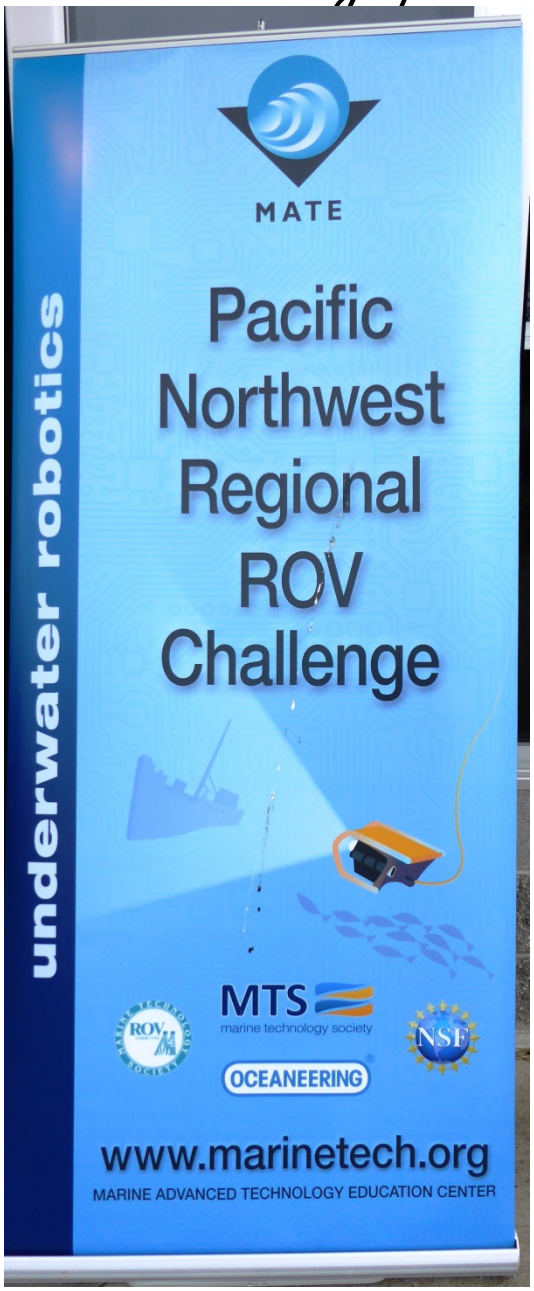
2nd Annual Olympic Coast MATE ROV Challenge



Forks Athletic and Aquatic Club, May 19, 2018

Forks Sanctuary “Crew”

The Pacific NW Challenge for "Jet City":

- The Applied Physics Laboratory at the University of Washington has issued a request for proposals (RFP) for a remotely operated vehicle (ROV) and crew that can operate in the salt and fresh water areas in the Pacific Northwest. The specific tasks for the ROV and operators include:

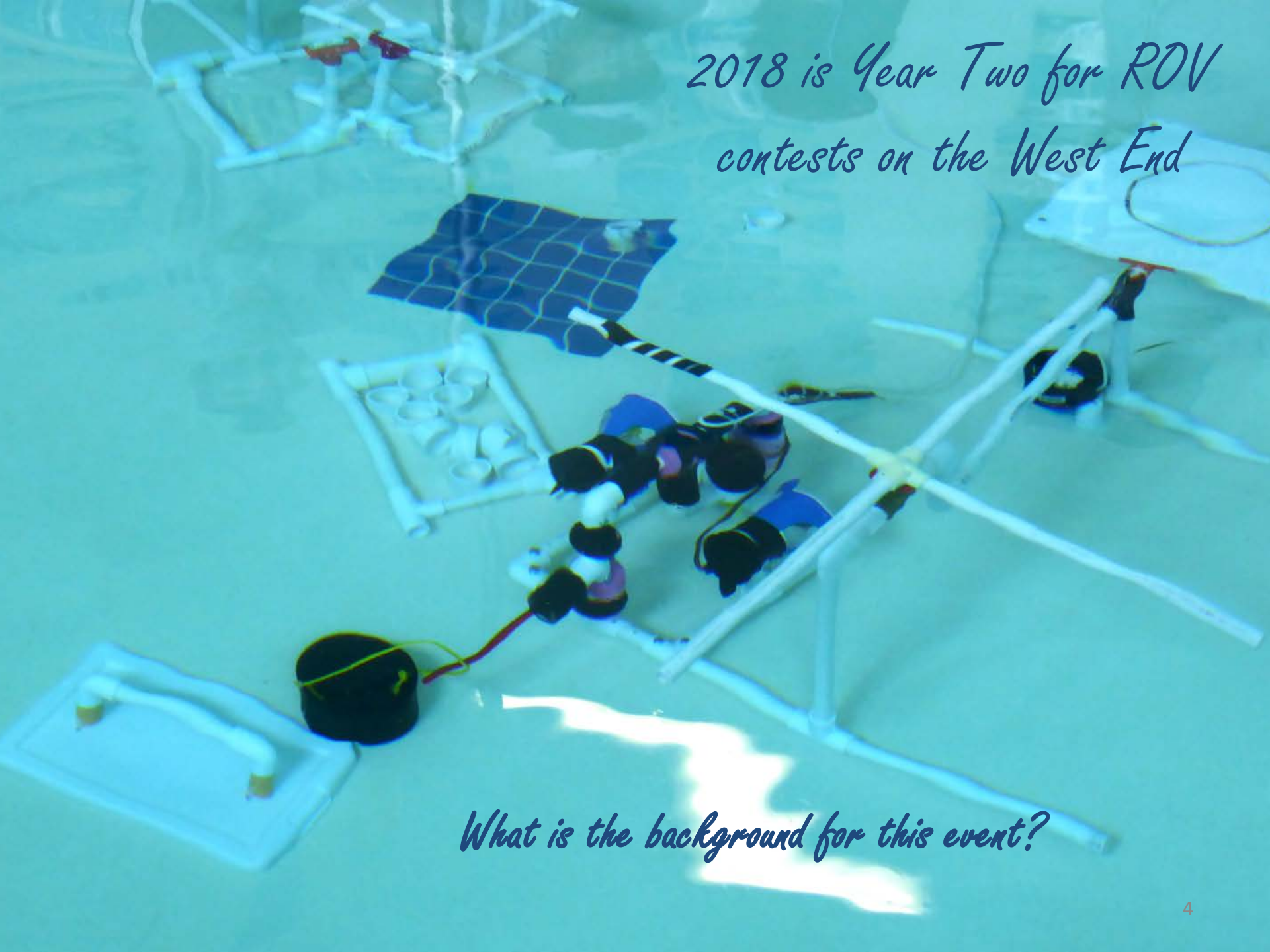
Design an ROV for:

- 1) Locating the wreckage of a vintage airplane and returning its engine to the surface.
- 2) Installing or recovering a seismometer. (Earthquake Zone!)
- 3) Installing a tidal turbine and instrumentation to monitor the environment. (Alternative Energy)

Demonstrate the ROV: Before launch and operations, the ROV must complete a series of "product demonstrations" staged at a swimming pool at various regional locations.

Presentation: Company must do an explanatory poster and present its company and ROV selling points.

[slide designed by Mr. George]


2018 is Year Two for ROV contests on the West End
What is the background for this event?

ABOUT MATE (www.marinetech.org)

- Marine Advanced Technology Education (Center)
- Initial funding from NSF in 1997
- Inspire/challenge students in STEM fields to solve real-world problems
  - Collaboration
  - Creative thinking/innovation
  - entrepreneurship

MATE now an Alliance

- Based at Monterey Peninsula College (CA)
- Still gets NSF funds
- Involves Office of Nat. Mar. Sanctuaries, Navy, SeaGrant in W coast states, NGOs
- Works with Industry and Educators--Centers for Ocean Sciences Education Excellence
  - Provides materials
  - Increases awareness of ocean-related careers (ocean economy is 20% of nation's/1 in six jobs)—http://www.oceancareers.com

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Puget Sound Section

Now "International" and long a Puget Sound event.

https://www.marinetech.org/sponsors/

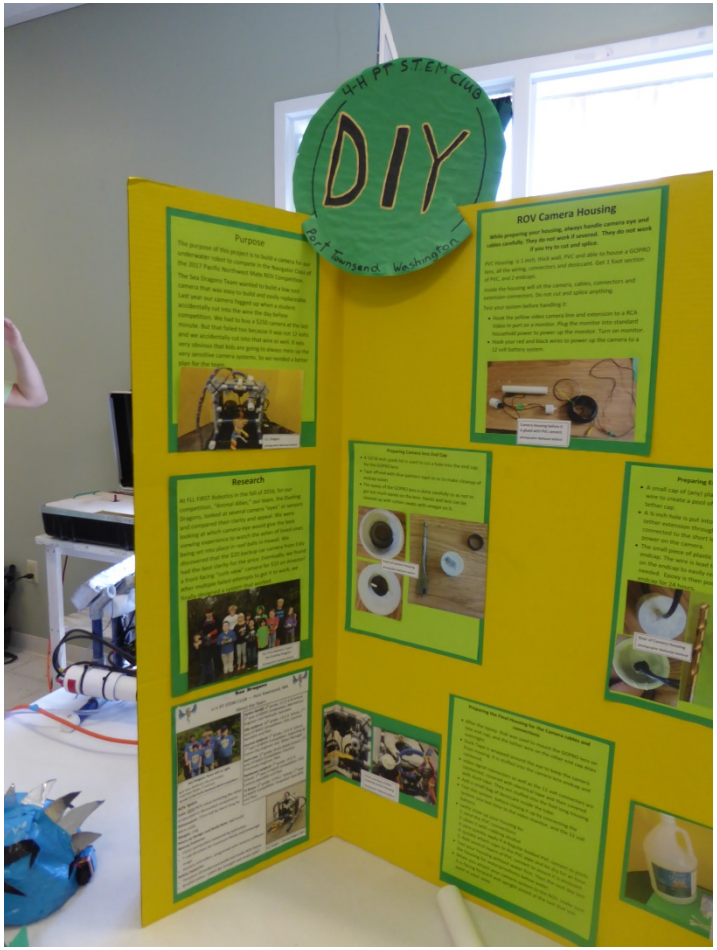
Creating Robots for Marine Jobs is the Focus for Challenges

- Degrees of difficulty: Explorer →, Ranger →, Navigator → and Scout classes (simplest)
- Safety checks
- Pool exercises to demonstrate functions
- Posters to illustrate robot suitability for an industrial goal, research, visual sales points
- Live team presentations to form communication skills

Teams Given Tools (Product Demo Specs Briefing)

- For the various robot tasks, sampling of websites related to the problem and the task
- Specific instructions for each class, as to what robot must do
- Specific instructions of what to put on poster
- For design, up to team
- For poster attractiveness, up to team.

Port Townsend 2017 Region Winners (Sea Dragons)—went way out!



West End Two Classes

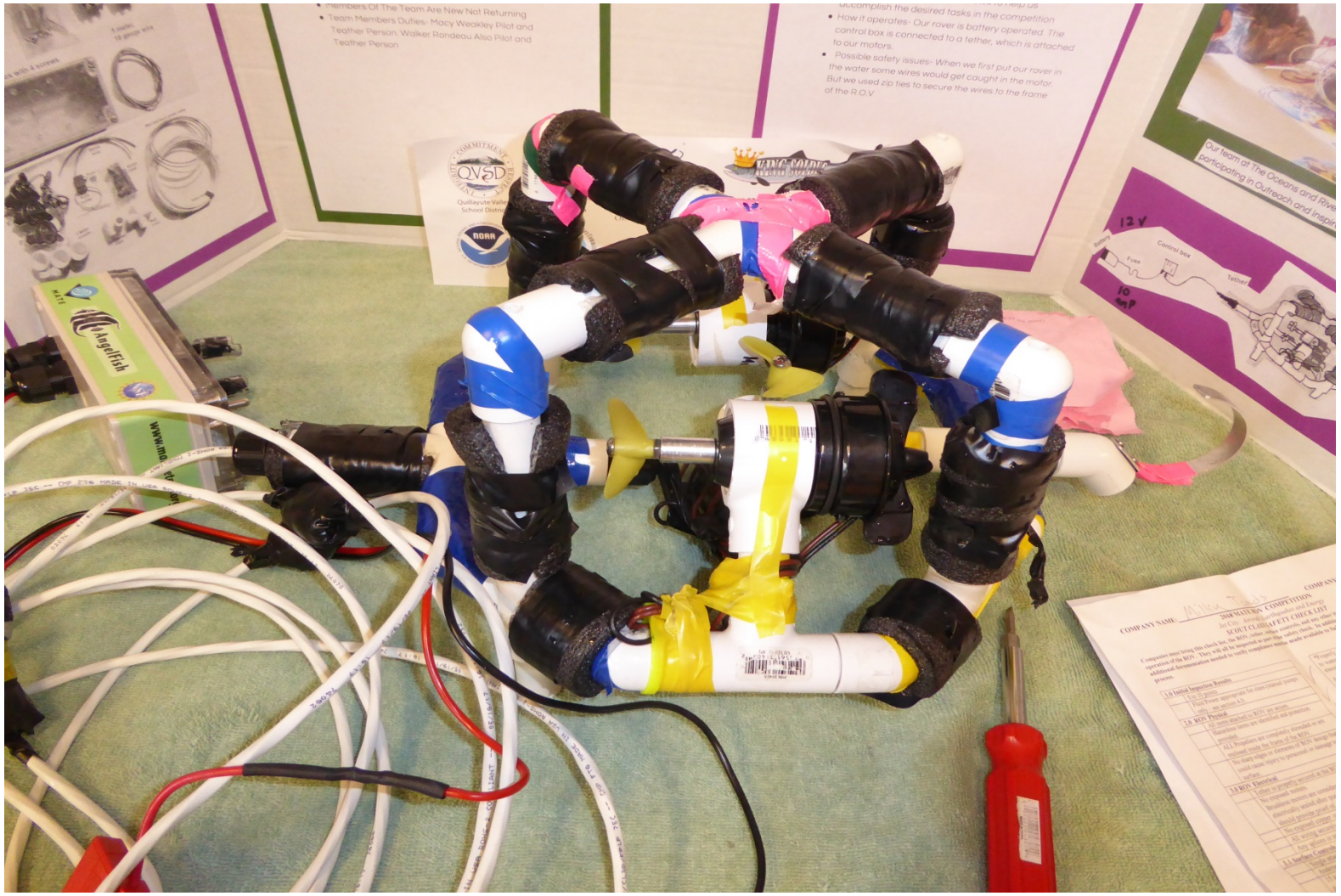
- **Navigator**
  - **Must use provided location data**
  - **Must meet device specs**
  - **Must do specific exercises**
  - **Must use camera in operations**
- **Scout**
  - **Ditto**
  - **Ditto**
  - **Ditto**
  - **Camera not involved**

[Explorer and Ranger classes must operate by camera, are higher voltages and amps, allow use of lasers, operate deeper, and have maximum weights and sizes specified.]

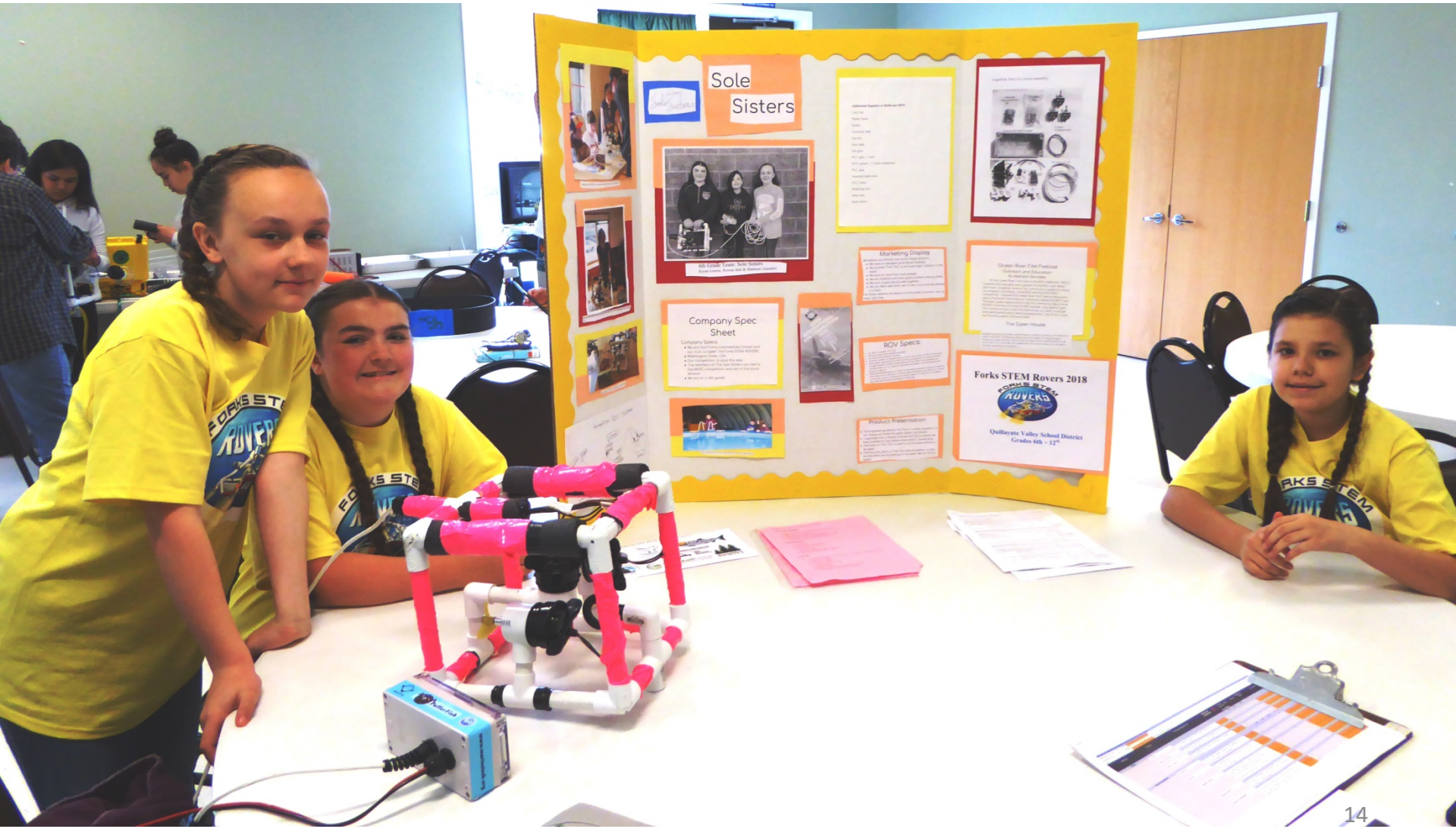
Judges get prepped by Fritz Stahr

Fritz Stahr manages Seaglider Fabrication Center and is this year's co-chair for the MATE ROV competition in the Pacific NW Region. On UW faculty, and Chief Scientist for OAR Northwest (NGO re STEM).

Everyone who enters has to pass safety checks for design—motors, wiring, etc.



Forks Stem Rovers: Sole Sisters—6th Grade



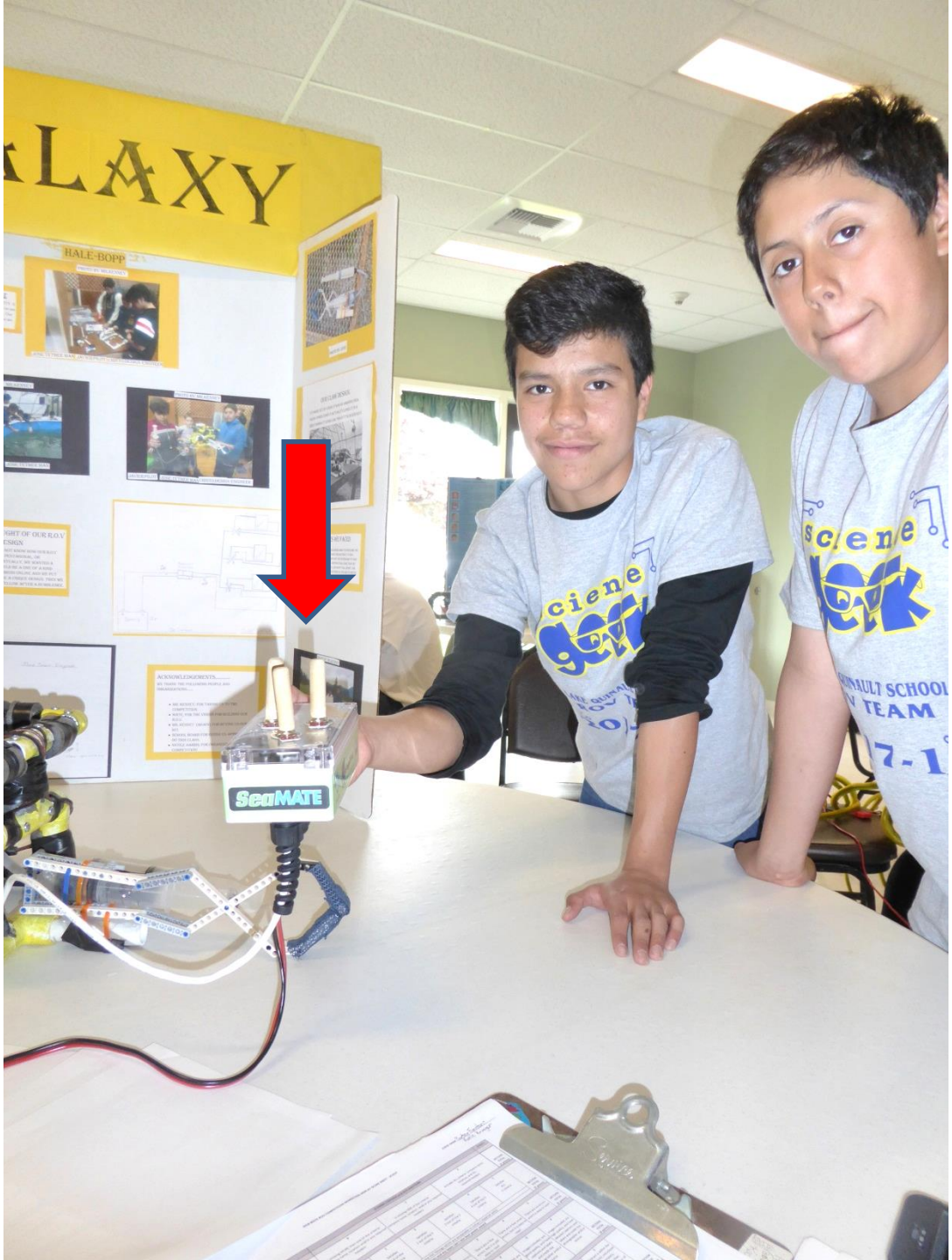
Forks Stem Rovers—Milky Toads-6th gr.

Note ROV is an octagon

Toad problems with remote—buttons hurt to use in maneuvers

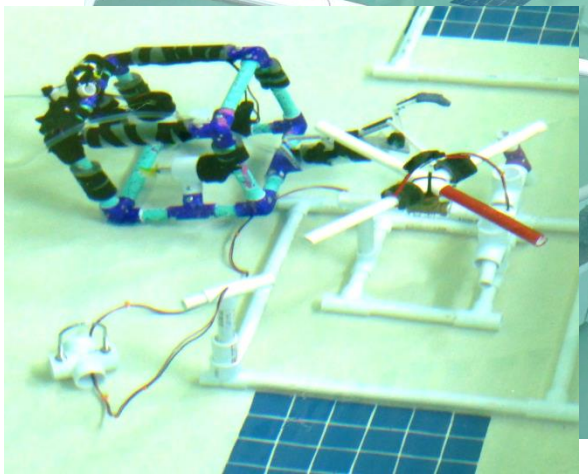
Quinault's Galaxy Team–
Grades 7-9

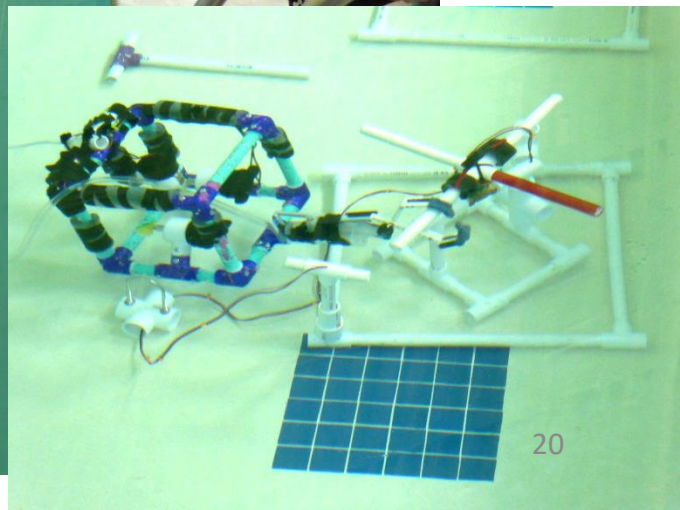
Galaxy master salesman—this team got Top Presentation.



Galaxy levers on remote solve handling—wooden dowel pins

Meanwhile—pool practice is going on.





Left—claw approaches
R—claw grabs bar

Meanwhile—teams reassess and even rebuild, before the actual trials begin.

Quileute Sea Wolves got McGyver Award!

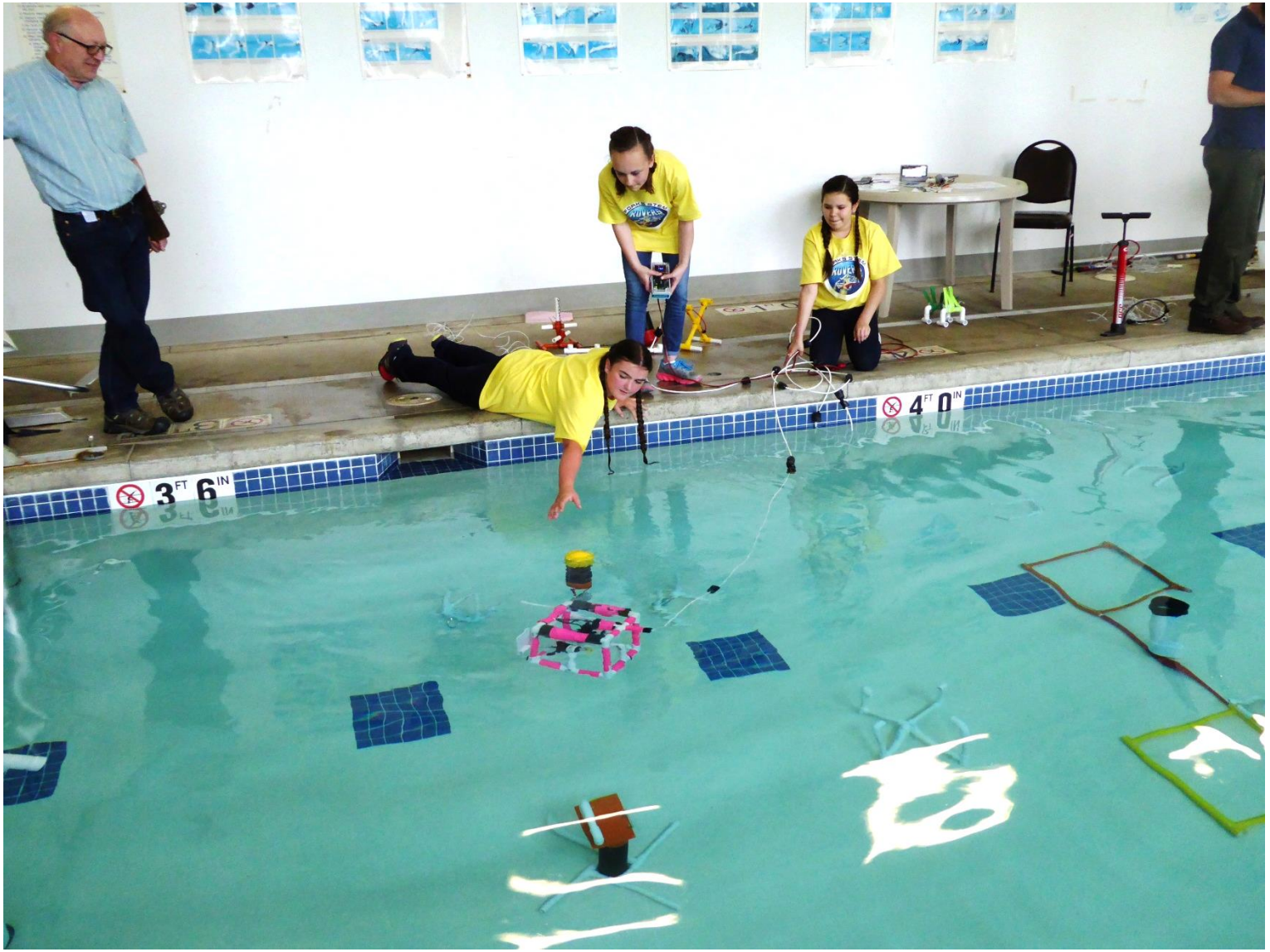
Forks Stem Leviathans later got Top Poster.

Pizza lunch!

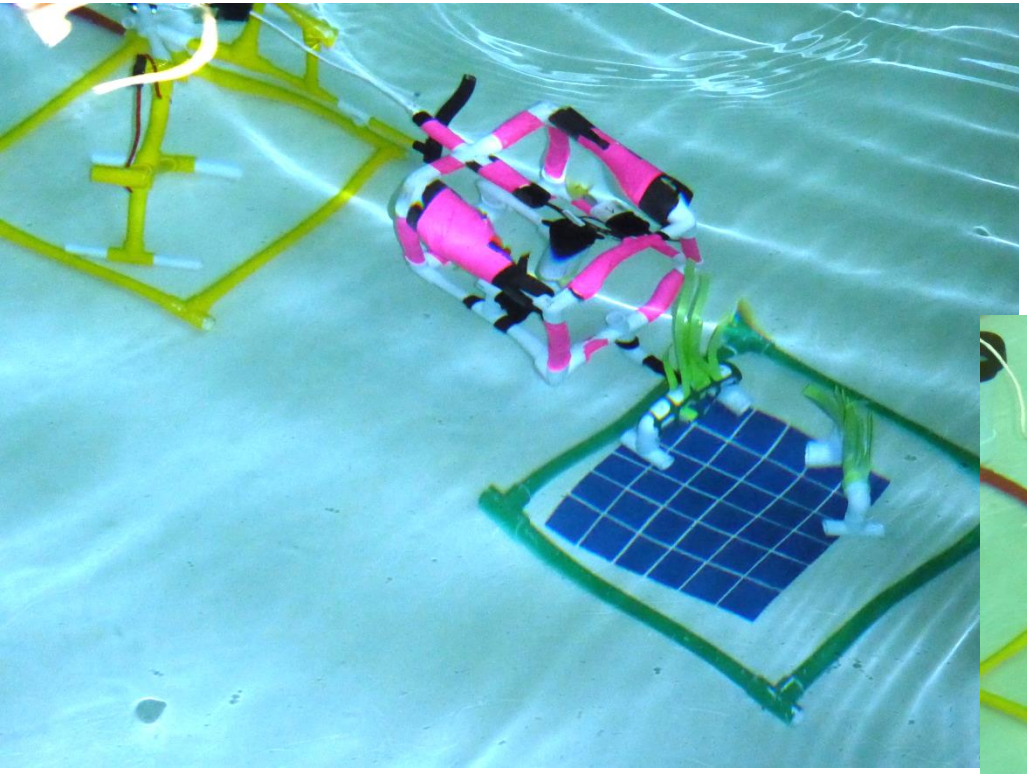
Or chillin' in the gym …

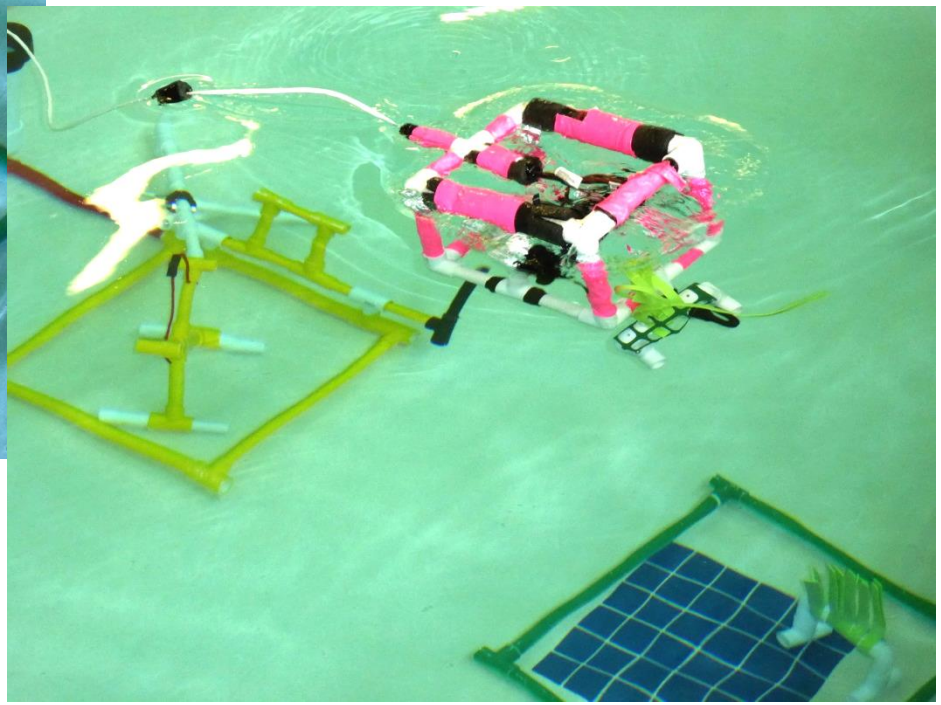
Some scored pool exercises

It counts as a return, if you can reach/touch your ROV!



A successful grab and haul back! (Sometimes, they fall out of the hook...)





Massive scoring task begins.

Teams gather for awards event.

Note 10 guys in gray T-shirts along back wall—Quinault School (4 scout teams)

Quinault's Michael Kenney receives Mentor of Year Award for bringing school from 1 scout team in 2017 to 4 in 2018

Lessons Learned

- Focus seems to be on ROV design and operation, less on presentation (STEM)
- Posters copied last year's captions and subjects, not instructions
- Poster categories therefore missing in many cases
- Poster instructions largely not followed (required topics, captions and credits for pictures, background research, how device met industrial needs)
- Ability to talk about project needs coaching
- Judges need to be located early, and to commit.
- All these students and teachers are nonetheless amazing.★ ★ ★ ★ ★