Ontario Underwater Council
www.underwatercouncil.com

2013 Report on Scuba Diving Incidents of Ontarians Outside Ontario, and Recommendations to Prevent Recurrence

Compiled by:

Stephen Weir	*Advisor, Sport Safety*
Ayisha Hassanali	*Advisor, Sport Safety*
Mar Smith	*Director, Sport Safety*

as of August 19, 2014

Document Control

Date	Description of Change	By Whom
August 11, 2013	Incident – Ginnie Springs, Florida	Stephen Weir, Ayisha Hassanali
August 16, 2013	Updated Ginnie Springs Incident	Ayisha Hassanali

OUC Contact Information:

Ontario Underwater Council
1 Concorde Gate
Suite 109
Toronto, Ontario
M3C 3N6

Phone: 416 426 7033
Fax: 416 426 7336

Email: ouc@underwatercouncil.com
Website: www.underwatercouncil.com

Submitting an Incident Report

To submit a report, you should contact one of the ***OUC board members***.
You can also complete and return an ***Incident Submission Form***.

For comments on this document please contact

OUC's Director of Sport Safety
ouc.safety@underwatercouncil.com

Table of Contents

Ontario Underwater Council

Report on Scuba Diving Related Incidents outside Ontario, and recommendations to prevent recurrence.

Goals:

The goals of this report are to:

- **Educate** (inform) readers on Scuba Diving incidents that have occurred outside Ontario, the direct causes leading up to those incidents, and recommendations to prevent recurrence.

- **Prevent** and /or reduce the numbers and/or severity of future scuba diving incidents wherever divers are diving, thus making the sport of scuba diving more safe

- **Earn** the privilege of continued sport self-governance by demonstrating that the greater Ontario scuba diving community cares deeply about sport safety and that it works hard to identify past incidents, and prevent future ones.

Intended Audience:

Although this report is posted on the Web and can therefore be read by anyone, the ***intended*** audience for this report is:

- Ontario Underwater Council (OUC) Members and Member Organizations (Clubs, Charter Operators, Retailers, etc.)
- Not-yet OUC Members and Member Organizations (Clubs, Charter Operators, Retailers, etc.)
- Scuba Certification Agencies (e.g. ACUC, PADI, NAUI, BSAC, etc.) that certify divers in Ontario
- Scuba Safety Organizations (e.g. Divers Alert Network) that provide services in Ontario
- Ontario Government, Ministry of Community Safety and Correctional Services, Office of the Chief Coroner (Dr. Andrew McCallum at time of publication)
- Other Canadian Provincial Underwater Councils, whether still self-governed, or provincially-governed (e.g. Quebec)
- Other Ontario Provincial Sport Organizations
- Other users of Ontario waters, including but not limited to: commercial and recreational power boaters, sailors, hydro-electric power generating companies, commercial and sport fishing users, personal watercraft operators, etc.

Scope:

The scope of this particular report includes:

- Only scuba diving incidents that OUC has learned about independently and those that have been brought to OUC's attention by outside parties.
- Scuba diving incidents that have occurred anywhere in the world involving divers whose principal residence was Ontario at the time of the incident / fatality
- Recreational scuba diving incidents
- Technical (including Re-breather) scuba diving incidents
- Recommendations to prevent recurrence, where sufficient direct causes have been identified to allow relevant recommendations to be made.
- Corroborated information from public domain, survivors interviews, coroner's reports, police, witnesses, that OUC deems to be helpful in understanding the incidents/s.

The following are *not* in scope of this report:

- Snorkelling incidents
- Free-diving (breath-hold diving) incidents
- Everything that is not expressly listed as in-scope of this report shall be, by definition, out of scope of this report.

Publication Frequency:

OUC's goal is to re-publish this living document as soon as possible after any of the following occur:

- After investigation of incidents within Ontario have been satisfactorily investigated. The Ontario Scuba Incident & Prevention Report remains the OUC's top priority.
- When we become aware of, and have confirmed that an incident has occurred.
- When we receive more information or facts about the incident.
- When we develop recommendations to prevent the incident from recurring in the future.
- If you wish to be notified of these re-publications, please sign up to OUC's Safety Advisory e-mail distribution list at www.underwatercouncil.com/mailinglist

Recommendations:

The goal of OUC's recommendations is to prevent future recurrence of scuba incidents.

- OUC can only publish relevant recommendations to prevent recurrence if we have sufficient hard facts relating to the direct causes of the incident.
- This means that it could take some time between initial publication that an incident has occurred, and the subsequent publication of relevant recommendations to prevent recurrence.
- OUC needs ***your*** (the greater Ontario Scuba Community's) help to reduce / prevent future scuba diving incidents. If you are aware of such hard facts or information regarding an incident, or know someone who is, please inform BOTH of the following individuals as soon as possible:
  - OUC's Director of Sport Safety at:
    - ouc.safety@underwatercouncil.com AND
  - OUC's Scuba Incident & Prevention Report Coordinator at:
    - ouc.reports@underwatercouncil.com
- Wherever possible, OUC will position recommendations positively (what people ***should do*** to prevent future incidents), rather than negatively.
- OUC's recommendations may be directed inwards towards the diving community, and/or outwards to other users of Ontario Waters.
- In some circumstances, third parties such as Police, Coroner's Office, etc. may conduct all areas of the investigation into the incident, and only involve OUC after the investigation has been concluded. These third parties may then request OUC to develop the recommendations and to use OUC's communications channels and contacts to communicate them to the greater Ontario Scuba Community.

Disclaimer:

No claim is made by the OUC, OUC's Director of Sport Safety, OUC's Scuba Incident & Prevention Report Coordinator, or by any contributors, as to the completeness or accuracy of information contained within this report.

Notwithstanding the above, OUC, subject to the availability of its volunteer resources, makes every effort to verify and corroborate the information provided in this report, and to ensure that the recommendations to prevent recurrence are relevant, and if followed, would prevent a similar incident from happening in the future.

Certain personal risks are inherent in most sports, and the sport of scuba diving is no exception. By engaging in the sport of scuba, you accept these risks. No amount of training, experience, equipment, policies, etc. can completely eliminate all personal risks, and the OUC, its Board Members, Regional Coordinators, and Members are not responsible for any losses, injury, or death sustained as a result of members or non-members taking these risks.

SECTION A: Fatalities - Summaries & Recommendations

Fatalities - Summaries and Recommendations are listed in chronological order.

Date of Incident: 2013-08-08

Summary:

There was a fatal accident in a cave in Florida on Thursday August 8th, 2013. Carlos Fonseca, a resident of Caledon, Ontario, was diving in the Devil's Eye cave system, part of Ginnie Springs in Florida. Mr. Fonseca had been diving for about four years and was Full Cave trained, Trimix certified, and Sidemount Full Cave trained. He was a Wakulla Award recipient for having conducted safe cave dives. Mr. Fonseca was preparing an aluminum 80 cubic foot tank that was permanently and clearly marked with "O2" (oxygen) and "MOD 20" (Maximum Operating Depth 20 feet) as a stage bottle to 90 feet in order to extend his penetration distance into the cave. His team mates observed that the victim was about to use an oxygen bottle for a greater depth than it was considered to be safe for, and questioned him about it. The oxygen bottle was intended to be used down to a maximum operating depth of 20 feet, as marked by the victim. Mr. Fonseca, who had a full mix/blend station at home, replied that he had filled the bottles himself and knew that the bottle was filled with air. Mr. Fonseca's team mates repeated their concern about the bottle in question and the victim insisted that he knew it was air. Mr. Fonseca's computer was also set for air. No one had observed Mr. Fonseca analyze that tank that morning. The team continued to prepare for the dive and discussed the dive plan, reviewed the map and made contingency and emergency plans to turn the dive if necessary. Mr. Fonseca proposed to not make any visual jumps during the dive, which refers to crossing a gap between the main permanent guideline and where a branch line begins, without a gap spool.

The team, which consisted of Mr. Fonseca, Michel Therrien, and Shawn O'Leary, entered the Devil Springs cave system through the Eye, in the Santa Fe river. They went upstream about 400 feet and were about 1/3 of the way between the "park bench" and "Hill 400", when Mr. Fonseca began having a seizure and then lost consciousness. In the process, the victim spit the stage bottle regulator out of his mouth and after the tonic-clonic phase of the seizure, his team mates purged and inserted his back-gas regulator into his mouth. His team mates decided to bring the victim to exit through the Ear, going through a wide passageway known as the Gallery, passing one restriction, and with a direct, easier path out than back through the Eye. The team mates were watching Mr. Fonseca's face as they pulled him along for the 20 minute, challenging exit from the cave, ensuring that his nose was pinched, his regulator was in his mouth, and observing whether he was breathing. Mr. Fonseca appeared to begin breathing at two points on the way out of the cave as well as at the surface prior to possible cardiac arrest. As the group surfaced and shouted for help, other divers, including cave instructors, assisted in getting Mr. Fonseca to the shore and commenced CPR (Cardiopulmonary Resuscitation). Mr. Fonseca was transported alive to the hospital where he was later pronounced dead.

A cave instructor who took part in the rescue attempt later analyzed the tanks in the presence of members of the sheriff's department. The single AL 80 stage bottle was analyzed to be 98% oxygen. The partial pressure of oxygen was about 3.5 at the point of the seizure at a depth of about 85 feet, likely causing oxygen toxicity. There was an AL 40 deco bottle marked as and contained oxygen. The back-mounted double steel tanks were analyzed as having 30% oxygen content.

For public domain information of this incident, please refer to Section C, Appendix #1 of this document.

OUC Recommendations:

- ✓ ***Always follow all rules and protocols that you were trained for***
- ✓ ***Always analyze the oxygen and other contents of every tank every time***
- ✓ ***Always analyze a tank immediately prior to diving***
- ✓ ***Always fill a tank only with what it is labeled as; ie) only O2 in a tank labeled O2***
- ✓ ***Know and adhere to the maximum operating depth of a gas***
- ✓ ***During the dive, always verify the content and MOD of the tank you are about to switch to, have the team mates verify the tank, and then make the gas switch if it is correct***
- ✓ ***Verify that all team members analyze their tanks and all members are aware of the contents***
- ✓ ***If a team member will not follow protocols, refuse to partake in the dive***
- ✓ ***If any team member is uncomfortable with the process that is occurring, refuse to partake in the dive until and unless protocols are followed ie) a gas is analyzed and appropriate***
- ✓ ***Avoid complacency in all parts of the process***
- ✓ ***Visual jumps, even very familiar ones, are not recommended, and can complicate orientation with the stress and task loading of a rescue attempt***

Date of Incident: **2013-mm-dd**

Summary:

For public domain information of this incident, please refer to Section C, Appendix #2 of this document.

OUC Recommendations:

Date of Incident: ***2013-mm-dd***

Summary:

For public domain information of this incident, please refer to Section C, Appendix #3 of this document.

OUC Recommendations:

SECTION B: Near Misses - Summaries & Recommendations

Definition of a "Near Miss"

A "Near Miss" is any scuba-related situation or incident that did not result in a fatality, but that did put the diver/s health and/or safety at risk.

To report a near miss and submit it for consideration for publication in this report, please send an e-mail to ouc.safety@underwatercouncil.com with all relevant details.

Date of Incident: **2013-mm-dd**

Summary:

OUC Recommendations:

- *Recommendation 1*
- *Recommendation 2*

SECTION C: Appendices

Appendix #1

Public Domain Information on Scuba Fatality of 2013-08-08:

http://rosemarylunn.wordpress.com/2013/08/13/always-analyse-your-gas-statement-from-the-nacd/

"Always analyse your gas" – Statement from the NACD
August 13, 2013
Following a recent fatality at Ginnie Springs, the National Association for Cave Diving has issued the following statement.
NACD Gas Analysis Advisory

The recent death of a cave diver highlights the necessity to review some critical procedures that we should be doing before all dives – gas analysis. A couple of years ago there was a cave diver death in Cozumel that resulted from breathing high carbon monoxide content in a cylinder. This created quite a commotion that caused the sales of CO analyzers to jump quite a bit. These days it's not uncommon to see divers analyzing their cylinders for CO during the pre-dive process. However, even with that awareness it is a bit surprising that there are still divers that do not analyze all cylinders for oxygen content. While the NACD does not have courses for mixed gas procedures diving at this time, all NACD instructors should be emphasizing the need for gas analysis during the pre-dive process.

It is always worth having everything you need to hand when analysing and labelling diving gas. 990 Magazine

Divers should re-analyze all cylinders to be used on a dive at the site during the pre-dive process and make sure the cylinders are properly labeled with oxygen content, helium content (if any helium in the blend), and MOD. This should occur even if the cylinders were personally filled by the diver. Each and every cylinder should be analyzed and clearly labeled, even if there is an isolator connecting the cylinders, and regardless what gas is believed to be in the cylinder.
While it is understood that not everyone may own enough cylinders to permanently mark them with content and MOD, cylinders being used for 100% oxygen should be permanently marked and only used for 100% oxygen. However, permanent markings do not substitute for additional labeling. Even permanently marked cylinders need to be analyzed and labeled with

content and MOD to show confirmation of the contents. There should never be any confusion about labeling. It should be clear and concise to anyone who looks at it.
Finally, there is some controversy over whether gas analysis should be an individual responsibility or a team responsibility. All divers with mixed gas training of any kind have been instructed that all gas should personally be analyzed prior to every dive. Almost every dive training class emphasizes gas sharing with teammates. With that, there is always the potential for a diver to be breathing from a teammate's cylinders. Gas analysis and confirmation should be a team project during the pre-dive process.

Rosemary E Lunn analysing a Nitrox stage prior to diving Scapa Flow / 990 Magazine

The lessons to take away from this:
1. Analyze every cylinder, whether you think it is filled with air, Nitrox, Trimix, or Oxygen,
2. Label every cylinder with gas content and MOD
3. Remove all old, Oxygen, Nitrox, and Custom Mix labels if the cylinder is to be repurposed.
4. Make gas analysis a team project.

If you are unfamiliar with or out of practice with analyzing gas contact any NACD instructor and request a gas analysis refresher. If you do not have an NACD instructor nearby contact the training committee and we will provide you with an instructor who can help you.
Gas analysis is not an optional activity. Your life depends upon it.
Rob Neto
NACD International Training Director
NACD International Safety Officer
Source: NACD

Other Related Links:

Scubaboard Thread:

http://www.scubaboard.com/forums/accidents-incidents/462563-fb-friend-posted-his-brother-died-today-ginnie-springs.html

Cave Diver's Forum (membership required):

http://www.cavediver.net/forum/showthread.php/23650-Accident-at-Ginnie

http://www.cavediver.net/forum/showthread.php/23649-Death-at-Ginnie

The Deco Stop (membership required):

http://thedecostop.com/forums/showthread.php?53412-Fatality-at-Ginnie-8-8-13

Appendix #2

Public Domain Information on Scuba Fatality of 2013-mm-dd:

Other Related Links:

Appendix #3

Public Domain Information on Scuba Fatality of 2013-mm-dd:

Other Related Links: