

## Study of hazards and risks associated with localised differential pressure

QinetiQ are conducting a study for the United Kingdom (UK) Health and Safety Executive (HSE), (a non-profit governmental organisation), on localised differential pressure hazards in the diving industry.

This project follows in the wake of a number of recent diving incidents where differential pressure (or Delta P) was identified as a causative agent or contributory factor.

Divers can encounter a localised pressure gradient when:

- Water levels between adjoining areas vary (e.g. at dams or locks);
- Water is juxtaposed against gaseous voids at different pressure to the water pressure (e.g. at submarine pipelines);
- Water is mechanically drawn through intakes (e.g. at cooling water intakes for power stations or at sea chests on ships) and ducted propellers, impellers, or other types of thrusters are operated in the vicinity of diving operations (e.g. on shipping).

Examples of incidents where divers encountered differential pressure hazards include:

- A diver working in the vicinity of a partially open sluice gate was trapped when the tide changed lowering the water level downstream of the gate.
- Divers operating in 30 m of water damaged a valve on a pipeline containing gas at atmospheric pressure. The sudden inrush of water into the pipe pulled the arm of one of the divers into the resulting hole.
- Inadequate lockout procedures allowed the activation of a bow thruster while a diver performed a hull inspection. The diver was drawn into the propeller.

As a first stage of this project QinetiQ are collecting information from the diving community. It is expected that the outcome of the project will allow the HSE to formulate industry guidance, which will be of benefit to the diving community as a whole.

This information could take the form of:

- accident or near miss reports where pressure gradients have been cited as a primary or contributory factor;
- anticipated differential pressure risk scenarios;
- examples of successful procedures or technology in the management of differential pressure hazards.

Reports and data will be treated in the strictest confidence and individuals or organisations will not be identified in the final document. A confidentiality agreement can be made if required.

If you feel you could assist with this study I would be most grateful if you could contact me or forward any relevant information (details at the foot of the page) at your earliest convenience. Any assistance you can provide with this project would be gratefully received.

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