



Sea Dragons Safety Checklist

IN CASE OF EMERGENCY - CALL 911

- 1  **PERSONNEL**
 - SAFETY GLASSES, EARPLUGS, GLOVES, MASKS, HAT
 - SHOES, PROTECTIVE & TIGHT FITTING CLOTHING
 - HAIR SECURED AWAY FROM FACE AND TOOLS
- 2  **LAB**
 - CLEAN WORKSTATIONS
 - VENTILATION AND DUST SYSTEMS ON
 - FIRST AID, FIRE AND SPILL KITS MARKED
- 3  **POOL OR WATER**
 - LIFE SAVING DEVICE ON OR NEARBY, BUDDY SYSTEM
 - POWER CORDS OFF THE GROUND AND SECURED
 - KEEP AWAY FROM POOL DURING LIGHTNING STORMS
- 4  **FIELD**
 - NO RUNNING, BUDDY SYSTEM
 - SECURE EQUIPMENT FOR FIELD WORK
 - TRAVEL FIRST AID, FIRE AND SPILL KITS
- 5  **TRANSPORT**
 - SECURE CARGO. SPOTTER AND AT LEAST 2 LIFTERS
 - PLAN OUT LIFT FIRST, LIFT WITH LEGS NOT BACK
 - CALL OUT HAZARDS, LIFTERS ACKNOWLEDGE
- 6  **SETUP/POWER-UP**
 - INSPECT ALL SYSTEMS AFTER TRANSPORT
 - COMMUNICATE STARTUP WITH TEAM
 - INITIATE STARTUP/TEST SEQUENCE
- 7  **LAUNCH/RETRIEVE**
 - VERBALIZE "LAUNCH, RETRIEVE" WITH TEAM
 - TEAM MEMBERS REPEATS COMMUNICATION BACK
- 8  **INCIDENTS RESPONSE**
 - IN EMERGENCY - CALL 911
 - NON-EMERGENCY RESPOND AS TRAINED
 - LOG INCIDENT IN LOGBOOK
- 9  **EQUIPMENT RETURN**
 - RETURN SAFETY EQUIPMENT TO LAB TO IT'S PLACES
 - INVENTORY RETURNED SAFETY EQUIPMENT
 - LOG SAFETY EQUIPMENT CONSUMED IN LOGBOOK
- 10  **MAINTENANCE/UPDATES**
 - DOCUMENT MAINTENANCE/UPDATES
 - REPLENISH SUPPLIES PER LOGBOOK
 - UPDATE SAFETY AND JSA AS NEEDED

5/21/19 **UPDATED**

Sea Dragons

Job Safety Analysis (JSA)

Page 1— Safety Checklist Card

Page 2—JSA

Page 3—JSA

Page 4—JSA

Page 5—Job Safety Incident Response Plan

Sea Dragons: Job Safety Analysis (JSA) Updated 05/24/19				
Task	Hazard	Potential Consequence	Risk Controls	Responsible Person(s)
1. Personal safety				Initials:
Manufacturing, soldering, running ROV, prototyping	Flying debris, Chemicals, burns	Damage to eyes	Safety glasses	Engineer
Manufacturing, soldering, running ROV, prototyping	Flying debris, Chemicals, burns	Damage to body	Protective, tight clothing	Engineer
Running machinery	Loud noises	Damage to ears	Ear muffs, ear plugs	Engineer
Chemical applications, soldering, running ROV near barnacles	Acid burns, hot surfaces	Damage to hands	Task specific gloves	Engineer
Chemical applications, sanding	Dust particles, and poisonous fumes	Damage to lungs	Task specific face mask	Engineer
Running machinery or ROV	Loose hair caught in tool or ROV	Damage to scalp	Hair tie or hat	Engineer
Running machinery or ROV	Equipment hits head	Damage to head	Hard hat	Engineer
Manufacturing, soldering, running ROV, prototyping	Falling objects, metal or hot shards	Damage to feet	Closed toed shoes	Engineer
2. Lab Safety				Initials:
Manufacturing, soldering, running ROV, prototyping	Cluttered workstation	Tripping, fire hazard, personal safety hazards	Keep a clean, tidy workstation	Engineer
Soldering, sanding, chemical applications	Toxic fumes	Damage to environment, damage to lungs	Good air circulation, dust and chemical ventilation and filters	Safety Office
Manufacturing, soldering, running ROV, prototyping	Lack of access or knowledge of appropriate safety equipment	Possible fire or minor injury escalation to serious injury	Keep first aid kit, fire extinguisher, spill kits nearby, available and train on use, keep a log book of supplies and usage	Safety Office
3. Pool or Water Safety				Initials:
Running ROV	Tripping, slipping, falling	Possibility of drowning, head or body injury	Keep life preserver nearby, always use the buddy system	Pilot
Running ROV, using 110V water pumps and water filters	Electrocution	Possibility of major injury or death	Always keep AC power cords off the ground and secured. stay away from pool during lightning storms	Safety Office
4. Field Work Safety				Initials:
Running ROV, using 110V	Tripping, slipping, falling	Possibility of major injury, drowning, product damage	No running, use the buddy system	Pilot

Task	Hazard	Potential Consequence	Risk Controls	
ROV Transport	Falling equipment, loose tools	Back injury, product damage	Secure all equipment and tools	Safety Office
Running or Transporting ROV, and Battery	Lack of access to appropriate safety gear	Possible fire, property damage, minor injury escalation to serious injury	Keep travel field first aid kit, fire extinguisher, spill kits, log usage in journal, keep resupplied, train in usage	Safety Office
5. Transport Safety				Initials:
Lifting and transporting ROV, battery and equipment	Falling cargo	Injury to hands, neck or back, cargo damage, vehicle damage	Secure cargo, plan out lift first, have a spotter, at least two certified lifters. Lift with legs not back	Safety Office
Lifting and transporting ROV, battery and equipment	Miscommunication	Injury to neck, hands, back, falling cargo	Spotter calls out hazards, everyone acknowledge	Safety Office
6. Setup/Powerup Safety				Initials:
Setup Workstation	Jostling of electronics, fire	Damage or destruction of product	Inspect all systems after transport before powering up	Pilot
Powerup Workstation	Miscommunication	Injury to members hands caught in motors, burns from fire, damage to product	Communicate startup with all members. only once all members have communicated begin the startup process	Pilot
7. Launch/Retrieve				Initials:
Launch and Retrieve	Miscommunication	Injury to members, damage to product, drowning	Verbalize launch and retrieval with all members, wait for members to communicate back	Pilot/Tether Manager
8. Incident Response				Initials:
Jobsite Accident Protocol	Confusion as to how to respond to incident	Minor injury could lead to major injury, death	In emergency call 911, provide as much help as possible. During non-emergency respond as trained and communicate so there is no confusion	Safety Office
Incident Log protocol	Repeated incident could lead to new safety protocol	Repeated injury	Log all incidents in a logbook and brief all members so there are no repeated incidents, safety training	Safety Office
9. Safety Equipment Return				Initials:
Designate Log Book and Safety Equipment Site	Safety equipment not in its place, Lack of access or knowledge of appropriate safety equipment	Minor injury could lead to major injury, death	After field work always return safety equipment to the lab in its correct place so the company is always prepared during an incident	Safety Office
Inventory of Safety Equipment	Lack of access or knowledge of appropriate safety equipment	Minor injury could lead to major injury, death	Inventory all equipment after field work. Log safety equipment consumed in logbook	Safety Office

Task	Hazard	Potential Consequence	Risk Controls	
10. Maintenance/Updates				Initials:
Resupply, update JSA, safety risk checklist, safety equipment training	Lack of access or knowledge of appropriate safety equipment	Minor injury could lead to major injury, death	Resupply all logged consumed safety supplies, update safety equipment, JSA and Safety Checklist, conduct safety training	Safety Office, CEO, CFO

JOB SAFETY



WHOSE JOB IS IT?