

SUBMARINE RESCUE & ESCAPE

School/Team & # AS IT APPEARS ON THE TEAM LIST: _____

EXPLORER or RANGER (circle one)

Team captain: _____ Mission attempt #: _____

Mission station officials: _____

Set-Up and Safety Check

- Collect safety SIGNED safety inspection card.
- All power cords, power bars, pressurized cylinders, etc. are secured.
- A fuse is present in the vehicle's electrical system.
- No hazardous materials are leaking onto the pool deck.
- Vehicle is hand-launched by team members in a safe manner.
- No team member has entered the water in order to prepare and/or launch vehicle.
- Vehicle is in the water near the control shack at the end of the 5-minute set-up period.

Mission official's notes: _____

Team is ready for the mission: _____ (official's initials)

Note: An official's decision to disqualify a team due to safety concerns is final. If there is a safety concern, please contact the lead official or competition coordinator.

Fuses

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

Mission task scoring summary

Task #1: Survey and inspect the submarine for damage (25 points max)

Task #2: Pod posting (100 points max)

Task #3: Ventilation (100 points max)

Task #4: RORV (remotely operated rescue vehicle) mating (75 points max)

*Note: Teams must complete all sections of Task #1 before moving on to the other mission tasks.

Task #1: Survey and inspect the submarine for damage (25 points max)

This mission task involves:

- Descending to the submarine.
- Piloting your ROV around the complete perimeter of the submarine.
- Locating a damage point on your video monitor(s).

Scoring – 25 points

- 5 points – descending to the submarine
- 10 points – piloting your ROV around the complete perimeter of the submarine
- 2 points each (up to 10 points total) – locating ONE damage point on your video monitor(s)

_____ Descend to the submarine (5 points) _____

_____ Pilot around perimeter of submarine (10 points) _____

_____ # of damage points located x 2 points (up to 10 points total) _____

Task #2: Pod posting (100 points max)

This mission task involves:

- **Turning the hand wheel to unlock the hatch.**
- **Opening the hatch.**
- **Removing an ELSS transfer pod from the carousel assembly.**
- **Inserting the pod into the escape tower.**
- **Closing the hatch.**
- **Turning the hand wheel to lock the hatch.**

Scoring – 100 points

- **10 points** – turning the hand wheel of the hatch from the “close” to the “open” position
- **15 points** – opening the hatch so that it remains open and with access to the escape tower
- **5 points each (up to 25 points total)** – removing an ELSS transfer pod from the carousel assembly so that it is no longer in contact with the assembly
- **5 points each (up to 25 points total)** – inserting the pod into the escape tower so that the pod is completely inserted (i.e., no part of the pod is emerging from the tower)
- **10 points** – closing the hatch so that it remains closed and with no access to the escape tower
- **15 points** – turning the hand wheel of the hatch from the “open” to the “close” position

_____	Turn hand wheel to open (10 points)	_____
_____	Open the hatch (15 points)	_____
_____	# of ELSS pods removed from carousel x 5 points (up to 25 points total)	_____
_____	# of ELSS pods inserted into escape tower x 5 points (up to 25 points total)	_____
_____	Close the hatch (10 points)	_____
_____	Turn hand wheel to close (15 points)	_____

Task #3: Ventilation (100 points max)

Note: Teams must complete this sequence of tasks in order. If they fail to complete one section of the mission task #3, they cannot receive points for any later mission task.

This mission task involves:

- **Transporting the airline to the submarine.**
- **Opening the hatch.**
- **Inserting the airline into the inlet valve connection.**
- **Opening the valve to allow the flow of air.**
- **Closing the valve to shut off the flow of air.**
- **Removing the airline from the inlet valve connection.**
- **Closing the hatch.**
- **Returning the airline to the surface.**

Scoring – up to 100 points

- **10 points** – transporting the airline from the surface to the submarine so that its insertion point does not dangle from the line
- **15 points** – opening the hatch so that it remains open and with access to the inlet valve connection
- **10 points** – inserting the airline into the connection so that it remains in the connection once it is released from the ROV
- **15 points** – turning the valve from the “close” to the “open” position to simulate the flow of air
- **15 points** – after 10 seconds and once the mission control official announces “time,” turning the valve from the “open” to the “close” position
- **10 points** – removing the airline from the connection so that it is completely separated from the connection
- **15 points** – closing the hatch so that it remains closed and with no access to the inlet valve

connection

- **10 points** – returning the airline to the surface so that its insertion point does not dangle freely from the line

_____ Transport airline to insertion point (10 points)	_____
_____ Open the hatch (15 points)	_____
_____ Insert the airline into the connection (10 points)	_____
_____ Open valve (15 points)	_____
_____ Close valve after 10 seconds (15 points)	_____
_____ Remove airline from connection (10 points)	_____
_____ Close hatch (15 points)	_____
_____ Return airline to surface (10 points)	_____
_____ PENALTY – airline insertion point dangling from the line (- 5 points)	_____

Task #4: RORV (remotely operated rescue vehicle) mating (75 points max)

This mission task involves:

- **Building and incorporating a transfer skirt into the ROV.**
- **Mating the transfer skirt to the escape hatch and holding position.**
- **Undocking the transfer skirt from escape hatch.**

Scoring – 75 points

- **15 points** – building and incorporating a transfer skirt that falls within the assigned dimensions into your ROV
- **50 points** – mating the transfer skirt to the escape hatch so that the transfer skirt completely surrounds the hatch and covers the red band and holding your ROV in that position for 20 seconds until a mission control official announces “time”
- **10 points** – undocking the transfer skirt from the escape hatch so that your ROV is completely separated from the escape hatch

_____ ROV has a transfer skirt (15 points)	_____
_____ Transfer skirt mates to escape hatch for 20 seconds (50 points)	_____
_____ Transfer skirt undocks from escape hatch (10 points)	_____

See below for SCORING SUMMARY WORKSHEET

SCORING SUMMARY WORKSHEET

MISSION POINT TOTALS		
Task #1: Survey and inspect the submarine for damage		
Descend to Submarine		0 5
Pilot complete perimeter of submarine		0 10
Locate all 5 damage points		0 2 4 6 8 10
Task #1 point total:		
Task #2: Pod Posting		
Turn hand wheel to open		0 10
Open the hatch		0 15
Remove 5 ELSS pods from carousel		0 5 10 15 20 25
Insert 5 ELSS pods into escape tower		0 5 10 15 20 25
Close the hatch		0 10
Turn hand wheel to close		0 15
Task #2 point total:		
Task #3: Ventilation		
Transport airline to inspection hatch		0 10
Open the hatch		0 15
Insert the airline into the connection		0 10
Open valve, have it remain open for 10 seconds		0 15
Close the valve		0 15
Remove the airline from the connection		0 10
Close the hatch		0 15
Return airline to surface		0 10
Penalty points – airline insertion point dangles from line		- 5
Task #3 point total:		
Task #4: RORV (remotely operated rescue vehicle) mating		
ROV has a transfer skirt		0 15
Transfer skirt mates to escape hatch for 20 seconds		0 50
Transfer skirt undocks from escape hatch		0 10
Task #4 point total:		
PENALTY POINT DEDUCTIONS		
Illegally pulling tether* _____ infractions X - 5		
Illegal communication* _____ infractions X - 5		
Diver assistance _____ infractions X - 5		
Exceeded 5-minute demobilization period _____ minutes X - 1 =		
TIME BONUS		
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 = _____		
Time bonus		
TOTAL MISSION SCORE		

*Issue a warning for the first infraction. Begin deducting points AFTER the first infraction.

Mission official's initials: _____ Team captain's initials: _____