



JOB SAFETY & ENVIRONMENT ANALYSIS (JSEA)

Crush Depth — GKAlloy ROV & Float Operations

2026 MATE ROV World Championship · Marine Institute, Memorial University · St. John's, Newfoundland, Canada

Venues: Wave Tank · Flume Tank · Ice Tank

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Accessibility Note			

Scope: This JSEA covers deck/dive operations only across all three 2026 World Championship venues. Shop, build, and tool safety is covered separately in the Crush Depth Company Safety Review. ANYONE may call ALL STOP at any time if an unsafe condition is observed.

Job Task	Venue(s)	Hazard	Potential Risk	Safety / Prevention Steps	Responsible Personnel
PRE-OPERATION — Toolbox Talk & Setup (All Venues)					
Toolbox Talk	All	Miscommunication / unclear roles	Procedure error; injury	- ANYONE may call ALL STOP at any time if an unsafe condition is observed. - Assign Pilot, Tether Man, ROV Deployer/Retriever, Prop Management, Surface Side before each run. - Review JSEA and venue-specific hazards (waves, current, ice) before each session. - Cell phone use prohibited in active operations zone.	CSO / Pilot
Setting up ROV power supply	All	Loose / exposed wiring	Electrocution; short circuit	- Inspect all wiring before powering on. - Secure control box; confirm lid is closed. - Have dry hands or wear rubber gloves. - Move power supply to a dry area if surface is wet or icy.	Surface Side Management

Job Task	Venue(s)	Hazard	Potential Risk	Safety / Prevention Steps	Responsible Personnel
Setting up ROV power supply	All	Wet / icy conditions near power supply	Shock; equipment short	- Keep power supply minimum 1.5 m from pool / tank edge. - Identify wet areas before setup; relocate if needed. - Dry hands before any contact with supply.	Surface Side Management
Setting up / breaking down tether to control box	All	Tangled tether	Trip hazard	- Use roller to unwind/rewind tether in a controlled flake. - Tether Man monitors tether lay at all times. - Keep tether clear of wheelchair paths.	Tether Man
Setting up / breaking down tether to control box	All	Exposed wiring on tether or connectors	Electrocution	- Confirm power is OFF before handling tether. - Inspect full tether length for damaged jacket before any power-on. - Do not power on if damage is found — escalate to Surface Side lead.	Tether Man
Checking ROV sealing	All	Water leak / failed O-ring	Electrocution; equipment damage	- Use one-hand rule when working with live electronics. - Ensure all compartments containing electronics are properly sealed and insulated. - ANYONE authorized to stop operations if electrical problems arise. - Shut off power before opening ROV housing.	ROV Deployer & Retriever / Prop Management
TRANSPORTING ROV (All Venues)					
Moving ROV from workstation to pool / tank	All	Tangled tether; tether caught in motorized wheelchair	Trip hazard; wheelchair user injury	- Watch for tether and move around it — never step over. - Pick up excess cord before moving ROV. - Confirm wheelchair paths are clear of tether before any movement. - Wear closed-toed shoes.	ROV Deployer & Retriever / Prop Management
Moving ROV from workstation to pool / tank	All	Wet / icy deck	Slip; fall; drowning	- Wear proper non-slip footwear at all times. - Keep body centered on deck, away from pool / tank edge.	ROV Deployer & Retriever / Prop Management

Job Task	Venue(s)	Hazard	Potential Risk	Safety / Prevention Steps	Responsible Personnel
				- Wear life vest if unable to swim. - At ice tank: treat all floor surfaces as potentially icy.	
Moving ROV from workstation to pool / tank	All	Heavy ROV (~27 kg); sharp edges / pinch points	Back injury; hand laceration	- Two-person minimum lift — squat with legs, not back. - Grip chassis rings only, not thrusters or manipulators. - Ensure no sharp edges or pinch points are exposed before lifting. - Wear safety gloves if needed. - Clear area of loose tools and debris before transport.	ROV Deployer & Retriever / Prop Management
LAUNCH & RETRIEVAL (All Venues)					
Launch / retrieval of ROV	All	Wet / icy pool deck	Fall into water; drowning	- Wear proper non-slip footwear. - Wear life vest if cannot swim. - Two-person controlled lower — Pilot announces READY FOR HANDS ON before lift. - ROV Deployer announces HANDS ON / HANDS OFF at each step.	ROV Deployer & Retriever / Prop Management
Launch / retrieval of ROV	All	Heavy machinery; sharp edges / pinch points	Back injury; hand injury	- Minimum two people for all lifts. - Squat and lift with legs; do not twist or strain back. - Grab ROV by designated hand-holds / chassis rings. - Wear safety gloves if needed.	ROV Deployer & Retriever / Prop Management
Launch / retrieval of ROV	All	Tangled tether during launch	Foot injury; ROV pulled off course	- Tether Man manages slack during launch. - Watch for tether and move around it. - Wear closed-toed shoes.	Tether Man
OPERATING ROV DURING TASKS (All Venues)					

Job Task	Venue(s)	Hazard	Potential Risk	Safety / Prevention Steps	Responsible Personnel
Operating ROV during tasks	All	Tangled tether / tether in walkway	Trip hazard; tether caught in motorized wheelchair	- Tether Man keeps tether controlled on roller throughout operation. - Wear closed-toed shoes. - Pilot avoids 360° rotations to minimize tangling. - Wheelchair users positioned away from active tether lay zone.*	Tether Man
Operating ROV during tasks	All	Wet pool / tank deck	Slip on water	- Keep station area dry. - Wear proper non-slip footwear. - Wipe up spills immediately.	All Members
WAVE TANK — Additional Hazards (Wind & Wave Environment)					
Operating in wave tank	Wave Tank	Wind and wave-generated spray / splash	Wet deck; slip; electrical hazard near surface station	- Surface station and power supply positioned away from spray zone. - All members aware that deck can become wet rapidly during wave generation. - Tether Man maintains additional tension awareness as waves affect ROV position. - Do not lean over tank edge during active wave generation.	All Members
Operating in wave tank	Wave Tank	Unexpected ROV movement due to waves / wind	Tether jerk; trip hazard; ROV hardware damage	- Tether Man pays out or takes up slack smoothly as ROV moves with wave action. - Pilot communicates wave-induced ROV position changes to Tether Man. - Maintain firm two-person grip during launch/retrieval when waves are active.	Tether Man / Pilot
FLUME TANK — Additional Hazards (Current Environment)					
Operating in flume tank	Flume Tank	Current-generated ROV drift	Tether tension spike; trip hazard; ROV collision with tank wall	- Tether Man provides continuous slack management — current increases tension unexpectedly. - Pilot pre-plans task approach angles to account for current direction. - Never wrap tether around hands or body.	Tether Man / Pilot

Job Task	Venue(s)	Hazard	Potential Risk	Safety / Prevention Steps	Responsible Personnel
				If tether tension becomes unmanageable, Pilot surfaces ROV immediately.	
Operating in flume tank	Flume Tank	Wet deck from current-generated surface chop	Slip; fall into tank	- Wear non-slip footwear at all times. - Keep safe distance from flume tank edge during current operation. - Life vest worn by anyone working within 1 m of tank edge.	All Members
ICE TANK — Additional Hazards (Cold / Icy Environment — Float Operations)					
Operating in ice tank	Ice Tank	Ice-covered floor / tank deck	Slip; fall; fall into icy water	- Treat all floor surfaces as potentially icy — wear maximum-grip non-slip footwear. - Move slowly and deliberately; no running. - Life vest required for anyone within 1 m of tank edge. - Buddy system — no member works alone near ice tank.	All Members
Operating in ice tank	Ice Tank	Cold air temperature (maintained at -30 to +15 °C)	Hypothermia; cold injury; reduced dexterity	- Wear adequate cold-weather layers under any required PPE. - Wear insulated, waterproof gloves — especially when handling float or wet equipment. - Take warm-up breaks as needed; do not work in cold environment past point of comfort. - Report any numbness, shivering, or loss of dexterity to CSO immediately. - Know location of nearest warm area / first aid station.	All Members / CSO
Operating in ice tank	Ice Tank	Contact with ice surface or icy water during float handling	Cold burn; hypothermia; slip	- Wear insulated waterproof gloves when handling float near ice. - Do not touch ice surface with bare skin. - If a member falls into icy water: immediately call ALL STOP, deploy recovery equipment, do not enter water to rescue — use pole or throw rope.	All Members / CSO

Job Task	Venue(s)	Hazard	Potential Risk	Safety / Prevention Steps	Responsible Personnel
Deploying / retrieving FLOAT at ice tank	Ice Tank	Wet / icy deck during float handling	Slip; fall; equipment drop into tank	- Two-person controlled deploy/retrieve of float. - Move slowly on icy surfaces; no rushing. - Float tether managed with same roller protocol as ROV tether. - Wear non-slip footwear and insulated gloves.	ROV Deployer & Retriever / Prop Management
BREAKDOWN (All Venues)					
Powering down and disconnecting	All	Live circuit during disconnect	Electrocution; equipment damage	- Electrical lead disconnects power supply before any other disconnection. - One-hand rule when disconnecting 48V connections. - Confirm power is OFF before handling tether or opening ROV.	Surface Side Management
Coiling tether and transporting equipment back	All	Manual handling strain; trip on tether during coil	Hand/wrist strain; trip	- Re-coil tether onto roller immediately after power-down. - Two-person coil if tether is fully laid out. - Wear closed-toed shoes throughout breakdown.	Tether Man

Sign-Off — All personnel must sign before operations begin

Name	Role	Signature	Date
	Pilot		
	Co-Pilot / Prop Management		
	Tether Man		
	ROV Deployer & Retriever		
	Surface Side Management		
	CSO / Safety Officer		
	CEO		