MARK 1

MiA robotics

ALEXANDRIA, EGYPT

JOB SAFETY ANALYSIS

2024 | TECHNICAL REPORT

جامعة الإسكندرية
ALEXANDRIA UNIVERSITY

TABLE OF CONTENTS

JSA EVALUTION TABLE

Tasks	*Hazards*	*controls*	*Responsibility*
Pre-launching			
Equipment Check	***Malfunctioning equipment, Delay, Electrical hazards***	*Ensure equipment is properly maintained and inspect for defects before use.*	*Serag Emad – Mechanical Leader*
TCU Setup	***Electrocution & Equipment Damage***	*1. Confirm the surface of placement is level and clean.* *2. Place the TCU properly on the surface.* *3. Verify all connectors are securely connected before announcing "TCU Ready".*	*Pilots & Co-pilots*
Setting up the tether	***Loose/Tangled tether***	*1. Be sure that there are no loops in the tether.* *2. Always store the tether neatly and securely*	*Deployment Team & Operation Crew*
	Tether damage from pulling	*Secure strain relief on ROV & TCU*	*Tether Men & TCU Crew*
Transportation of Mark1	***Slip, trip, or fall***	*Require at least two company members to lift Mark1.* *Wear nonslip gloves & shoes while holding Mark1.*	*Deployment Team*

Transportation of Mark1	***Miscommunication***	*Notify when and where Mark1 is headed and alert if any obstacle or delays occur.* *Clear the way of transportation*	*Marwan Mohamed - CEO*
Pool Side Check	***Falling/slipping*** ***Drowning***	*Clear Deployment area of all objects*	*Operation Crew*
Launching			
Power-up	***Electrocution*** ***Hand/Skin injury***	*Confirm that there is no leakage.* *Make sure there are no loose parts.* *Check that no one is in contact with the ROV before turning power on.* *Confirm power on by "ESC Arming sequence."*	*Deployment Team*
Operating thrusters	***Finger damage***	*Shrouds on thruster.* *Warning labels on T200 thrusters to seek awareness.*	*Yousef Mohamed - Mechanical CTO*
	Thrusters blade damage	*Always operate with shrouds mounted on thrusters.*	

Tether Handling	***Tripping*** ***Hand/foot injury***	*1. Running is prohibited near the tether.* *2. Ensure the tether is not tangled and is knot-free.* *3. Tether twisting is prohibited.*	*Deployment Team*
Retrieval			
ROV Pick-up	***Electrocution*** ***Back, shoulder, and/or arm strain*** ***Hand/skin injury***	*Ensure power is off from TCU.* *When picking the ROV from the pool make sure to lay low to the ground.* *Take care while moving the ROV.* *Make sure a team member is there to help clear the way & support in pick-up*	*Deployment Team*
Storage	***Equipment Damage***	*Confirm that the storage area is clear.* *Make sure the surface is stable.* *Insert the ROV into the storage area carefully and check that there are no contact points stressed in the ROV.*	*Marwan Mohamed – CEO*

SAFETY TRAINING

At M.I.A, ensuring the safety of all company members is paramount. Therefore, it is mandatory for every individual to undergo comprehensive safety training. This training program not only acquaints participants with essential safety protocols but also imparts foundational knowledge on the proper utilization of power tools for fabrication purposes. Moreover, it includes detailed instructions on handling the Remotely Operated Vehicle (ROV) effectively, both before, during, and after its operation underwater. The curriculum of this training is designed to instill a thorough understanding of potential hazards and the necessary precautions to mitigate risks effectively. Participants learn how to identify and address safety concerns in various work environments, ensuring a secure working environment for themselves and their colleagues. By emphasizing the importance of safety at every step, MIA aims to cultivate a culture of responsibility and diligence among its workforce, ultimately contributing to the well-being and productivity of the entire team.

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

To ensure employee safety during ROV operations, a comprehensive PPE policy is vital. Employees involved in ROV operations should be equipped with appropriate gear to mitigate risks associated with their work environment. This typically includes essentials such as **safety goggles or face shields** to shield the eyes from debris or hazardous chemicals, **gloves** to safeguard against cuts, abrasions, or chemical exposure, and **sturdy footwear** with slip-resistant soles to prevent slips, trips, and falls. Additionally, specialized PPE such as **vests** may be necessary for personnel directly involved. It`s also important to provide training on the proper use, maintenance, and limitations of PPE to ensure maximum effectiveness. By prioritizing the provision of required PPE, ROV companies demonstrate their commitment to the safety and well-being of their employees, ultimately fostering a culture of safety and reducing the likelihood of workplace accidents or injuries.

PRELAUNCH SAFETY CHECKLIST

Procedure

Pre-power Test

☐ Area is safe (no tripping hazards, items in the way)

☐ Verify switches and circuit breakers are off

☐ Tether flaked out on deck secured to ROV

☐ strain relief connected to ROV

☐ Electronics housing sealed

☐ Visual inspection for damaged wires

☐ Nuts tight on electronics housing

☐ Thrusters free from obstructions

☐ Set compressor output to 2.75 bar Power Up

☐ Power source connected to TCU

☐ TCU receiving 48 Volts nominal

☐ Control computers up and running

☐ Ensure deck crew members are attentive

☐ Power on TCU

☐ Verify video feeds

In water

☐ Check for bubbles, if large, pull ROV to surface

☐ Visual inspect for water leaks

☐ Engage thrusters and begin operations

☐ Verify thrusters are working properly

Loss of communication

☐ Cycle power on TCU to reboot ROV

☐ If no communication, power down ROV

☐ Check Ethernet connection

☐ Check Communication services

☐ Restart the services and inspect the problem

☐ If Communication restored, resume operation

Pit Maintenance

☐ Verify thrusters are free of foreign objects

☐ Visual inspect for any damage

☐ Ensure that all cables are neatly secured

☐ Verify tether is free of kinks

☐ Visual inspect for leaks

☐ Test onboard tools

☐ Verify camera positions

☐ Washdown thrusters with water