

Altum Operations

Job Site Safety Analysis

Task	Hazards	Control Risk	Responsibility	Initials
Building the ROV				
Operating manual tools	<ul style="list-style-type: none"> • Injury from handling sharp tools • Cut items entering eye 	<ul style="list-style-type: none"> • User has been trained in use of tool • Correct tool is being used • Goggles are worn 	Engineers	
Operating electrical tools	<ul style="list-style-type: none"> • Injury from handling sharp or hot tools • Cut items entering eye • Loose clothes or hair getting caught in tool 	<ul style="list-style-type: none"> • User has been trained in use of tool • Correct tool is being used • Goggles are worn • Dress code followed 	Engineers	
Soldering	<ul style="list-style-type: none"> • Burns from soldering iron or solder • Fumes getting in eye • Fumes getting inhaled • Lead solder causing chemical poisoning 	<ul style="list-style-type: none"> • User has been trained in use of soldering iron • Goggles are worn • Proper ventilation in workspace • User washing hands when complete 	Engineers	
Applying Epoxy	<ul style="list-style-type: none"> • Chemical burns from touching epoxy • Fumes getting inhaled 	<ul style="list-style-type: none"> • User follows all instructions written on epoxy container • Dress code followed • Proper ventilation in workspace 	Engineers	

Task	Hazards	Control Risk	Responsibility	Initials
Handling electricity when working on ROV	<ul style="list-style-type: none"> • Short circuits causing sparks and damaging ROV electronics • Electrocutation 	<ul style="list-style-type: none"> • Make sure people know when electronics are being powered • Prevent exposed wires in circuits • Make sure a fuse is connected to power 	Engineers	
Transporting ROV				
Putting ROV in box	<ul style="list-style-type: none"> • ROV getting smashed from improper packaging • Wet components leaking into controls 	<ul style="list-style-type: none"> • Careful and thoughtful packaging of components • Dry off wet components before putting in box 	All	
Carrying ROV box	<ul style="list-style-type: none"> • Back injury • Dropping box 	<ul style="list-style-type: none"> • Have two people carry box with safe posture • Transporters let partner know if they need to set the box down 	All	
Storing ROV	<ul style="list-style-type: none"> • Water accumulating in box and causing shorts later • ROV getting accidentally damaged 	<ul style="list-style-type: none"> • Have ROV dry out if still wet on a clean, protected counter • Store ROV inside closed box when not supervising 	All	
Poolside Setup				

Task	Hazards	Control Risk	Responsibility	Initials
Setting up and powering control system	<ul style="list-style-type: none"> • Short circuits causing sparks and damaging ROV electronics • Electrocutation • Control system getting dropped 	<ul style="list-style-type: none"> • Make sure people know when controls are being powered • Prevent exposed wires in circuits • Make sure the fuse is connected to power • Properly carry controls • Supervise control system when on table 	Pilots, Poolside Engineers	
Preparing ROV for deployment	<ul style="list-style-type: none"> • Accidentally dropping ROV in water • Water leaking from loose penetrators and screws 	<ul style="list-style-type: none"> • Properly carry ROV • Supervise ROV at all times • Ensure penetrators and screws on watertight enclosure are fully tightened 	Prop Collector	
Plugging in tether	<ul style="list-style-type: none"> • Water getting inside tether plug 	<ul style="list-style-type: none"> • If any water is located in plug, fully dry it out • Make sure plug is properly and fully tightened 	Tether Manager	
Using the ROV				
Recovering props from ROV	<ul style="list-style-type: none"> • Dropping props back inside water • Accidentally falling into water 	<ul style="list-style-type: none"> • Once prop is grabbed, inform pilots to let go of prop • Use proper lifting and lowering techniques to ensure safety 	Prop Collector	

Task	Hazards	Control Risk	Responsibility	Initials
Handling tether	<ul style="list-style-type: none"> • Tether getting tripped over work deck • Tether getting wrapped around props 	<ul style="list-style-type: none"> • Place signs informing others of tether • Keep full focus on managing tether 	Tether Manager	
Working with pneumatics	<ul style="list-style-type: none"> • Pressurized air building up • Water inside tube getting shot out and damaging electronics 	<ul style="list-style-type: none"> • Have gauge on air compressor or have tube detachable from pump • Ensure ROV is underwater when air is being pumped 	Prop Collector	
Working with hydraulics	<ul style="list-style-type: none"> • Water leaking or dripping inside control box 	<ul style="list-style-type: none"> • Keep any hydraulic manipulators away from controls 	Pilots	