

# OD-4D

**A R&D subsidiary of O'Donel High School**  
**Mount Pearl, Newfoundland and Labrador, Canada (2000 km from Orlando)**



## OD-4D STAFF

**Back Row (L to R): Kristen, Connor, Lauren, Megan, Brandon, Stephen, Christian**

**Front Row (L to R) Ashley, Peter, Amanda, Alexia, Victoria (Missing: Christina, Erin)**

## Human Resources Profiles.

Grade	NAME	POSITION	ROLES
12	<b>Stephen Whiffen</b>	<b>Chief Executive Officer</b>	<b>Management Fabrication</b>
12	<b>Christina Hamlyn</b>	<b>V.P. Communications</b>	<b>Graphic Arts, Publicity</b>
11	<b>Megan Howse</b>	<b>Chief Financial Officer</b>	<b>Deck Management</b>
11	Peter Burton	Technician	Tool Design & Fabrication
11	Brandon Ellsworth	Manager	Media Outreach
11	Lauren Hayes	Manager	Human Resources
11	Ashley Hunter	Technical Writer	Thruster Design & Fabrication
10	Victoria Hynes	Technician	Design & Fabrication
11	Amanda Mansfield	Manager	Gov. Reg. Aff.
11	Kristen Marks	CAD Technician	HR Management
11	Erin Matthews	Technician	Tool Design & Fabrication
10	Christian Samson	Technician	Tool Design & Fabrication
11	Alexia Spencer	Software Manager	Software Design & Testing
11	Connor Whalen	Pilot / Technician	Electronics

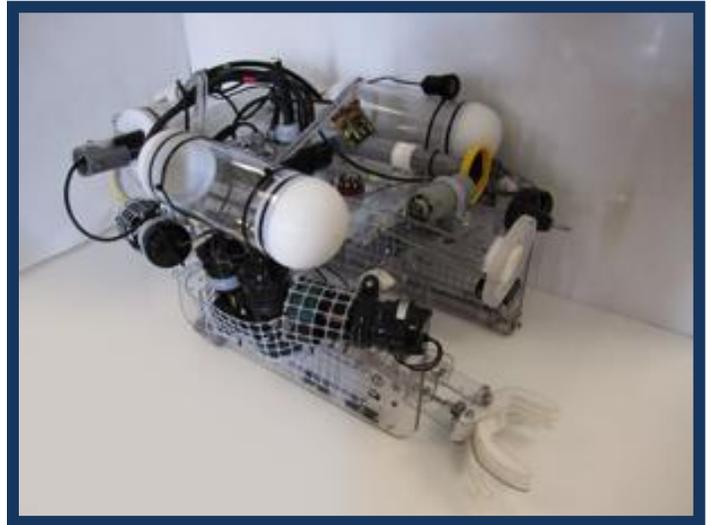
**Company Directors:** Jim Hickman, Melanie Ryan, Joseph Santos.

## Company History:

**OD-4D** and its parent organization have participated in the Regional MATE ROV Competitions since 2004. We have attended the international competition from 2004 to 2006 and most recently in 2011. Returning international ROV competition staff are: Alexia, Christina, Connor, Kristen and Stephen. In 2011 we were one of only four teams internationally to have earned a perfect mission score. We are terribly excited about this year's competition, as we have a very effective ROV. It had to be rebuilt from scratch during the week of our Regional competition due to a catastrophic leak into the onboard electronics can. Now it's better than ever!

## ROV Specifications:

Our ROV is named **"ICE"** (International Competitive Entry) as it is fabricated almost entirely with transparent Lexan™, a tough polycarbonate plastic. Also because it's **REALLY COOL!** The Lexan™ pipes which serve as our main buoyancy chambers and "fuel oil" vacuum pump are capped by HDPE plugs, with "O-ring" seals. These plastic materials are very durable, easy to: form, bend, drill, and contour by our CNC Lathe. **"ICE"**'s frame measures 46cm L x 32 cm W x 25cm H. It is a unique modular design which permits size adjustment as the missions change from year to year, and is easy to disassemble and transport.



Special features include two multi-function pneumatic tools.

- i. A two-axis miniature robotic arm is used for holding the tool which attaches the lift bag to the "fallen mast"; delicately collects the endangered corals and relocates them to appropriate areas and has the additional ability to pick up dropped items from the bottom.
- ii. A pneumatic cylinder (40 cm L stroke x 2 cm bore) extends our compass in front of the ROV, away from the influence of onboard motor magnets. It is used to take directional measurements of the hull orientation and detect metal in the debris field around the shipwreck. It also serves as the retractable **"intromittant organ"** which pierces the ship's hull and extracts 400 ml of hazardous "fuel oil" from its tanks.

Safety features include: cowling protectors for the props, smooth rounded corners and edges, neatly bound and attached wiring using small commercial, "wet-mateable" waterproof electrical connectors; pneumatic pressure regulator and over-pressure relief valve, and multiple video-cameras for safe navigation and mission performance. In addition, OD-4D has developed and used safety protocols for in-shop and on-deck activities, which are rigorously enforced and observed.

**"ICE"** weighs 11.3 kg in air, 3.0 kg in water, and, of course, 0.0 kg (neutrally buoyant, when the buoyancy chambers are filled with air). The entire cost of the unit's components and electronics is \$5200 of which \$2400 is the value of donated items. This cost has been spread over the past three years.