act as standby for each other when the Dive Supervisor can ensure the following:

- depth of the dive will not exceed 18 m (60 ft),
- weather conditions are good,
- no appreciable currents are present,
- underwater visibility is good,
- no possibility of entanglement with underwater objects,
- access and egress to and from the dive site is good,
- that each diver is free swimming,
- the no-decompression limit is not exceeded,
- each diver has been trained to effectively rescue a diver in trouble and has demonstrated this ability to the Dive Supervisor's satisfaction,
- the divers are in close proximity to each other at all times so as to be able to effect rescue, and
- the divers are in constant audio communication with each other and the surface, or when using SCUBA they maintain constant physical or visual contact with each other.

If these conditions cannot be met, a minimum crew of 4 workers must be present, including a standby diver and Dive Supervisor that must be on the surface.

When divers are using lifelines, floats, or audio communication with the surface, a standby diver and a Dive Supervisor must be on the surface. A standby diver may tend to two divers when divers are on floats or have lifelines and effective 3-way communication, otherwise they must only tend to one diver.

SCUBA

Warning Devices

During diving activity in open water, warning devices must be displayed as follows:

- Buoys, flags, lights, lamps, or flares must be used to define the limits of the diving area to ensure boats that are not involved are clear of the area.
- A recognized diver's flag (a red square with a white diagonal stripe) must be prominently displayed.
- Flags and signals used for work site identification must only be displayed during active diving operations.

SCUBA Equipment

Depending on the diving conditions, the Dive Supervisor may require any diver to use the following equipment:

- a SCUBA unit complete with a quick release harness and a submersible pressure gauge;
- a face mask and swimming fins;
- a suitable knife and a depth gauge;
- an exposure suit and an inflatable buoyancy device;
- a weight belt with quick release buckle;
- an underwater watch with elapsed time indicator;
- an underwater light when night diving;
- If risk of entrapment is present, one complete spare set of underwater breathing apparatus with fully charged cylinders must be assembled at the dive site.
- When diving in open water, each free-swimming diver must carry an audible or visual locating device such as a whistle, flare, or strobe light.

Crew SCUBA Diving Recommendations and Requirements

Actsafe Safety Bulletin #7

- The employer must ensure that adequate quantities of medical oxygen (100% O2) with appropriate methods of administration, and personnel trained in the use of such oxygen are immediately available during the diving operations

SCUBA tanks

Each scuba cylinder must be hydrostatically tested at least once every 5 years and visually inspected internally at least once a year. The hydrostatic test date must be affixed to the cylinder, and both dates entered into the maintenance log.

When transported, SCUBA tanks must be secured in such a manner as to prevent them from rolling or the valves being struck by other objects. When not in use, SCUBA tanks must be equipped with valve covers and stored in the shade.

SAFETY MEETING

Before the start of underwater work, the 1st AD, in conjunction with the Stunt Coordinator and Dive Supervisor, should conduct a safety talk with all crew involved in water work, covering the following:

- The scope of work, potential hazards, control measures, and safety precautions to be followed around any specialized equipment (e.g., electrical equipment and the use of GFCIs)
- Communication protocols
- Elements of the written water rescue procedures, such as the persons assigned to coordinate the rescue, required equipment, etc.

DOCUMENTATION

The following documentation must be at the dive site:

- **Individual Occupational Diving Certificates:** A certified copy of competency documents for each diver.
- **Individual Dive Medical:** Each diver must have a signed, current medical certification provided by a physician acceptable to WorkSafeBC. Medical exams are required every two years up to age 39 and annually from age 40 onwards. This signed form must be on site. No self-declared medical form will be accepted.
- **Individual Divers Log:** A personal log containing 2 years of records in chronological order of all dives, medical recompressions, and other exposures to a compressed air/mixed gas environment.
- **Breathing Apparatus:** The breathing apparatus, accessories, and applicable service records must be available to workers on the dive site.
- **Dive Tables:** Diving operations, repetitive dives, and treatment of divers, must be carried out in strict accordance with tables and procedures published or approved by the Defence and Civil Institute of Environmental Medicine (Canada). Sport diving tables and diving computers must not be used in place of primary diving tables.
- **First Aid, CPR, & Oxygen Therapy:** All divers and the Dive Supervisors must be trained in CPR, oxygen (O2) therapy, and diving accident management.
- **Safe Diving Procedures:** Written safety procedures for diving, including emergency, evacuation, and rescue procedures.

Crew SCUBA Diving Recommendations and Requirements

Actsafe Safety Bulletin #7

REGULATORY REFERENCES

- Sections 24.7-24.34 Diving Operations Requirements
- Sections 24.35 – 24.39 SCUBA Diving
- Section 24.34 Incident Investigation Reports
- Section 24.9 Notice of Project

RELATED RESOURCES

- Safety Bulletin #7a Principal Performers Using SCUBA Diving Equipment
- Safety Bulletin #15 Watercraft Safety
- Safety Bulletin #17: Water Safety
- Safety Bulletin #23 Working with Lighting Systems and Other Electrical Equipment

Actsafe Safety Association

Actsafe is a not-for-profit health and safety association supporting British Columbia's arts and entertainment industries. Actsafe provides resources and training to employers, workers, and supervisors. We are always here to provide information relevant to best practices around health and safety in the arts and entertainment industries in B.C.

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