

300083 - DMO Divisional Support - LRAUV

Week 51

1. Thom Maughan
 - a. BPC1 battery diagnosis on Ahi. Pack discharge is 56ah, not 160ah expected. Two banks not reporting after overnight discharge.
 - b. Got trained on Denis' battery measurement labview and setup another discharge.
 - c. Using BPC2 to diagnose sticks not behaving on BPC1.
 - d. Working on BPC2 firmware, pack health message.

Week 50

1. Brian Kieft
 - a. Supporting MBTS deployment, Piscivore deployment, and previous piscivore deployment last week.
2. Thom Maughan
 - a. Diagnosing Ahi's battery packs on rev1 BPC1 backplane. Captured bank switching mid-i2c transactions. Two bad banks have been resurrected after removing and re-inserting sticks and in one case, using the stick charger.
 - b. BPC2 health message implementation.
 - c. Parts delivered to Indtec
 - d. Met with Erik to go over the task list and plan for the next month
 - e. Stuffed Serial Monster Killer base board (20 serial ports) and getting it prep'd for Tad

Week 49

1. Brian Kieft
 - a. Supporting Piscivore deployment
2. Thom Maughan
 - a. Working thru the list of hardware bringup
 - b. Assembled parts kit, write PO for a 2nd build of 2 backplanes and 2 charger boards at Indtec
 - c. Ran out of code space and found out a few things about library linking with gcc (thanks Erik). Supply chain is improving, lpc11e37 is available that boosts code space from 32k to 128k, whew.
 - d. Review packet health message with Quinn, we'll be changing to a 'Pack health' message from a 'stick average'
3. Mike McCann
 - a. Processing VolumeScatCoeff117deg[470|650]nm variables now instead of Output[470|650]
4. Carlos Rueda
 - a. Exchanges with Erik regarding his maintenance tracking feature.

Week 48

1. Brian Kieft
 - a. Supporting Pontus piscivore deployment
2. Thom Maughan
 - a. Ahi battery analysis. Drained aft pack as an experiment to reset the SMBus controller in the batteries to fix the i2c address bus hang. ~45A-hr of expected 150A-hr capacity. Next step is to remove the two packs and diagnose at the cell level.
 - b. Working plans to get Ahi's battery capacity for next year Planktivore and also working plans to get new battery backplane installed for testing. We're not going to use BPC2 on Ahi as a test vehicle.

- c. Delivered Parts and PCBs to Indtec to build two more backplane/charger sets.
- 3. Mike McCann
 - a. Gave tutorial to Steve Ruberg & Kristen Rosier for getting data from [stogs_greatlakes2023](#)

Week 46

- 1. Brian Kieft
 - a. Supporting MBTS deployment

Week 45

- 1. Thom Maughan
 - a. Debugging surge stopper electronics

Week 43

- 1. Thom Maughan
 - a. Worked on overvoltage / surge input hardware
 - b. Tweaked smbus routines and serial protocol
 - c. I2c peripheral drivers

Week 42

- 1. Brian Kieft
 - a. Supporting MBTS and Planktivore deployments this week.
- 2. Thom Maughan
 - a. Worked with Erik on Overvoltage, overcurrent testing of the charger board.
 - b. Changed resistors and 5v converter input voltage, retested
 - c. Worked on firmware

Week 40

- 1. Mike McCann
 - a. Used MB-System on new Mac to create a 100x vertical exaggerated terrain of Lake Michigan
 - b. Testing visualization improvement with 100x vertical exaggerated simulation & LRAUV data

Week 39

- 1. Mike McCann
 - a. Making progress on simulation animation in STOQS – plan to present at [Web3D Conference](#)

Week 37

- 1. Thom Maughan
 - a. Meeting with Erik, discussions on test plan
 - b. Implementing additional smbus routines

Week 36

- 1. Brian Kieft
 - a. Supporting MBTS run this coming week
- 2. Thom Maughan
 - a. Working on port expander driver and charge termination
 - b. Tested charger response to low batteries.

3. Mike McCann
 - a. Fixed loading of [stogs_greatlakes2023](#)

Week 35

1. Thom Maughan
 - a. Working on charge termination and other battery charging smbus features
 - b. Drafted a serial protocol doc and delivered to Quinn

Week 34

1. Thom Maughan
 - a. Updating test plan for scenarios. Read the battery safety checklist.
 - b. Working on charge termination via smbus

Week 33

1. Thom Maughan
 - a. LRAUV BatMan charger testing. Erik's design is working great so far. Using the old and throw away batteries from the LRAUV lab. Basic charge monitoring is in place. Working to understand and implement the more advanced features on the boards.

Week 32

1. Thom Maughan
 - a. Updated the backplane processor to add 8KB additional flash - nice to have some code space again.
 - b. Draft serial protocol reviewed with Quinn and implemented. Will broaden the review and iterate.
 - c. Backplane hardware bringup and drivers are work in progress. Basic functions are working.
 - d. Runtime battery status messages implemented
 - e. In progress on charger daughter board. Working with Erik to understand features. Starting charge test on 28 batteries.

Week 31

1. Thom Maughan
 - a. Smbus functions implemented and tested for run time monitoring of the lrauv battery packs
 - b. Met with Quinn to discuss protocol for multidrop rs232. In progress on implementation but hitting the end of flash (again).
 - c. Processor swap to upgrade to a 32KB part.
 - d. Starting on the charging board bringup and firmware.
2. Mike McCann
 - a. Making good progress on 3D oil spill simulation data visualization in STOQS

Week 30

1. Brian Kieft
 - a. On call for MBTS
2. Thom Maughan
 - a. LRAUV BatMan firmware development.
 - b. Making progress on I2c and smbus for battery status.
 - c. Ran out of code space on the 24KB lpc11e13. Scrunched some functions but no joy. Tried compiler for size optimization but lost single step debug and code is not working. Found a pin compatible part with 32KB.

- d. Reading thru NMEA style WHOI protocol for multi-drop rs232. Drafted a more compact, energy efficient and less labor (for me) machine-to-machine proposal based on previous rs485 experience.
- e.
- 3. Mike McCann
 - a. Exploring x3dom's <VolumeData> and <ImageTextureAtlas> nodes for visualizing oil spill simulation data in the STOQS database for current Great Lakes LRAUV deployments

Week 29

- 1. Brian Kieft
 - a. Supported Pontus deployment this past week/weekend
- 2. Thom Maughan
 - a. LRAUV BatMan controller firmware. In progress on implementing smbus functions. Board bringup on baseboard is done and charging daughter boards will be tested after smbus functions for charge monitoring are working.

Week 28

- 1. Brian Kieft
 - a. Emergency recovery of Daphne S of M1 due to failed thruster
 - b. Supporting MBTS and Pontus deployments
- 2. Mike McCann
 - a. Creating a stoqs_greatlakes2023 database for triton and makai deployments there

Week 27

- 1. Mike McCann
 - a. Finishing migration of tethysviz2 to the official <https://tethysviz.shore.mbari.org/> server

Week 26

- 1. Thom Maughan
 - a. Lrauv batman board bringup. Scanning i2c and working thru i2c mux. Minor assembly problems found and fixed.
 - b. Meetings with Erik on the electronics design and software

Week 25

- 1. Mike McCann
 - a. Starting to transfer databases to the new tethysviz2 STOQS server

Week 24

- 1. Mike McCann
 - a. Submitted help ticket to configure new tethysviz2 STOQS server to host PostgreSQL 15 DBs

Week 23

- 1. Thom Maughan
 - a. Created chip support library for lpc11exx. This solved the hard fault when accessing some peripherals.
 - b. Backplane board bringup is done. Thanks to Brett H for the fast response on a dev battery cage. Making progress on battery status code.
 - c. Erik provided an overview of planned battery manager operation, very helpful

Week 21

1. Thom Maughan
 - a. Board bringup and software dev for Irauv battery management board.
 - b. Parts kit for small dev board

Week 20

1. Thom Maughan
 - a. Battery backplane controller firmware, aka, batman. Working on i2c driver coming up to speed on MCUxpresso.

Week 19

1. Thom Maughan
 - a. Working thru hardware issues affecting code download, found and fixed. LPCopen app dev for battery backplane is in progress

Week 18

1. Thom Maughan
 - a. MCUxpress + MCU-Link now working after a bit of the ole uninstall, reinstall, reboot.
 - b. Purchased a known good lpc11c24 board to verify all is well with the dev+debug setup. Still no joy downloading code to the battery board. In progress going thru the lpc11e13 datasheet against the schematic and layout.

Week 17

1. Thom Maughan
 - a. Installed MCUxpresso then switched to LPCxpresso per NXP support, then after meeting with Erik am back to MCUxpresso.
 - b. Meetings with Quinn on protocol

Week 16

1. Mike McCann
 - a. Maintaining data flow into [stoqs_irauv_apr2023](#) and [stoqs_ecohab_april2023](#)
 - b. Fine tuning crontab execution times as these databases now take 15+ hours to load

Week 15

1. Thom Maughan
 - a. Meetings with Quinn regarding LRAUV to battery backplane software. We have a plan
 - b. 2 battery backplane boards have been received. To aid software development for i2c mux and multidrop rs232 protocol a small dev board was designed and fabricated.
 - c. Battery charger boards have been picked up at Indtec
 - d. Installed MCUxpresso
2. Mike McCann
 - a. Supporting ECOHAB by ensuring data is flowing into [stoqs_ecohab_april2023](#)

Week 13

1. Denis Klimov
 - a. Two debugged battery packs seem to be operating so far.

Week 12

1. Thom Maughan
 - a. Picked up backplane boards from Indtec, in my office
 - b. Dropped off Charger parts and PO on Thurs 9th.
 - c. Installed MCUXpresso IDE after working thru NXP website issues
 - d. Ordered jtag programmers
 - e. Designed a minimal RS232 multi-drop dev board.

Week 11

1. Brian Kieft
 - a. Daphne launch today for MBTS run and some engineering testing
 - b. Prepping Pontus for deployment today (hopefully)

Week 9

1. Denis Klimov
 - a. LRAUV battery pack testing setup was overhauled back into operation. We are to test 2 battery packs after mechanics are rebuilt due to cracking frames resulting from age and field deployments. Also, training Quinn Shemet on using the test setup.
2. Thom Maughan
 - a. Met with Erik to discuss battery control / monitor board, get schematics. Git access to the Dorado code.
 - b. Picked up LRAUV backplane from Indtec. Charger is due first week in March
3. Mike McCann
 - a. Following BK's recovery of January daphne files reloaded sippers for [stoqs_lrauv_jan2023](#)

Week 8

1. Brian Kieft
 - a. On call for monthly MBTS Daphne deployment. Samples came back full!

Week 7

1. Brian Kieft
 - a. On call for Daphne/Pontus MBTS runs this week. Recovering Daphne today.
2. Thom Maughan
 - a. Met with Erik, Brian, Brett and Quinn to discuss battery board. Dropped parts to Indtec. Reviewed WHOI software protocol design doc.

Week 4

1. Brian Kieft
 - a. On call for Daphne MBTS run last week. Updated software release on vehicle.