

# JOB SAFETY ANALYSIS

Safety information for Avalon 2018 - *Avalon* - ROV

<b>Analyzed by:</b>	
<b>Date:</b>	
<b>Time:</b>	
<b>Location:</b>	
<b>Personal Protective Equipment (PPE)</b>	
<ul style="list-style-type: none"> <li>• Safety glasses</li> <li>• Protective gloves</li> <li>• Non-slip shoes</li> </ul>	



Hazard Type	Risk of Injury & Details	Control Measures
<b>Manufacturing</b>		
Electrical	Electric shock or burns from faulty electrical equipment. Damaged cabling, poor earthing etc. Risk of electrocution due to faulty electrical appliances which are not maintained in a safe condition.	All Portable Appliances Testing (PAT) is to be carried out at correct intervals. No electrical appliances are to be used under any circumstances without prior PAT, this includes privately owned items brought into laboratories and workplaces. All items should have a visual inspection by the user prior to use to check for faulty wires or damage. Any damage should be reported to the Technical staff immediately and the item <b>MUST NOT</b> be used. Electrical items should be switched off after use.

Other	Use of hand tools which may cause cuts and pinches.	Visually inspect hand tools prior to use. Tools should be stored safely in drawers when not in use. Ensure the user is competent to use tools. Wear suitable eye protection.
Vapours & Fumes	Inhalation of solder fumes and vapours.	Ensure adequate ventilation. Use fume extraction in confined areas or if soldering for prolonged period of time.
Fire & Burns	In case of a fire, user of the lab could suffer fatal injuries from smoke inhalation/burns. Flammable materials and substances in the work area. Injury to personnel and destruction of property.	Know location of nearest safe exit from building. Know where assembly point is. Know how to raise the alarm. Fire Alarms tested weekly in all buildings. Keep work area tidy at all times. No Smoking allowed in any laboratories under any circumstances. All electrical appliances must be PAT tested and have a sticker attached. Appliances should be switched off when not in use.
Slips, Trips & Falls	Various injuries as a result of slipping on wet or dusty surfaces. Tripping over poorly sited equipment, boxes, cables etc. Staff and visitors may be injured if they trip over objects or slip on spillages	Keep work areas clean and tidy. Do not obstruct walkways/traffic areas with equipment/boxes/cables etc. Mop up spillages immediately. Ensure all cables are secured and do not cross walkways, corridors or aisles. Good housekeeping should be maintained. Trailing leads or cables should be moved or protected. Keep work areas clear, eg no boxes left in walkways, deliveries stored immediately. Report and/or mop up spillages immediately.
Fire & Burns	Burns to the hands, serious damage to tissues.	The Soldering iron must be placed in the 1 holster when it is not immediately needed. Always be aware of when the iron is on and off. If in doubt, always treat the soldering iron as being hot; never touch it from the soldering end only by the protected handle. Once the task is completed, ensure that iron is secured in its holder and that it is not

		left unattended until cooled down. Do not touch the hot tip of the iron. Do not put your face too close to where you are soldering. Let the solder cool down first before touching it. Be aware that metal is a conductor of heat so if soldering to anything metal place it in a vice or suitable holder
Electrical	Risk of electrocution due to improper use of power supply. Risk of electric shock from touching live wires. Risk of damaging equipment due to short circuits.	Visually inspect all wires and circuits before plugging them to the power supply. Ensure all wires and circuits are insulated to prevent users from accidentally touching them. Test all circuits before connecting to power to ensure there are no short circuits
Spillages	Damage to equipment due to water spillage.	Keep water away from equipment at all times. Ensure hands are dry when handling equipment. In case of spillage, disconnect the equipment immediately. Notify a member of staff and ensure the spillage is contained and dried.
Mechanical	Cuts or injuries from touching rotating propellers. Notify a member of staff and ensure the spillage is contained and dried.	Keep hair tied back. Keep fingers away from propellers when handling the thrusters. Ensure that the thruster is off when not in use.
<b>Operation</b>		
Transportation	The risk of a back and hand/fingers injury when carrying an ROV. Foot injuries in case of dropping of the vehicle.	Always carry the robot with another person, lift it from the ground at the same time with the knees initially bent. Do not lift it too high. Do not grip its sharp edges, make sure the elements you hold are safe. Carry the robot only in appropriate non-slippery footwear.
Electrical	Electroshock.	Make sure the hands are dry when connecting to power supply. Never allow electrical components to have direct contact with water by using

		appropriate insulation. In case of leak detection, cut power immediately, do not touch water or any components of the ROV. Do not turn the power on until the problem is resolved. Use fuses.
Body injuries	Injuries of hands, fingers, face caused by thrusters when working or in case of a damage.	Keep away from the ROV when the thrusters are on. Do not touch under any conditions. Do not allow untrained individuals to approach or touch the robot when the thrusters are rotating. Make sure the whole team wears appropriate PPE in case of damage of the thrusters.
Slipping, drowning	Risk of tripping nearby the edge of the pool and falling to the water.	Wear an appropriate footwear when working near the swimming pool. Avoid stepping onto wet floor and if the floor is to wet, make sure you dry it prior to stepping on it. Do not approach the edge of the swimming pool and be aware of the surroundings. If the footwear gets wet, dry it before spreading the liquid around. Never launch the ROV alone, make sure the operators can either swim or wear life jackets.
Tripping over wires or tether	Tripping over the wires or the tether is a potential risk when the ROV is operated.	Keep an eye on all wires and the tether and do not allow them to tangle. Mark them with labels or bright colour stickers so they are more visible. Wear proper footwear. Do not allow external individuals to approach to the wires or tether.
Pneumatics	Uncontrolled release of air may lead to uncontrolled motion of ROV when it is being tested	Inspect tubing and connectors before pressuring the system. Only tighten the pneumatic connectors when not under pressure. A single point to shut down all the pressure system
Pneumatics	Body parts trapped between the mechanical components of the pneumatic systems	Before activation, ensure there is no body part in the operation range of the compressor. Tie long hair back. Wearing loose clothes should be avoided