



2005 MATE Center/MTS ROV Committee ROV Competition for High School & College Students

www.marinetech.org/rov_competition/index.php



General Information



OVERVIEW

The Marine Advanced Technology Education (MATE) Center and the Marine Technology Society's (MTS) ROV Committee are partnering with the Neutral Buoyancy Laboratory (NBL) at NASA's Johnson Space Center Sonny Carter Training Facility to organize their 4th annual ROV design and building competition for high school and college students. Employers – industry, businesses, government agencies, and research organizations – and working professionals are becoming involved in the event by donating funds, building supplies, equipment, and facilities and volunteering their time and technical expertise as mentors, technical assistants, and judges to support the competing teams.

Goals:

- To increase the awareness and visibility of marine technical fields, educational and career opportunities, and potential employers.
- To help students develop the skills necessary for careers in technical fields. These skills include the ability to work as a team, problem solve, think critically, troubleshoot, communicate effectively, and manage projects.
- To connect students and educators with employers and working professionals. These connections result in collaborations where professionals mentor the students, complementing what they are learning in the classroom, and employers have the opportunity to evaluate the students as potential employees.
- To give students the opportunity to learn how similar technologies are used to explore both the depths of our oceans and the far reaches of outer space.

Eligibility:

- Open to high school, college, and university students. Home-schooled students of comparable grade levels are also welcome.
- Students can design and build the vehicles as an entire class project or school group activity. The group must be affiliated with a school or home-school network and/or demonstrate that 1) the participating students are currently enrolled in a high school, college, university, or home-school network and 2) the students are working under the supervision of an adult mentor.* Students can divide themselves into groups that focus on various aspects of vehicle design and operation.
- Teams must have at least three students with at least one faculty member or adult advisor involved in the process. One student should be designated as the team spokesperson.

- Individuals from industry, businesses, research organizations, and/or government can act as mentors during the design and building process. These individuals can provide students and their instructors with guidance and technical expertise, but cannot be actively involved** in construction and operation.

*Competition organizers will review registration forms and make the final decisions about teams' participation.

**Active involvement can be evaluated on a case-by-case basis.

REGIONAL CONTESTS

The MATE Center is supporting and helping to organize regional competitions in **New England, Texas, southern California, central California, Hawaii, and Florida** to serve as feeders into the national **RANGER** class. Schools from the New England area, eastern Texas, southern California, central California, Hawaii, and central and southeast Florida interested in competing in the **RANGER** class are asked to take part in the regional event in their area before moving on to the national competition. The top one to two teams from each regional contest will advance to the national competition.

For information about the **RANGER** regional contest near you, contact:

New England

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Southern California

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Northern California

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and

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Note: Regional contests that feed into the national event help to allow as many students as possible to participate in ROV design and building projects, learning key skills and connecting with employers and mentors, while keeping the number of teams that compete in the national at a manageable level – both financially and logistically. The intent is NOT to dissuade or discourage students from becoming involved in ROV projects that lead to exciting and rewarding competitions; on the contrary, the MATE Center's goal is to encourage and enable as many students as possible to take part, and it sees regional events as a way to accomplish this goal.

COMPETITION CLASSES

There are two classes in which teams can compete – **EXPLORER** and **RANGER**. Teams can register to compete in **one** (but not both) competition class. Two teams per instructor will be considered as long as one team represents a high school or home school and the other a college or university. Institutions/instructors interested in entering one team per competition class will also be considered.

Teams in the New England, Houston, Texas, southern California, central California, Hawaii, and central and southeastern Florida areas interested in competing in the **RANGER** class will participate in the regional event in their area before moving on to the national competition.

Please see the appropriate (**EXPLORER** or **RANGER**) **Competition Scenarios & Mission Tasks** and **Mission Task Specifications** documents as well as the **Design & Building Specifications and Competition Rules** document for detailed information. You can also visit the competition's web site at www.marinetech.org/rov_competition/index.php.

KEY MILESTONES AND SCHEDULE OF EVENTS

Key milestones:*

- November 8th – mission tasks & design specs posted
- **December 15th – registration deadline**
- December/January – building funds distributed
- Early June – technical reports due
- June – competition (date and location TBD)
 - Falls over a weekend; events take place over the course of 3 days
 - Engineering & poster presentations due

*Note: These are milestones that apply to the national only. Regional contests will be held prior to the national event and may have their own sets of key milestones.

Schedule of events:

*******Example*******

- Wednesday – teams arrive & check-in
 - Vehicles shipped or hand-carried to competition venue
- Thursday – set-up & pool practice day
 - Welcome & introductions in morning
 - Set-up team workstations & posters, competition arena, and repair station
 - Practice time available **ALL DAY**
 - Optional workshops, presentations
 - Evening social mixer/reception (w/ judges) and poster session
- Friday – presentations & social activities
 - Engineering evaluation interviews
 - Optional social/free time, possible tours of local subsea company facility, aquarium, or other marine-related point of interest
 - Underwater mission challenges begin
 - Teams have scheduled time slots
 - Optional social activities/free time when not competing
 - Evening dinner
- Saturday – competition day **ALL DAY**
 - Underwater mission challenges continue
 - Teams have scheduled time slots
 - Optional social activities/free time when not competing
 - Evening awards ceremony
- Sunday – teams depart

FUNDING AND BUDGET

The MATE Center will provide each team with the following support:

- **\$100 for building supplies and materials.**

All teams – both regional and national – receive \$100 to use toward building supplies and materials. Teams competing in regional events should contact the regional competition coordinator in their area to make arrangements to receive their ROV building supply and material funds. Regional coordinators may also have plans for other types of support, including workshops and access to mentors.

Note: There is no limit to the amount of money, time, and technical expertise that can go into building your team's vehicle. However, keep in mind that a costlier vehicle does not necessarily mean that the vehicle will perform better or will be better able to successfully accomplish the mission tasks.

- **Travel stipends up to \$1,500.**

Teams competing in the national competition and within driving distance (300 miles) to the event venue will receive roundtrip mileage reimbursement funds based on \$0.375 per mile. Teams competing in the national competition outside of driving distance will receive a \$1,500 travel stipend. Travel stipends may be available for teams competing in regional events; regional teams should contact the regional competition coordinator in their area for more information.

- **Housing – two rooms per team.**

Each team competing in the national competition will receive two hotel or dorm rooms for the duration for the event (usually 4 nights). Teams are responsible for covering the cost of any additional housing needs, including additional nights either before or after the event activities. Housing may be available for teams competing in regional events; regional teams should contact the regional competition coordinator in their area for more information.

- **Meals – kick-off reception, lunches, and awards banquet.**

A kick-off reception, lunches each day of the event, and an awards banquet will be provided to student team members, instructors, and mentors attending the national competition. Additional meals, such as breakfast each day of the event, may also be provided. Parents, spouses, siblings, cheerleaders, etc. will be able to purchase tickets for the reception and awards banquet in advance.

Meals are usually provided at regional contests; regional teams should contact the regional competition coordinator in their area for more information.

- **Special offers from competition sponsors.**

Several companies offer their products, materials, supplies, and/or access to equipment and facilities to competition teams at no or reduced costs.

For example, VideoRay (www.videoray.com) has created a "MATE ROV Competition Store" that will be available to competition teams **only**. This on-line store will offer discounts on cameras, tethers, and, possibly, thrusters, among other

items. Carrillo Underwater Systems (CUS) offers a scholarship for free and/or discounted products. Visit www.carrillounderwater.com/mate/ for more information, including how to apply.

- **Resources and “teams only” sections of the ROV competition web site.**

The resources section of the ROV competition web site located at www.marinetech.org/rov_competition/resources.php contains information on where to purchase building supplies, lists of helpful web site and books, and a “teams only,” password protected area, among other resources.

The URL for VideoRay’s on-line store, CUS scholarship program, and other information and support available only to MATE competition teams are posted within the “teams only” section. Information on potential funding sources at both the national and regional level (e.g., local Rotary Clubs, American Association of University Women, etc.) is also included there. You will receive the username and password to access the “teams only” section after you submit your registration form.

- **Additional costs.**

Teams are encouraged to organize their own fundraising activities to cover building supply, travel, housing, and meal costs above and beyond what the MATE Center provides. The “teams only” section of the ROV competition web site includes a letter from MATE’s competition coordinator that teams can use to approach local businesses (e.g., Home Depot) for donations of funds, building materials, equipment, etc.

In addition, the following items are your team’s responsibility:

- Shipping your ROV system and tools to competition venue.
- Costs associated with fundraising or presentations to community.
- Miscellaneous expenses for photocopying, phone calls, shipping costs associated with ordering ROV components, poster session materials, mailings, courier, etc.