

## RANGER CLASS SCORE SHEET

### Exploring the Great Lakes

**SCHOOL NAME and # AS IT APPEARS ON THE OFFICIAL LIST:** \_\_\_\_\_

**Company CEO:** \_\_\_\_\_ **Mission attempt #:** \_\_\_\_\_

**Mission station officials:** \_\_\_\_\_

<p><b>Safety Check and Set-Up (up to 10 points total)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 5 points – Company presents signed safety inspection sheet.</li> <li><input type="checkbox"/> 5 points – Vehicle and control system present no safety hazards.</li> </ul> <p>Examples:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> All power cords, power bars, pressurized cylinders, etc. are secured.</li> <li><input type="checkbox"/> No hazardous materials are leaking onto the pool deck.</li> <li><input type="checkbox"/> Vehicle is hand-launched by team members in a safe manner.</li> </ul> <p>Mission official's notes: _____</p> <p><b>Company is cleared for the mission:</b> _____ (official's initials) _____ <b>total points (out of 10)</b></p> <p><i><b>Note: An official's decision to disqualify a company due to safety concerns is final. If there is a safety concern, please contact the lead safety inspector or competition coordinator.</b></i></p>
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<p><b>Organizational and Operational Effectiveness (up to 10 points total)</b></p> <ul style="list-style-type: none"> <li>• Up to 2 points – Organization                             <ul style="list-style-type: none"> <li>○ Chain of command evident <span style="float: right;">1</span></li> <li>○ Roles clear and executed well <span style="float: right;">1</span></li> </ul> </li> <li>• Up to 3 points – Task Plan                             <ul style="list-style-type: none"> <li>○ Task plan is well thought out to maximize score <span style="float: right;">1</span></li> <li>○ Alternate plans available <span style="float: right;">1</span></li> <li>○ All team members are aware of the plan <span style="float: right;">1</span></li> </ul> </li> <li>• Up to 2 points –Time Management                             <ul style="list-style-type: none"> <li>○ Awareness of time <span style="float: right;">1</span></li> <li>○ Adjusting timeline to adapt to situations <span style="float: right;">1</span></li> </ul> </li> <li>• Up to 3 points – Team Cooperation                             <ul style="list-style-type: none"> <li>○ Composure under pressure <span style="float: right;">1</span></li> <li>○ Supportive of each other <span style="float: right;">1</span></li> <li>○ Team communicates well with each other <span style="float: right;">1</span></li> </ul> </li> </ul> <p style="text-align: right;"><b>Total points (out of 10)</b></p>	<p>✓</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
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**Judges' Notes:**

**Penalty Points**

**Tether pulling:** Issue a warning for the first infraction. Begin deducting points AFTER the first infraction. Companies may pull on the conductivity sensor wire to manipulate, move, or control the sensor. However, companies may not pull on their sensor wire to move, manipulate, turn, or retrieve their ROV.

**Illegal communication:** Company members at the side of the pool may not communicate visual evidence of the ROV status (location, need to turn, etc.).

**Diver assistance:** Companies will be penalized for diver assistance during a mission run. Diver assistance will be provided ONLY AFTER a company requests it. During a mission run, the clock will not stop for diver assistance. Companies WILL NOT be penalized for diver assistance once the mission time has ended. At this time the divers will assist the ROV to the surface as part of the company's 5-minute demobilization period.

**Debris:** Companies that leave debris (e.g. parts of their ROV, including weights and flotation) in the pool such that a diver must retrieve the debris will also receive penalty points. Mission props are NOT considered debris. A company constructed collection basket is considered debris.

**Fuses**

If a vehicle blows the MATE power supply in-line fuse, the company is allowed one spare. If the vehicle blows the second MATE fuse, the mission performance period is over. The company will receive points for the mission tasks that they have completed up to that point but will not receive a time bonus score.

**RANGER Mission Task Scoring Breakdown:**

**Task #1: Shipwrecks (up to 140 points)**

**Task #2: Science (up to 100 points)**

**Task #3: Conservation (up to 60 points)**

<b>Task #1: Shipwrecks</b>	<b>Scoring – up to 140 points</b>
<b>Judges' Notes:</b> Companies may complete the steps of Task #1 in any order and may alternate between this and the other tasks.	
<b>1.1 up to 30 points – determining the length, width, and height of the shipwreck</b>	
● <b>up to 10 points – measuring the length of the shipwreck</b>	_____
○ <b>10 points</b> - ≤ 5 cm off true length	
○ <b>5 points</b> - 5 cm to 20 cm off true length	
○ <b>0 points</b> - > 20 cm off true length	
● <b>up to 10 points – measuring the width of the shipwreck</b>	_____
○ <b>10 points</b> - ≤ 5 cm off true width	
○ <b>5 points</b> - 5 cm to 20 cm off true width	
○ <b>0 points</b> - > 20 cm off true width	
● <b>up to 10 points – measuring the height of the shipwreck</b>	_____
○ <b>10 points</b> - ≤ 5 cm off true height	
○ <b>5 points</b> - 5 cm to 20 cm off true height	
○ <b>0 points</b> - > 20 cm off true height	
<b>1.2 5 points each (15 points total) – correctly “scanning” the ship at three locations</b>	_____
<b>1.3 5 points – determining the type of ship</b>	_____
<b>1.4 up to 25 points – determining the shipwreck’s cargo</b>	
○ <b>5 points</b> – unlocking the cargo container	_____
○ <b>5 points</b> – opening the door of the cargo container	_____
○ <b>5 points</b> – determining the type of cargo carried by the ship	_____
○ <b>5 points</b> – closing the door of the cargo container	_____
○ <b>5 points</b> – locking the cargo container	_____
<b>1.5 10 points – entering the shipwreck through the 60 cm x 60 cm hole</b>	_____
<b>1.6 10 points – locating and determining the date the ship was built</b>	_____
<b>1.7 up to 25 points – recovering a ceramic dinner plate from inside the ship</b>	
○ <b>10 points</b> – lifting the dinner plate from the floor of the shipwreck	_____
○ <b>10 points</b> – returning the dinner plate to the surface	_____
○ <b>5 points</b> – identifying the home port of the ship	_____
<b>1.8 20 points – identifying the ship using the four known features</b>	_____
<b>TOTAL POINTS FOR TASK #1</b> _____	

**Task #2: Science****Scoring – up to 100 points**

**Judges' Notes:** Companies may complete the steps of Task #2 in any order and may alternate between this and the other tasks.

**2.1 up to 25 points – measuring the conductivity to determine which area is venting groundwater**

- **10 points** – measuring the conductivity of both areas \_\_\_\_\_
- **15 points** – correctly identifying which area is venting groundwater \_\_\_\_\_

**2.2 up to 30 points – retrieving a sample of a microbial mat**

- **10 points** – collecting a sample of microbial mat \_\_\_\_\_
- **up to 20 points** – returning a sample to the surface \_\_\_\_\_
  - 20 points - > 150 ml
  - 10 points – 50 ml to 150 ml
  - 0 points - <50 ml

**2.3 up to 20 points – recovering the old sensor string and replacing it with a new one**

- **10 points** – returning the old sensor string to the surface \_\_\_\_\_
- **10 points** – deploying the new sensor string to the designated area \_\_\_\_\_

**2.4 up to 25 points – estimating the number of zebra mussels on the wreck**

- **5 points** – placing the quadrat into position on the top of the shipwreck \_\_\_\_\_
- **5 points** – counting the number of zebra mussels within the quadrat \_\_\_\_\_
- **up to 15 points** – estimating the # of zebra mussels on the shipwreck \_\_\_\_\_
  - 15 points – within 5% of total number of mussels
  - 5 points – between 5.01% and 10% of total number of mussels
  - 0 points – >10% of total number of mussels

**TOTAL POINTS FOR TASK #2 \_\_\_\_\_**

**Task #3: Conservation****Scoring – 60 points**

**Judges' Notes:** Companies may complete the steps of Task #3 in any order and may alternate between this and the other tasks.

**3.1 up to 40 points – removing two bottles**

- **10 points** – removing the plastic water bottle \_\_\_\_\_
- **10 points** – returning the plastic water bottle to the surface \_\_\_\_\_
- **10 points** – removing the glass bottle \_\_\_\_\_
- **10 points** – returning the glass bottle to the surface \_\_\_\_\_

**3.2 up to 20 points – removing the anchor line rope**

- **5 points** – lifting the rope off the bottom \_\_\_\_\_
- **15 points** – returning the anchor line rope to the surface \_\_\_\_\_

**TOTAL POINTS FOR TASK #3 \_\_\_\_\_**

**SCORING SUMMARY WORKSHEET**

The purpose of this sheet is to allow you to verify and tally scores from the previous pages.

<b>SAFETY CHECK &amp; SET-UP</b>			
Signed safety inspection sheet	0	5	
Vehicle and control system present no hazards	0	5	
<b>ORGANIZATION</b>			
Company is effectively organized to undertake the mission	0	1	2 3 4 5
	6	7	8 9 10
<b>Safety check, set-up, and organization point total:</b>			
<b>Task #1: Shipwrecks (up to 140 points)</b>			
Measuring the length of the shipwreck	0	5	10
Measuring the width of the shipwreck	0	5	10
Measuring the height of the shipwreck	0	5	10
Correctly 'scanning' the ship at three target locations	0	5	10 15
Determining the type of ship	0		5
Determining the shipwreck's cargo	0	5	10 15 20 25
Entering the shipwreck through the 60 cm x 60 cm hole	0		10
Locating and determining the date the ship was built	0		10
Recovering a ceramic dinner plate from inside the ship	0	10	20 25
Identifying the ship using the four known features	0		20
<b>Task #1 point total:</b>			
<b>Task #2: Science (up to 100 points)</b>			
Measuring the conductivity to determine which area is venting groundwater	0	10	25
Retrieving a sample of microbial mat	0	10	20 30
Recovering the old sensor string and replacing it with a new one	0	10	20
Estimating the number of zebra mussels on the wreck	0	5	10 15 25
<b>Task #2 point total:</b>			
<b>Task #3: Conservation (up to 60 points)</b>			
Removing two bottles	0	10	20 30 40
Removing the anchor line rope	0	5	20
<b>Task #3 point total:</b>			

<b>PENALTY POINT DEDUCTIONS</b>		
*Illegally pulling tether _____ infractions X - 5		
*Illegal communication _____ infractions X - 5		
**Diver assistance _____ infractions X - 5		
*** Leaving debris in the pool _____ infractions X - 5		
Exceeded 5-minute demobilization period _____ minutes X - 1 =		

<b>TIME BONUS</b>	
1 point for every minute and 0.01 point for every second under 15 minutes	
Duration of Mission: _____	
Minutes under 15 remaining: _____ X 1 point = _____	
Seconds remaining: _____ X 0.01 point = _____	
<b>Time bonus</b>	
<b>TOTAL MISSION SCORE</b>	

**Mission official's initials:** \_\_\_\_\_ **Company CEO's initials:** \_\_\_\_\_