



# JOB SAFETY ANALYSIS (JSA)

Team Screwdrivers 2016, SVKM'S NMIMS MPSTME, Mumbai, India

**Protective Gear required:** Helmet, Pair of gloves, Goggles, Ear-muffs, Close-toed and traction Shoes. (any additional protection is always a good idea).

TASK	POTENTIAL HAZARDS	CONTROLS
<ul style="list-style-type: none"> <li>Using hand tools (hacksaws, files, hammers, screwdrivers, sanding paper)</li> </ul>	<ul style="list-style-type: none"> <li>Physical injury such as cuts and bruises</li> </ul>	<ul style="list-style-type: none"> <li>Ensure every member handling tools has been trained for its use</li> <li>Ensure every member using tools is wearing Protective Equipment (gloves and eye protection)</li> <li>Correct tools are used for the task</li> </ul>
<ul style="list-style-type: none"> <li>Using power tools (hand drills, grinders, dremel, soldering gun)</li> </ul>	<ul style="list-style-type: none"> <li>Physical injury such as cuts and bruises</li> <li>Physical injury from improper handling of tools</li> <li>Electric shock</li> <li>Physical injury from fumes (like that of solder and flux)</li> </ul>	<ul style="list-style-type: none"> <li>Ensure every member handling power tools is trained for its use</li> <li>Ensure every member using tools is wearing Protective Equipment</li> <li>Ensure power tools are connected to grounded power supplies</li> <li>Ensure use of lead-free solder</li> </ul>
<ul style="list-style-type: none"> <li>Electrical and Electronics Safety</li> </ul>	<ul style="list-style-type: none"> <li>Static discharge</li> <li>Electric shock</li> <li>Electric fires</li> </ul>	<ul style="list-style-type: none"> <li>Ensure proper personal grounding</li> <li>Ensure safe connections are made and grounded power supplies are used</li> <li>Ensure proper fuses or circuit breakers are used on power supplies</li> <li>Ensure connections are free from shorts and use good wiring</li> </ul>
<ul style="list-style-type: none"> <li>ROV and systems unloading and unpacking</li> </ul>	<ul style="list-style-type: none"> <li>Back injury from lifting of heavy crates</li> <li>Risk of falling or tripping due to packaging material</li> </ul>	<ul style="list-style-type: none"> <li>Ensure there are two or more people to lift heavy objects</li> <li>Ensure work area is clear of wires and other unrequired material</li> </ul>

<ul style="list-style-type: none"> <li>ROV assembly</li> </ul>	<ul style="list-style-type: none"> <li>Injury such as cuts from sharp edges or tools</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that every member working on assembly is wearing Protective Equipment</li> <li>Handle every component slowly and carefully</li> <li>Handle tools in an organized fashion, do not leave tools unattended or scattered around</li> </ul>
<ul style="list-style-type: none"> <li>ROV equipment test (dry)</li> </ul>	<ul style="list-style-type: none"> <li>Electrical fire</li> <li>Physical injury such as cuts to fingers</li> </ul>	<ul style="list-style-type: none"> <li>Ensure there are no loose power connections</li> <li>Ensure area, especially power supplies are free from presence of water</li> <li>Ensure all power supplies are properly grounded</li> <li>Ensure all main electrical connections use a fuse or circuit breakers</li> <li>Ensure vehicle is not powered when manually inspecting thrusters and motors using hands and fingers</li> </ul>
<ul style="list-style-type: none"> <li>ROV launch</li> </ul>	<ul style="list-style-type: none"> <li>Injury due to slipping/ falling around pool deck</li> <li>Electric Shock</li> </ul>	<ul style="list-style-type: none"> <li>Deck crew should wear non slip footwear and be careful about tether and other hazards of tripping</li> <li>Ensure each member of deck crew can swim and as additional safety wearing personal flotation device</li> <li>Ensure that all electric connections are secure and waterproofed</li> <li>Ensure that power supply and extension wires are properly wired and at safe distance from water</li> </ul>
<ul style="list-style-type: none"> <li>ROV retrieval</li> </ul>	<ul style="list-style-type: none"> <li>Injury due to Moving parts such as Thrusters</li> <li>Heavy straining and further pains in the backbone due to heavy lifting</li> </ul>	<ul style="list-style-type: none"> <li>Proper care to be taken while Picking the ROV.</li> <li>Special handles provided to lift the ROV.</li> <li>Group of two (maybe more) people to pick up the Vehicle.</li> </ul>