

902106 - Niobicon-Based AUV Docking Development

Week 29

1. George Stern
 - a. Solar buoy electronics testing

Week 28

1. Brian Kieft
 - a. Re-assembled, tested, and deployed mock dock for testing with Pontus this week. Will survey in with WG Tiny next week.
2. George Stern
 - a. Tested solar buoy subsea can

Week 27

1. George Stern
 - a. Began testing the solar dock, worked with James to fix
 - b. Completed schematic for the active diode bridge

Week 26

1. Scott Jensen
 - a. Oversee the build of the WEC - Dock interface bottle
2. George Stern
 - a. Active 3 phase bridge schematic redrawn and lightly modified; still need to review

Week 25

1. Francois Cazenave
 - a. Assembling Wave energy dock
 - b. Working on proposal
2. Scott Jensen
 - a. Supporting build of WEC dock bottle

Week 24

1. Francois Cazenave
 - a. New solar panels

- b. Plans for 2027 and proposal
 - c. Pontus brushes upgrade and Triton.
- 2. George Stern
 - a. Top side power off except modem feasibility study
 - b. Tested all the various modem modes with the real buoy cable and generator on in the test tank to emulate stretched out hose - should be able to get >125mbps with margin

Week 23

- 1. Francois Cazenave
 - a. Ordering parts for Brizo docking arm and brushes upgrade
- 2. Scott Jensen
 - a. Support documentation and fabrication of the WEC version of the dock
- 3. George Stern
 - a. Planning for some more coms tests and changes to the solar buoy

Week 22

- 1. Francois Cazenave
 - a. Power take off device assembly
- 2. George Stern
 - a. Tested 3phase diode bridge demo board, does not work as well as hoped but better than the diode bridge we have. Attempts to modify it to improve performance have resulted in shoot through; reverse engineering the main component behaviour via ltspice because the datasheet doesn't even explain pin functions.

Week 21

- 1. George Stern
 - a. Found a 3 phase ideal diode development board which looks promising
 - b. Reviewed specs for the victron system and inverter trying to eliminate a mysterious 50W DC load reported by the Victron GUI when the inverter was started with very light AC loads; finally located current probes large enough to fit around the large buoy conductors and discovered once again that the GUI is very inaccurate despite it having access to sensors with specs that suggest they should be very accurate

Week 19

- 1. Francois Cazenave
 - a. Mock dock mooring design
 - b. Deployment plan
- 2. Scott Jensen
 - a. Continued work identifying parts and transfer to EEtech

- b. Purchasing parts
- c. Defined custom PCB function and parts

Week 18

1. Scott Jensen
 - a. Much work and discussion with the group about the “new” subsea bottle electronics and a desire to support autonomous recharging.
 - b. After much searching for COTS parts to support this autonomy a solution was reached
 - c. Now selling the idea and detailing out the concept of operation.
 - d. Reached consensus it was a reasonable path forward
 - e. Starting to test prospective parts
 - f. Beginning to pull together schematic for fabrication and for housing layout design.
2. George Stern
 - a. Tested power consumption and communication speeds with two potential modems to downselect to one; unspooled 1000ft of cat6a cable through buildings A and B to run a 1hr test and then respooled it - not recommended...

Week 17

1. George Stern
 - a. Coms testing with the short rod
 - b. Prep for testing

Week 16

1. Brian Kieft
 - a. Docking meeting. Discussed addressing power issues on the solar dock with an external supply to support the fall campaign.
 - b. Trying to locate mock dock. Will build a new one if necessary.
2. George Stern
 - a. More tank testing with the long rod
 - b. Final down selection to 2 possible coms techs
 - c. Subsea bottle testing with controlled loads to better understand what initially appeared to be odd losses

Week 15

1. George Stern
 - a. Subsea can troubleshooting, testing and mods

Week 14

1. George Stern
 - a. Troubleshoot networking issues on Pontus backseat
 - b. More subsea housing mods
 - c. Finally ran first networking tests to the LRAUV; tests between the subsea bottle and vehicle were only surprising because speeds were 30-40Mbit/s at the feedend of the rod, however bottle to buoy was slower than previous tests with intermittent drops outs. Bottle electronics were pulled for some additional mods and started troubleshooting
 - d. Desk tests with chokes indicate 30% derating is marginally sufficient for Wurth, ordered new parts with 50% and a bit better performance.

Week 13

1. Francois Cazenave
 - a. Testing brushes
 - b. Project management
2. George Stern
 - a. Lots of tank testing and subsea bottle mods to fix all possible problem causes for bottom topside plc coms failures. Testing indicates the modems achieve 24Mbits/s and the bottom side is limiting speed; still poking at the nice to have increased speeds but have been unable to reproduce dead coms encountered during last years deployments.
 - b. Networking troubleshooting on Pontus backseat

Week 12

1. Francois Cazenave
 - a. Testing brushes
2. Scott Jensen
 - a. Worked on configuration of power supplies
 - b. Locating candidates for power
3. Brian Kieft
 - a. Sent LNM and sanctuary descriptions

Week 11

1. Francois Cazenave
 - a. Project management
2. Brian Kieft
 - a. Standing by on Mandy for mock dock deployment.
3. George Stern
 - a. Began planning mods to the subsea can and LRAUV to try to optimize coms without changing rod geometry

Week 9

1. Francois Cazenave
 - a. Project management
 - b. New mooring
 - c. Video guidance plan
2. George Stern
 - a. Planning

Week 8

1. Scott Jensen
 - a. Trying to settle upon a EMC cable for the WEC to Dock

Week 7

1. Scott Jensen
 - a. Small amount of time helping with specifying communications EMC cable
2. George Stern
 - a. Meetings and planning for the buoy cable buy

Week 6

1. Francois Cazenave
 - a. Working on new cable
 - b. Project management
2. George Stern
 - a. On going over the past 2wks
 - i. Datasheet and docs review of the current powerline modems
 - ii. High frequency magnetic field shielding refresher - nonferrous high conductivity metals really do work best due to eddy currents
 - iii. Began looking at filter design and system layouts
 - iv. Potential comms options for new docking buoy and phy layer cable requirements

Week 5

1. Francois Cazenave
 - a. Helped prepare mockup LRAUV
2. Scott Jensen
 - a. Meetings about surface to seafloor communications

Week 4

1. Francois Cazenave
 - a. Project management

Week 3

1. Francois Cazenave
 - a. Project management
 - b. Planning
2. Scott Jensen
 - a. Project planning meetings for the year
 - b. Investigated options for copper solutions between surface and floor
3. George Stern
 - a. meeting

Week 2

1. Francois Cazenave
 - a. Project management