Near-miss during subsea cutting operations

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A Member has reported an incident during subsea gas flame cutting in which a flashback occurred and one oxygen hose burst in two places.

What happened?

During gas flame cutting with a PVL torch, it was noticed that the oxygen bottle for the gas mixture was approaching depletion. Cutting operations were suspended whilst a new oxygen bottle was prepared. The diver reported closed valves on the torch and the deck crew closed the old oxygen bottle and unscrewed the regulator. The regulator was then screwed to a full bottle and the bottle opened. Cutting operations were about to restart when the diver had difficulty igniting the torch. After several attempts at ignition, the flashback occurred, resulting in the hose bursting around 4metres underwater and also on deck, causing a small fire. The fire was put out by deck crew. There were no injuries.

Our member's investigation revealed the following:

- There had been no flash back arrestors on the regulator side of the oxygen hoses.
- The available operations/user manual did not provide clear instructions.
- The procedures used to change out the oxygen bottle were not correct.
- The torch valve was not closed properly.

The following steps were taken to ensure there was no reoccurrence:

- All gas and oxygen hoses were fitted with flash back arrestors and non-return valves at the regulator side.
- Non-return valves were fitted at the torch side.
- Oxygen and/or gas quads were used instead of single bottles.
- The incorrect procedures and work Instructions were updated and rewritten, and redistributed to personnel.
- The Member together with the equipment manufacturer is researching further development of equipment and instructions.

Please see linked letter about this from the equipment manufacturer.

Members may wish to refer to the following IMCA documents in which further

information can be found:

- Guidelines for oxy-arc cutting
- IMCA international code of practice for offshore diving

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