



November 2018

Use of underwater thermal cutting equipment in occupational diving

This bulletin provides guidance about the use of underwater thermal cutting equipment during occupational diving operations. It has been developed in consultation with the Diving Industry Advisory Group (DIAG).

Introduction

WorkSafe consulted with DIAG to determine whether SCUBA and SSBA are suitable breathing systems for an occupational diver who is using underwater thermal cutting equipment.

What are SCUBA and SSBA breathing systems?

SCUBA stands for Self-contained Underwater Breathing Apparatus. The diver is attached to a cylinder with a limited supply of breathing gas. SCUBA gear is commonly used in the recreational, scientific and aquaculture diving industries.

SSBA stands for Surface Supplied Breathing Apparatus. The diver receives a continuous supply of breathing gas through an umbilical cable (hose) that leads to the surface. SSBA is commonly used in the commercial and construction diving industries.

What is underwater thermal cutting?

Underwater thermal cutting refers to the exothermic process of cutting materials (such as ferrous metals) with a tool that combines oxygen and heat to oxidize or melt the materials. It is often called Broco® cutting, named after one of the most common systems used for cutting under water.

The risks for divers carrying out underwater thermal cutting include the loss of breathable gas, entrapment, explosive gas build-up and electric shock.

Recommendations

- A diver carrying out underwater thermal cutting should only use SSBA.
- To ensure that SSBA is used safely, before work starts identify the control measures that can be used to eliminate or minimise risk. Use site controls, supporting structures and engineering designs that are appropriate for the working conditions. For example, by providing ventilation under a pier, constructing a working platform, or securing the diver's umbilical and power cables away from the working area.
- **Do not use SCUBA** when carrying out underwater thermal cutting, because of:
 - the high risk of the diver receiving an electric shock, and
 - the limited ability of the diver to communicate with the surface tender.

Further information

WorkSafe's [Occupational Diving](#) guidance and related information.