COMPANY NAME:_____ **COMPANY NUMBER:**_____

2015 MATE ROV COMPETITION

SCIENCE AND INDUSTRY IN THE ARCTIC

EXPLORER CLASS SAFETY CHECK LIST

Companies must bring this check list, the ROV, tether, surface controls, and any other item used in the deployment and operation of the ROV. They will all be inspected as part of the safety check. In addition, documentation listed below must be provided to the Safety Inspectors during the inspection process.

1.0 Documentation	
	Electrical schematics & power distribution diagrams
	Technical report
	Main fuse shown in electrical schematics?
	Pneumatics or hydraulics used? **See item 4.0**
	Lasers used? **If YES, see attached Laser Safety Sheet.**
2.0 Physical	
	All items attached to ROV are secure and will not fall off.
	Hazardous items are identified and protection provided.
	ALL Propellers are completely shrouded.
	No sharp edges or elements of ROV design that could cause injury to personnel or damage to pool surface.
3.0 Electrical	
	Single attachment point to power source.
	Anderson Power Plugs for electrical attachment
	40 amp single inline fuse or circuit breaker within 30cm of power supply attachment point.
	No power conversion before ROV.
	No exposed copper or bare wire.
	No exposed motors. **Brushless motors are considered exposed unless electrically sealed after purchase.**
	All wiring securely fastened and properly sealed*.
	Tether is properly secured at surface control point and at ROV.
	Any splices in tether are properly sealed*.
	Surface controls: All wiring and devices properly secured.
	Surface controls: All control elements are mounted with wiring inside an enclosure.

***Properly sealed means that the wires cannot be exposed to water. Tape only sealing will allow the conduction of electricity through water.**

At minimum joints must be soldered, then sealed with silicone sealant and then finally taped. For in water taping, silicone self-vulcanizing tape is preferred over thermoplastic tape. Male to male connectors are not allowed.

4.0 Pneumatic / Hydraulic (if using)	
	Passed pneumatics/hydraulics test.
	Pneumatic or hydraulic diagrams present?
	Pneumatic and/or hydraulic component documentation provided?
	Hydraulic fluid MSDS (if used) Fluid is compatible with the Biodegradable Food-Grade specification. Teams using water do not need to provide an MSDS.
	All pressure lines have minimum pressure rating 100psi (pneumatic) or 300psi (hydraulic) stamped on line or verified with specifications
	Valves meet the minimum pressure of 100 psi pneumatic or 300 psi hydraulic
	Attachment to pressure source is secure.
	Pressure is regulated to 40psi max for pneumatics and 150 psi max for hydraulics.
	Pressure vessels have a stamped pressure rating or verification by specification.
	Pressure vessels have current inspection sticker.
	Pressure vessels can be secured on pool deck.
	Company fabricated pressure accumulator test results are provided (if used).
	No hydraulic fluids are leaking.
	Pneumatics utilize compressed air or inert gas

INSPECTION #1 **PASSED:** **30 POINTS**
FAILED: Items to correct:

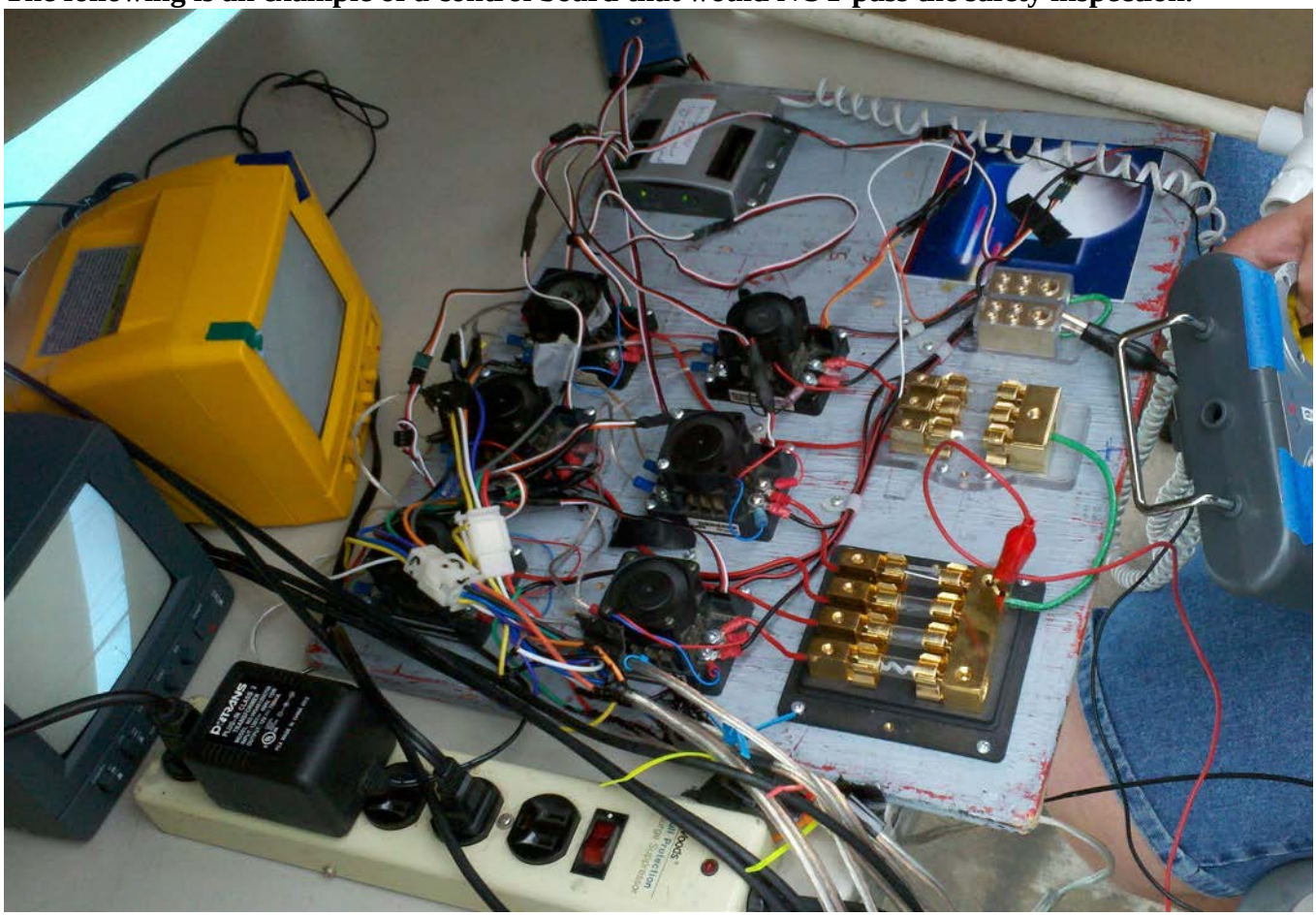
INSPECTION #2 **PASSED:** **20 POINTS**
FAILED: Items to correct:

INSPECTION #3 **PASSED:** **10 POINTS**
FAILED: Reason

Cleared to enter the water:

_____
Signature of competition official

The following is an example of a control board that would NOT pass the safety inspection.



Problems include but are not limited to:

1. **Does not have a single fuse to the power supply**
2. **Wires are loose. No method for securing wires leaving the control board.**
3. **Clip leads for attaching to power supply.**
4. **Electrical terminals are exposed on the fuse block and H-Bridges.**

Any of the above items would cause this controller to fail safety inspection.

Corrections needed.

1. One power cord going from power supply to control box with inline fuse.
2. Power cord is physically attached to the control box to provide adequate strain relief.
3. Power cord has proper banana lead terminations (RANGER) or eye terminal (EXPLORER).
4. All electronics installed into a control box to shield the exposed electrical from inadvertent contact.
5. All wires leaving/entering the control box go through a connector to provide termination and strain relief.

COMPANY NAME:_____ **COMPANY NUMBER:**_____

2015 MATE ROV COMPETITION
SCIENCE AND INDUSTRY IN THE ARCTIC

EXPLORER & RANGER LASER SAFETY CHECK LIST

Companies must bring this check list attached to the main safety checklist to the Safety Inspection.

1.0 Documentation	
	Laser specification sheet
	Electrical schematics showing laser driver
2.0 Physical	
	Lasers have an on/off switch on the surface controller
	Laser powered through the MATE surface power supply
	No batteries in the ROV powering the laser.
	Visible Laser in 630-680 nm (red) or near 532 nm (green)
	Class I, Class II, or Class IIIa Category
	Red Laser: 5mW or less Green Laser: 1.5 mW or less
	Laser voltage at or below laser rated voltage
	Explorer Class: Notification sheet showing Laser specifications sent to MATE Center 2 weeks prior to their qualification event
	Presence of Laser shield or beam stop attachment within 30 cm of laser when out of water
	Shield is painted flat black
	Laser is not focused or deviates from collimated beam
	Team has laser safety glasses for all members at safety inspection

LASER Safety Inspection Result

If failed, note failed items on the main safety sheet and deduct points as necessary.

LASER Inspection Passed

_____

Signature of competition official

PASSED STAMP: