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Sensor board → GPS, IMU, CAN transceiver and others. As bringing up power distribution board, realized how simple it would be to add GPS and IMU onto the CAN transceiver board. Metal panel where all electronics are mounted. Sensor board would be going on that. If mounted sensor sideways, it wouldn't work well (needs to see the sky). Make a board that just has GPS, CAN transceiver, IMU. Took away need for second board and saves \$200, plus time and layout. Max had to redo power board because Zeyar had made mistakes.

Matt explained the mounting. **What is the weight of the box?** Pretty heavy has the battery. And will get heavier. Still need to add a plate with the electronics. Things went great until we got to steering. Steering mount wasn't tall enough so needed to design a solution for that. **Noticed that this bearing and the other bearing is out of alignment. It's meant to be that's the design of that.** We have a lot of play with the rod anyway. **When doing a set-up of the thing, how do you know where it goes?** Vertically we put this side down to match this and then match it this high to match the tierod high. Do need to come up with a quicker way of how to align it. Say we went to the lake or something can't leave the motors down like this, most of time we went to the motor up or take them off. Could take the whole t-slot off. Need to figure out a quicker alignment. Especially getting it into the lake as well. **Couldn't have witness marks? Mark where it is where it's stationary.** Do we have a quick way to disconnect the actuator?

Showed steering test. Seems like it turns somewhat slow. Figured wouldn't have sudden changes in the water. It will slowly adjust with the IMU. On Tuesday, Haywood and Matt laid out the actuator. Marked off values and recorded how much the actuator moves every 50 intervals. **Speed's not a concern.** Spec'ed it out for 45 but ours go +/- 60. **Will probably find that this going slowly with this type of boat is better. Slower will be better with this. Helps with oscillation.**

Andy talked about the solar panel. Got 20W on a pretty heavy overcast day in about an hour. There wasn't any bypass diodes in. **Answers the question from last update if power was an issue. It seems like the answer is no. For the proof-of-concept, shows that it can make the power even on a day with less than ideal conditions. I'm happy with that.**

Retrotech donated \$1100 worth of material. Covers lots of wiring and connectors.

****Still need to add donated items to the BOM.**

****CAN standard on EDGE.**

****What's the build up heat inside there. Might be an issue in the hot sun. Might necessait**

Heat rise test.

Power distribution board.

What can get done by Imagine **Chris. Mike.**

- **Where are we at now?** Power systems all set up. Embedded coding, decently through that. Depending on where CAN goes (Max has taken over) – still have work to do to get everything talking to each other. Important thing is to make sure everything is controllable from the single board computer. **So as far as the autonomy, originally the small-scale boat would have this stuff on it. Did autonomy happen on the small-scale?** One propeller broke last time on the

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boat. **That was suppose to be the risk assessment for the full-scale. Why did you even do the RC control on the small-scale?** Currently it hasn't been fixed yet. **Small-scale was literally just to test risk for electrical systems.** But it kept mechanically breaking. Had to focus on motor controllers for full-scale. Lost time at end of MSD I and over winter break. Started realizing had to set small-scale aside right now and focus on the full-scale. If can control everything from the single board computer. **One of the major selling points was autonomy. Without having that, I wouldn't go for a rev 2.** I think we could get small-scale in autonomy on time. **If you can do it with small-scale why couldn't do it on full-scale?** Getting that control on the higher level would take more time. We do have ROS on the single board computer. Has a lot of packages built it for autonomy. Once have all of our inputs, it should ideally theoretically be trivial to pull in some navigation. If we have all of those inputs coming in, we could try and get autonomy using a Python code. **Worried about autonomy. What are you proposing as a contingency?** Essentially, everything back to autonomy. **So human controlled, not a preplotted out course. It'd be more hands on but there would still be a control over it. I understand that you guys don't have CEs but in the beginning we were saying yeah we have experience in this so it can be accomplished. Concerns are not meeting deliverables that were laid out ahead of time. Perhaps having someone dedicated would be a better choice. The show will consist of the hardware and mechanical. Is it bad to free spin those motors?** Yes, it just burned out. If we were to get into the water and stick the go-pro on the boat, then we can show video of the boat in action. **Can do a split screen of the go-pro on the boat and macro view.** Is it possible for next weekend to be able to go out into the water? **Is there anything you guys can foresee that would help meet the goal?** I find it hard that there's something we can do to catch up in time. Max's vision of the show = have video of full-scale boat being remotely controlled and having the small-scale boat on display. Small-scale on display. Small-scale video showing that first used it remote control. Have both of the boats being able to be actuated. **Include small-scale because it shows a good engineering process. We did this instead due to weather conditions. Proved the steering concept as well.** Could run the motors. Could also probably hook up the panels and show the generation plots of the panels. Had a go-pro that overlaid sensor data on the video. See a plot or a map of GPS location and other things as the video is going on. It'd be nice to show as its running the battery level and all of that stuff. **What do you think is the likelihood of achieving all of this by the show?** Reasonable. Could go to Irondequoit Bay or the place where we float tested. **Set sights on stuff on things that are absolutely achievable. Other stuff that is added on (ex. video editing), don't focus on that. Don't rule out the possibility that it'll be pouring rain on the day of the show.**