

Job Safety Analysis Form

Task: Developing to launch ROV

Required Protective Equipment
<ul style="list-style-type: none"> ● Non-slip, closed shoes ● Safety glasses ● Sunscreen and other forms of sun protection

General:

Task	Potential Hazards	Controls
1. Using hand tools (hacksaws, hand drills, files. Screwdrivers, hammer etc.)	1.a. Physical Injury from blades, drill bits, sharp edges, or heavy objects	1.a.i. Insure tool users know how to operate the tool 1.a.ii. Make sure tool users have proper PPE 1.a.iii. Avoid usage when unable to concentrate 1.a.iv Insure correct tool is used for the task
2. Using power tools (power drills, sanders, soldering irons, etc.)	2.a. Physical Injury from blades, drill bits, sharp edges, or heavy objects 2.b. Physical injury from improper usage 2.c. Internal injury from fumes such as soldering irons 2.d. Potential chemical contamination from substances such as lead solder	2.a.i. Insure tool users have required PPE 2.b.i Make sure tool users are qualified to use power trials 2.b.ii Avoid usage of tools when tired to stay away from carelessness 2.c.i. Use proper ventilation tools when fumes are present 2.c.ii. Use proper PPE at all times 2.d.i. Use lead-free solder and maintain a clean working place
3. Using rapid prototyping technologies	3.a. Ultrafine particulate and fume emissions from melting plastics 3.b. Risk of fire from high temperatures 3.c. Physical injuries such as burns from heated parts	3.a.i. Use proper ventilation at all times 3.b.i. Keep flammable materials away from 3D printers in operation 3.b.ii. Have fire extinguishers or other anti-fire materials 3.b.iii. Always have 3D printer under surveillance when running 3.c.i. Wait at least half an hour before removing part from 3D 3.c.ii.

4. Electrical Safety	4.a. Burned hands/fingers from mishandling or improper storage of soldering equipment	4.a.i. During usage of a soldering iron, be wary of people closeby the iron as to prevent accidental burning of others 4.a.ii. Do not use soldering equipment in areas that others frequently pass by 4.a.iii. When not in usage, place the soldering iron back into the stand and turn off the switch
5. ROV Operation in the water	5.a. Slipping/falling	5.a.i Avoid slippery surfaces while walking 5.a.ii Kneel down while retrieving items from the ROV at the water's surface
6. General ROV design and construction	6.a. Injuries from improper usage of cutting materials, such as saws or PVC cutters	6.a.i. Never point the tools in the direction of another teammate
7. Lifting heavy objects	7.a. Injuries from falling objects	7.a.i Always have at least two members carrying heavy objects
8. Performing unscheduled maintenance	8.a. Damage and/or injuries sustained from poor planning	8.a.i. Evaluate all decisions before putting them into place onto the ROV

Site Tasks (Working at Other Sites):

Task	Potential Hazards	Controls
1. Unloading and unpacking ROV materials	1.a. Injuries received from the vehicle falling on a person	1.a.i. Three members are necessary for transport of the ROV, each member carrying either the: electronics, control box, or tether.
2. ROV inspection	2.a. Injuries from moving ROV motors unintentionally moving	2.a.i When not in use, do not supply power to the vehicle
3. Dry testing	3.a. Fire caused as a result of improper or damaged wiring	3.a.i Check all electrical components of the vehicle before dry run testing
4. Testing wet equipment	4.a. Electrical shock as a result of wires exposed to wires	4.a.i Thoroughly inspect all wires to ensure they are not exposed before operation of the robot