Praktijkoefening

‘Hazard datasheet on Inshore Diving’

Werk als oefening in het opstellen van een preventieplan in het kader van de Ondernemersopleiding ACEBE Operator voor Onderwaterwerken tweede jaar 1999-2000.

Hazard datasheet on Inshore Diving

Foreword

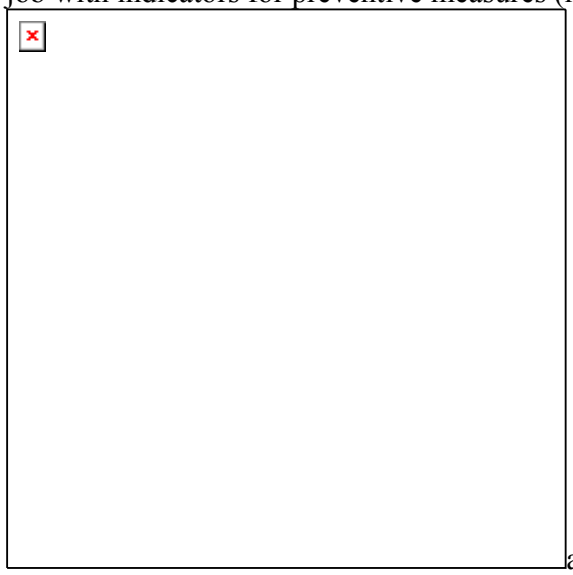
This hazard datasheet is based on the ILO's datasheet of Indigenous Fisherman Diver and the experiences during the period in Gochenée.

Part 1

The hazard datasheet on inshore diving?

This datasheet lists, in a standard format, different hazards to which Inshore Divers may be exposed in the course of their normal work. This datasheet is a source of information rather than advice. With the knowledge of what causes injuries and diseases, it is easier to design and implement suitable measures towards prevention.

This datasheet consists of four parts:

- Part 1: Information on the most relevant hazards related to the occupation.
- Part 2: A more detailed and systematized presentation on the different hazards related to the job with indicators for preventive measures (marked  and explained on the third part).
- Part 3: Suggestions for preventive measures for selected hazards.

- Part 4: Specialized information, relevant primarily to occupational safety and health professionals and including information such as a brief job description, a list of tasks, notes and references.

Who is an inshore diver?

A worker whose main job is to do underwater engineering, construction work, ship repairs, salviging, … within the 12 miles zone or territorial waters.

What is dangerous about this job?

- Inshore divers work under pressure and are dependent of surface supplied air (SSA) through hoses or self contained underwater breathing apparatus (SCUBA). Any interruption of the air supply can result in death from drowning or decompression sickness and barotrauma due to a rapid ascent.
- The nature of this work may take the diver a certain time from professional assistance and medical care.
- Diving is mostly done in water with low visibilty which makes the diver unaware of his surroundings.
- Diving in any water may reduce the body temperature and lead to hypothermia.
- Between dives, divers work alongside the water on the risk on falling and may be exposed to the sun, bad weather and all the dangers of construction places.
- These divers sometimesperforming heavy duty with heavy material which makes thing more complecate.
- Long term exposure to pressure can lead to dysbaric osteonecrosis and not known effects.

Part 2

Occupational hazards

PM : Preventive Measure
P : Probability / E : Exposure / S : Severity / R : Risk (= P*E*S)
O : Oxy-electric cutting / E : Electric welding / P : Power (pneumatic and hydraulic) tooling / S : Surface controlled tooling / M : Mixed gas diving /

Hazard type	Hazard	When?	Kinney risk analysis				PM
			P	E	S	R	
Accident hazards: 	Slips, trips and falls on surface						①
	Falling in the water						
	Falling objects on feet						
	Struck by falling object while diving						
	Struck by propeller or boat while diving or surfacing. Material hit by propellor.						②
	Injuries due to exploding pressure tanks						
	Stepping on object on surface or on the sea bed						①
	Caught or trapped in nets, cables, irons, tunnels, etc.						③
	Caught in compressor drive belts						④
	Overexertion while working, lifting, swimming, etc.						
	Interruption of air supply due to cut or separated air hose						③
	Overexertion while leaving the water.						
Physical hazards:	Running out of air.						③

	Oxigen explosion by build up						
	Cuts or scratches by lose or fixed material						
	Exposure to extremes of pressure leading to decompression sickness (DCS) and barotrauma as a result of rapid ascent						③⑤⑥⑦⑧⑨❶
	Long term exposure to pressure leading dysbaric osteonecrosis (DON)						⑤⑦⑧⑨❶
	Pressure damage to ears and sinuses						⑤⑥
Chemical hazards: 	Exposure to heat, cold, sun, rain, etc. between dives						
	Exposure to cold while diving						
	Exposure to noise while operating the compressor or boat engine						
	Exposure to noise while diving						
	Exposure to carbon monoxide gas (or other noisive gasses) in the divers' breathing air						❷
	Exposure to diesel emissions in the divers' breathing air						❷
Biological hazards: 							

Part 3

Preventive measures

①
- Use rubber and hardened security footwear when working and not-diving.
- Use rubber footwear when diving, remove flippers as soon as practical.

②
- There is an internationally recognized alpha flag that tells everybody in the vicinity that there is a diver underwater.
- When the flag is displayed all boats should stay clear and proceed very slowly.
- An international dive flag should be displayed so everyone can see it when a diver is underwater.

③
- Use Surface Supplied Air (SSA) whenever possible. Hose must provide (at least) air, communications and a pulling cord.
- When using SCUBA divers should always work in pairs, within easy view of another diver. This allows one's partner to help in freeing one from obstructions or in sharing air if a hose or a mask is lost or ruptured. In a diving emergency when the air supplying hose or mask is lost or ruptured, divers can share air at depth. If necessary two divers can slowly surface together sharing air.

④
- Construct and maintain a guard around drive belts and other dangerous material.

⑤
- For every dive, a diver should surface no faster than 10 metres per minute and exhale while surfacing or no faster than the slowest bubbles.

⑥
- The diver must always breath normally.
- One must never hold one's breath. While coming up to a new depth or to the surface, the diver should always exhale slowly.

⑦
- Dives should be planned so that the deepest part of the dive is carried out first and the diver works progressively shallower. By doing the deepest dive of the day first and each dive progressively shallower nitrogen levels are slowly reduced and the risk of decompression sickness decreases.
- Divers must maintain a certain level of fitness because fit people has lesser chance on DCS.

⑧
- Before diving, between dives and after diving, divers should drink large amounts of

water to prevent dehydration which increases the risk of decompression sickness.

- During a diving day a diver should try to drink at least 3 to 4 litres of water.

⑨

- By making a safety stop at 3 metres for 3 to 5 minutes, nitrogen in the divers' body has more time to turn into gas and escape through breathing.
- A good practice is to hang a line with a weight with a flag or a marker at a depth of three metres. The divers then find the marker and hold onto the rope for three to five minutes.
- A diver with a watch or someone on the boat should keep the time and tell the divers when the five minutes has passed.
- For long, deep dives one or more decompression stops may be necessary (see adequate tables).
- Special training is necessary to read diving tables to determine the time and depths of decompression stops.

❶

- While resting on the surface the body is able to get rid of nitrogen simply through breathing.
- The longer the diver is able to rest between dives the more nitrogen the diver will be able to get rid of.
- A work routine should be developed where divers are able to stay on the surface at least one hour between long, deep dives.

❷

- The traditional dive boat can be modified to reduce the possibility of carbon monoxide gas entering the air supply.
- The air intake for the compressor needs to be moved well away from the exhaust gases of both the compressor and the boats engine.
- Often extending the air intake two meters above the compressor using a hose attached to a pole will reduce considerable the presence of exhaust gases in the breathing air.

❸ •

❹ •

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Part 4

Synonyms

Diver, construction diver, commercial diver.

Definition and/or description

Using surface supplied compressed air or air from self-contained breathing apparatus, dives in waters up to 50 metres depth to cut; to weld; to construct; to clean; to inspect; … On rotation (while not diving) may be called to monitor the compressor, to tend to diving air hoses, to operate the communication console, to prepare the equipment for use and storage, to act as a security diver. Prior to dive will inspect the diving equipment and to help the diver get dressed. May also engage in diving salvage operations.

Related and specific occupations

Commercial diver, boat or ponton operator, diving tender.

Tasks

Attaching / Boat or ponton operating / Checking / Cutting / Diving / Explosives handling / Handling (lines) / Handling (hoses) / Handling (equipment) / Inspecting / Lifting / Loading / Maintaining / Observing / Operating / Positioning / Repairing / Storing / Transporting / Unloading / Videofilming / Welding

Primary equipment used

Air Hose / Boats / Compressor / Communications / Depth gauge / Dive flag / Diving mask / Diving suit / Fins / Gloves / Hoses / Shirts (long sleave with roll collar) / Shoes / Ropes / SCUBA equipment / SSA equipment / Watch / Weight belt

Workplaces where the occupation is common

Basically operates in shallow waters with low visibility from the waterside or ponton.

References

ILO's datasheet of Indigenous Fisherman Diver (webpages are removed from the site).