Cougar Robotics

Job Site Safety Analysis (JSA)

Required Personal Protective Equipment (PPE)

- Closed-toed, non-slip shoes
- Tight-fitting clothing (non-loose)
- Safety glasses
- Hair ties (for tying back loose hair, as needed)
- At least one other employee to supervise and assist in operations

*All jobsite operations are done with the supervision of **Cougar Robotics safety officer**.*
The safety officer's role is to ensure that employees are complying with jobsite safety protocols.

Pre - Launch Inspection

Job Steps	Potential Hazards	Controls	Persons Responsible
Pressure Hold Inspection	Electrocution	1. Move all electrical components away from the splash zone. 2. Kill power immediately with indication of any electrical issues via main control or kill switch on control box. 3. Ensure that there are no loose parts or fluids in the pressure hold before sealing.	Mark Nathan
Tether Setup Tripping over the	Tether	1. No running is allowed near the pool. 2. Ensure tether is laid out neatly with no knots or tangles. 3. Make sure all students acknowledge the location of the tether.	Nick
Control Box Setup	Electrocution	1. The control box must be placed on a level, Pilots stable surface. 2. Verify that control box connectors are screwed in tightly 3. Ensure battery and power supply are completely dry and away from the poolside.	Mark Nathan
Personal Protection Equipment Check	Falling/slipping Pinching or catching of hair, fingers, or clothing	1. Ensure that all members have proper PPE and attire. 2. No running is allowed near the pool. 3. All students must be clear of the ROV before	Natalie

		control is enabled.	
Poolside Check	Falling/slipping Drowning	1. Clear the poolside of all loose objects/debris. 2. Make sure all students acknowledge the location of the tether.	Natalie Nick
ROV Deployment	Back, shoulder, and/or arm strain Hand/skin injury	1. When moving ROV, squat down by bending at the knees, not the waist. 2. Make careful, slow movements. 3. Avoid overexertion by moving in teams if needed. 4. Have a spotter to ensure the path of movement is clear when moving heavy objects. 5. Make sure there are no loose connections in the pressure hold. 6. Make sure all connectors and ROV attachments are secure. 7. All O-rings must be checked before the ROV is placed in-water.	Isaiah

Launch, Operation, and Retrieval

Job Steps	Potential hazards	Controls	Persons Responsible
ROV Startup	Electrocution Hand/skin injury	1.Ensure no water is in the pressure hold. 2. Ensure no parts, external or internal, have come loose or fallen off from the ROV. 3. Ensure all electrical connections on the ROV are secure. 4. Verify that no employees are directly touching the ROV. 5. All students must be clear of the ROV before control is enabled. 6. AFTER COMPLETING THE PREVIOUS 5 CHECKS, announce "POWER ON" before	Mark Nathan

		turning on the ROV.	
In-operation ROV Procedure	Water Damage Electrocution	1. If water is detected in the pressure hold, the power must be cut immediately (via main control or kill switch on control box). 2. Pressure hold must be completely sealed at all times in-water.	Isaiah
In-operation Personal Protection	Electrocution Pinching or catching of hair, fingers, or clothing Falling/slipping Drowning	1. Ensure that all members have proper PPE and attire. 2. Do not touch the ROV in-operation unless power has been cut. 3. No running is allowed near the pool.	Natalie Nick
ROV Retrieval Electrocution	Back, shoulder, and/or arm strain Hand/skin injury	1.Have recovery equipment (pole, net, etc.) handy and easy to access. 2. Ensure power has been cut/turned off before handling the ROV. 3. When moving ROV, squat down by bending at the knees, not the waist. 4. Make careful, slow movements. 5. Avoid overexertion by moving in teams if needed. 6. Have a spotter to ensure the path of movement is clear when moving heavy objects.	Isaiah