Thom Maughan Sorted By Project

300070 - DMO Support - Ventana

- Ventana has an issue with valve pack delay. It was found there are no spares of French's valve pack controller. DJ has a couple more being built and assembled and is requesting PIC programming when those come in. (Week 6)
- Valve pack controller board is being stuffed. A hex file has been located, however the source has not been found. (Week 7)
- Valve pack controller boards are in assembly. Source code has not been located however the hex file exists. Need to find a PIC programmer and utility. (Week 8)
- Electrical testing of valvepack controller to investigate lag problem. Kent has the valve pack controller up and running, DJ has it setup with a valve on his bench and gave an overview of operations. There is a lag noticed between modbus tester app and wago stack, but this is likely not the problem as there is GreenSeas software controlling the valvepack on the vehicle. (Week 11)
- Worked with DJ to root cause the ~1sec actuation delay. Kent had figured out building and programming a spare valve pack controller designed in 2016 and with that spare and the modbus and electrical analysis tools ready for measurement, we had the privilege of working with the pilots who figured out the root cause is due to the internals of the valve - a great mbari moment. Ceremonial electrical measurements were made just to verify all was indeed well. (Week 16)
- Sampling delay problem solved - mechanical fix. Wahoo. 300078 - DMO Support - AUV (Week 23)
- Discussed 2025 hours with DJ, recommended 40 hrs. (Week 27)

300078 - DMO Support - AUV

- Reading thru Erik's Dorado design diagram (Week 16)
- Dorado emergency systems design review. Suggested use of single pair ethernet. (Week 27)

300083 - DMO Support - LRAUV

- BPC1 diagnosis. Reviews of BPC1 schematics with Denis (Week 1)
- BPC2 firmware implementation (Week 1)
- Defined and implemented a battery pack health message. Health will be the default message with Quinn's new battery software component. Battery details message will be requested infrequently. (Week 4)
- Board checkout of two new backplanes / chargers. (Week 4)

- BPC2 firmware (Week 6)
- Brett has requested a schedule. Working to update task list. (Week 8)
- LRAUV BatMan status and alignment meeting. Working thru alignment with WHOI battery protocol and whether it's possible to deliver asap. Conclusion was the LRAUV team will handle the WHOI protocol in the battery component and then thru config handle the MBARI protocol. (Week 10)
- Working with Erik to use his team for some of the remaining hardware board bringup in order to focus on finishing the firmware. (Week 10)
- Working on task list to help coordinate work with Cole and Varsha. (Week 11)
- Getting parts to build up another battery pack (Week 11)
- Brief meeting with Brett and Cole on the decision to prioritize Cole's time on BatMan v2 controller. Getting ready for a meeting on Thursday with Erik to discuss needed changes for the electrical (Week 16)
- Battery tests on Ahi with capacity below 20%. Ran tests on temperature rise with 8amp unattended charging (0.8 C rise on external hull). Internal, batteries at 24C. Reviewed the proposed change from 4A to 8A unattended charging with Brett and Erik and others. (Week 17)
- Preparing cart for mobile BPC2 development with Cole and Varsha. (Week 17)
- Sent BPC2 / Charger change list to Duane Thompson. (Week 18)
- Sent hardware change list to Duane T (Week 19)
- Working on pcal6416 driver (Week 19)
- Brizo battery diagnostics (Week 19)
- I2c port expander on charger (Week 20)
- Working i2c driver for charger board (Week 23)
- BatMan proposal discussions (Week 26)
- Met with Erik to discuss options for accelerating BPC2 rev2 hardware. Met with Varsha and George. (Week 27)
- Getting a BPC2 ready for work with Varsha. (Week 28)
- Working with Varsha on BPC2 Charger input protection testing and debug (Week 32)
- Eval board purchased, Varsha and Tad made great progress (Week 32)
- Working with Varsha and team on assembly of 2nd LRAUV battery pack. (Week 32)
- Working with Varsha on 2nd battery pack build. Serial terminal debugging, etc. Git pulled the code and Varsha/Tad found and fixed chip support lib linkage - great teamwork. (Week 34)
- Working with Varsha (Week 36)
- Reviewing hardware notes on backplane in prep for meeting with Duane and Erik. (Week 37)
- Reviewed the hardware changes with Erik and Varsha. Delivered the hardware changes to Duane Thompson for layout. Varsha will be point of contact with Duane and we'll meet to discuss. Working on bringing up two backplanes. (Week 41)
- Working a day a week. Duane has hardware changes. Cole tasked with LPC11e37 chip support library, validate backplanes. (Week 42)
- (Week 42)
- Backplane hardware review with Duane, Varsha and Erik. (Week 43)

- Working on port expander i2c driver for exercising charge current control (Week 43)
- Various meetings (Week 43)
- Working with Varsha and Duane on 2nd rev of BPC2 backplane and charger. Delivered Charger parts kit to Indtec and introduced Varsha to Trinh and Loni - got a quick tour. (Week 47)
- Duane finished backplane layout, reviewed and boards are sent out. (Week 47)
- All four first rev backplanes are updated to LPC1137 which has enough flash to finish development (Week 47)
- Delivered draft of serial protocol to Quinn. (Week 47)
- Charger boards are at Indtec for assembly (Week 48)
- Backplane layout review, Duane sent out for fabrication and has parts kits on order. Very appreciative of Duane Thompson and will dearly miss work with him when he retires. (Week 48)
- Backplane assembly may be delayed due to budget shortfall. Helping work option for alternate budget source. (Week 48)
- Varsha finished build of 2 packs with backplane updated to LPC11e37. Verified my chip support library is compatible with 11e37. (Week 48)
- Backplane pcbs are expected Dec 5, working with Varsha on Indtec kitting. EE Techs will be building 2 backplanes. (Week 49)
- Charger boards expected from Indtec mid Dec. (Week 49)
- Serial protocol doc updated to v0.81 and sent to Quinn. (Week 49)
- Tasks/status meeting with Quinn and Varsha. Hardware is on track for RevB builds. Varsha has two packs assembled and multi-drop rs232 dev/test starting after we get cabling and cart setup complete. (Week 49)
- Working with Brett on WHOI needs (Week 49)
- Many thanks to Kent for budget transfer to cover backplane assembly - a big help to the schedule. (Week 49)

901009 - CANON

- Met with Kobun to discuss goals for this year. (Week 6)
- Chat with Kobun regarding potential microfluidics company (Week 10)
- Met with Kobun to discuss 2024 plans on eDNA. Followed up with Francisco, then later with Chris Scholin. Work on proposed hours reduction to accommodate float program (Week 17)
- Visit to NASA Ames with Kobun. Met with two groups one of which was working on automated unattended DNA sequencing. NASA has a unit that has a fully functioning microfluidic frontend on an Oxford Nanopore minion. Wow! Thanks Kira Reinecker for hosting. (Week 25)
- DIscussed HiPP eDNA 2025 with Francisco. He's indicated pressure to scale back. (Week 27)
- Met with Kobun over next steps with NASA. Ran into Chris Scholin and told him about the microfluidics front end for Oxford Nanopore. Met again with Kobun and invite NASA team latter half of August. Also voiced concern about 'competitive' tone to MBARI eDNA efforts with both Francisco and Kobun. (Week 27)

- Proposal discussions (Week 28)
- Attended planning meeting (Week 36)
- Attended the CANON planning meeting. CANON starts next week. (Week 37)
- Working on eDNA tackle box, troubleshooting startup issue. (Week 39)
- Met with NASA regarding microfluidics implementation. Looks like a collaboration might happen. (Week 41)
- Supporting DeepEdna servers. IS has flagged a failing UPS and is moving the servers to Building G. DeepEdna1 has been moved and DeepEdna2 will be moved once one of the science users is done 'BLASTing' (Week 48)
- DeepEdna1 and DeepEdna2 servers have been moved to building G. IS added to Hipp-Edna slack for improved communications. (Week 49)

901217 - Chemical Sensors

- MSC3 processor and baseboard were delivered on Thursday 27 June 2024. (Week 27)
- Moving from MSC2 hack board to MSC3. (Week 27)
- Schedule pressure is high and balance between proposal efforts and MSC3 efforts. (Week 27)
- Working on MSC3 hardware bringup with Irene and hopefully Irene can help with some of the software tasks. Pushed pHFETSOS to bitbucket. Built up a portable dev setup for remote work. (Week 27)
- Mooring ISUS is functioning and returning data. (Week 27)
- Working on Tiva processor module (Week 28)
- USB power supply and portable dev environment to enable round the globe/clock dev. (Week 28)
- Working on tracking milestones for Ken/Yui/Kent. (Week 28)
- Note: Backlog of missed weeklies. (Week 32)
- Moved from MSC2 (MpHOx based) to new MSC3 hardware in 3rd week of June. (Week 32)
- Worked with Irene on board bringup and sorting out RevA issues. (Week 32)
- Designed a small board to add FRAM to the RevA Tiva module. (Week 32)
- Designed a Tiva launchpad daughterboard to open the possibility of outside contractor development of peripheral drivers. Planning to use upwork and/or fiverr. Hoping to invest 6 to 10 hours and save 6 to 10 days development. EETechs have assembled 5 boards. (Week 32)
- Stripped down version of pHFETSOS to remove IP for outside development. Pushed to public bitbucket. Thanks Kent for the bitbucket project support. (Week 32)
- I2C port expander driver working. Testing of MMS Spec and Fiberlite UV source. (Week 32)
- Irene tested the MCAP pH after finding and fixing some software porting issues. (Week 32)
- In progress on ISUS driver (Week 32)
- Inrush current testing of MSC3. Inrush of Fiberlite on MSC3 is less than 0.5 amps. MSC1 has reported inrush of 3 amps, in progress on measurement. (Week 32)

- Software dev resumed on July 31. (Week 32)
- Review of MSC3 tiva module and baseboard schematics. Inrush current measurement, Fiberlite testing for inrush and current usage. Working to understand the large cap. (Week 34)
- Meeting with UW to review system design differences between Persistor CF2 sleep and Tiva hibernate. Learned that the large cap was likely added to prevent power glitches from corrupting the PCMCIA card. Also learned there may be humidity in the float housing. (Week 34)
- UW is ok with the consequences of low power hibernate on RTS from MSC3. (Week 34)
- Auto-sleep feature of pHFET-SOS will need to be disabled. (Week 34)
- Aadu from UW will be traveling to MBARI next week. He's bringing the computer I sent with the UW test suite installed. Focus will be on MSC1 testing. (Week 34)
- Making interrupted progress on the ISUS driver development. No blocking issues in the hardware and nearly complete on board bringup. (Week 34)
- Designed a buck-boost converter with TI Webench tool. Used the design for intern bakeoff. Boards received and tested 21 Aug 2024. (Week 34)
- Reworked codebase to add newline config parm for cr vs cr-lf (Week 35)
- Mms spec driver (Week 35)
- Inrush measurements, finalizing revA board bringup (Week 36)
- Inputs to MSC3 revB hardware. Attended Irene's design review (Week 36)
- Meetings with Aadu from UW. Setup and running of float test suite, etc. (Week 36)
- Line termination config for cr vs cr-lf (Week 36)
- Pushing to get ISUS driver running on RevA. Ran out of code space and ram in debug build config which had been identified as a risk using tm4c123g processor. Tm4c129 code compatible variant strongly suggested. (Week 36)
- Conditionally compiled the code to fit in the Tiva TM4c123g code space. Did a bit of buffer shuffling to keep under the 32K limit. Meet with Yui and Ken regarding options. (Week 37)
- Designed and laid out a rapid proto TM4C1290 based processor module. If all goes well, the assembled boards should be at MBARI around Sep 17. (Week 37)
- MSC3 RevA board checkout is complete after getting to the bottom of RTS (PD7) problem. Special GPIO that required an unlock procedure. (Week 37)
- Chris B and Jim M helped build a number of sniffer cables and the Saleae proved invaluable (thanks Kent for the tip on use with rs232). (Week 37)
- Clocked the first 256 samples from the MMS_Digital (spec board), a big step to the ISUS driver milestone. wahoo! (Week 37)
- Isus driver is now scanning spectra, working on timing, formatting output. Working towards calibration in ChemSensors lab. Working on data formatting and serial protocol. (Week 38)
- pH driver is working, output format is close. (Week 38)
- Workstation isus calibration program c source files from Ken. (Week 38)
- Tested two more baseboards, Irene fixed one of them (Week 38)
- Review MSC3 Tiva revB and baseboard revB (Week 38)

- Received TM4c1290 rapid proto Tiva Module. EE-tech assembly and rework for swapped MISO/MOSI. Started porting, board bringup (Week 38)
- Second rev of Tiva 1290 board updated to add development features and fix SPI, sent out for fab 5pm. (Week 38)
- Captured nitrate and pH serial between calibration workstations and MSC1. (Week 38)
- Listened in on GO-BGC Argo float meeting (Week 38)
- Nitrate (ISUS) driver is getting close. Finished the init routines and coefficient file loading. Ran out of internal RAM on one set of coefficients that can be removed per Yui. Debugging with print statements is slow, but working. (Week 39)
- pH driver is now working with the Jensenian analog sim. Thanks to Irene for troubleshooting a reversed diode on the baseboard. (Week 39)
- Tiva 123 revB support. New pinmux scheme is implemented with prelim test. Received two handbuild Tiva 123 RevB on Sep 25 - working! Many thanks to the EETechs for fast turnaround. (Week 39)
- Tiva 1290 v1.0 board bringup. Uarts, I2c, microSD are working. Using the 1290 to resolve some of the code porting on the 123 when the single step debugger is needed. (Week 39)
- Interviewed a contractor from Suburban Marine. Wrote a PO and working with Ken on details. (Week 39)
- pHFETSOS was made open source on 26 Sep 2024 by Ken Johnson and Yui Takeshita (Week 41)
- Working with Jacob Schloss, contractor from Suburban Marine on Tiva1290 and I2C peripheral drivers (Week 41)
- ISUS driver appears to be functioning though it has different timing than the CF2 running the continuous sample menu item. Captured timing and scrutinizing the ported code. Almost 8 months of hard push to get this milestone. (Week 41)
- Approval to make the 3rd rev of rapid proto hardware. This time when JLCPCB handles all the part stuffing with order delays for parts not in stock. (Week 41)
- Still developing for both Tiva 123g and 1290. Will cut to 1290 after getting the HIB working provided all the other drivers work also. pH driver is working on the 1290. (Week 41)
- Working with Jessica on calibration setup and test harness. Jessica has created a python based MSC test framework. Connected MSC3 and ran pH. Minor fix needed and we'll be calibrating and noise analyzing pH. (Week 42)
- Nitrate driver is coming along (Week 42)
- Contractor Jacob Schloss has reworked i2c for the 1290 Tiva. Next step is NAND flash driver with FRAM caching. (Week 42)
- Major milestone achieved. Both Nitrate and pH drivers are working and an MSC3 is available that can run tests and calibrations. We still have a ways to go on many small details and are changing to the Tiva 1290 processor. (Week 43)
- Working with the contractor who is improving the robustness of the i2c driver on Tiva 1290 and working on the NAND flash driver. Shipped a 123g module and baseboard. (Week 43)
- Working with contractor and testing code drop on 123g and 1290 hardware. (Week 47)

- I2c low level driver is working on rapid proto 1290 boards. Hibernate / sleep is not yet functioning. Irene is working on revA 1290 and launchpad and has opened support case at TI. Progress is being made (Week 47)
- Software is coming along. Working to get the serial protocol for all commands finished. Irene, Ben and Jess are setup to file bugs (Week 47)
- Working with Ben on 3x builds with pH and Nitrate. One for Dev, One for Test and one for Irene and contractor. (Week 47)
- Thanks to Jim Birch and Nadia for granting access to the big environmental chamber for low temperature testing the deuterium UV lamp. (Week 47)
- RevC baseboards should be in by first week in December and we'll begin integration tests soon after. (Week 47)
- Working a plan to build more RevA 1290 processor modules. (Week 47)
- Contractor (Week 48)
- Cold testing in ESP environmental chamber (Week 48)
- Serial protocol (Week 48)
- Transition to Tiva 1290 (Week 48)
- Working on serial protocol functions. Development on Tiva 123g is getting very tight. (Week 49)
- Transitioning from Tiva 123g to 1290. Line by line code merge / review produced a build that did not communicate on console, suspecting something with the pll or clock setup. Second merge is line by line, but module at a time and now have the interrupt i2c code merged and working on 1290 rapido board. (Week 49)
- Sent Jacob Schloss a RevA Tiva 1290 and an additional Tiva 1290 Rapido v1.2 along with a RevB Baseboard. Emphasis is on getting the hibernate function working and assist on code merge. (Week 49)
- Built up a 2nd 'test box' for use by Jess in calibration. Jess is working on a python version for calibration. (Week 49)
- Used the ESP environmental chamber to characterize the Fiberlite UV lamp from 15C to -15C. Also tested with dew and changing the guard shield distance to the high voltage. Prelim result is Fiberlite can handle the temperature range and frost/dew with little change in output intensity. (Week 49)

901805 - Coastal Biogeochemical Sensing Program

- V5 pHFET-SOS release for MFET (Week 1)
- QA box assembly (Week 1)
- V5 testing on nanoFET (Week 1)
- Attended obs kickoff (Week 4)
- Glider groundfault, prelim testing shows potential diff between aft and mid pcase can source 2.5uA. Working with Joe and Irene to craft a micro amp data logger out of either an MFET+modified MCAP or a CurrentRanger. Testing has been on the bench so far and next steps are to take measurements in seawater with the housing closed. (Week 6)
- pHFET-SOS v5.0 testing on nanoFET and MpHOx (Week 6)
- Working with Irene on MpHOx revB hardware and instrument drivers. (Week 6)

- Working with Irene on MpHOx rev B and instrument integration (Week 7)
- Working with Joe on implementing a quick prototype ground fault data logger for Spray Glider. Option A is hacked MFET/MCAP and Option B is tweaked Current Ranger. (Week 7)
- MpHOx RevB hardware design inputs to Irene. (Week 8)
- Instrument driver for MpHOX RevB (Week 8)
- Working with Irene on MSC2 hardware review, software task list (Week 8)
- Starting Feb 19 and OSM, I've been working to understand MBARI Sensor Controller (MSC1) CF2 code. Upon return from OSM, there was a big push to identify source code, schematics, boards, parts inventories, etc. All the hardware, software, contractors, POs that had been managed by Luke Colleti. (Week 10)
- IS has been very helpful providing access to various mac desktops, laptops and Windows VMs (Week 10)
- Working with Irene, Yui, Ken and team we are starting to get on top of a plan forward. (Week 10)
- Working on FPGA source build and config eeprom programming. (Week 10)
- Phone call with contractor regarding status on new PSoC board development. Getting PSoC code to build. (Week 10)
- Brent and Yui helped me get up to speed on CodeWarrior, PicoDOS to start going thru the various code snapshots. Dana Swift of UW provided the binary executable in production, delivered by Luke and that is a big help. (Week 10)
- Too many activities to list, it's been a painful couple weeks but it's looking good and there is a plan. Next step is to slow down and move methodically. (Week 10)
- Hours for working the float challenge will be charged to 901805. (Week 10)
- GoBGC / SOCCOM ramp up to replace Luke. Meetings. (Week 11)
- Working on duplicating Persistor programming environment (CodeWarrior etc.), Atmel Flex FPGA compile and programming, PIC18F programming. (Week 11)
- Looking at implementation of FPGA and compatibility with MMS Analog board ADC. FPGA targets a different ADC than is used, but after datasheet compare, they are SPI sequence compatible. (Week 11)
- Diff'ing sources and binaries to try and locate 'production' CF2 code (Week 11)
- Meeting with Dana Swift and Aadu from UW. Very helpful in clarifying the functionality requested. UW will be providing an interface spec in the next couple weeks. Some changes in protocol and sequencing are ok (whew) as there are improvements we'd like to make. (Week 11)
- (3 weeks weekly) (Week 14)
- Finished software and hardware forensics. We have a solid plan for getting MSC1 back on track for delivery commits in 2024. (Week 14)
- Worked with IS to backup the various computers and VMs. Active content moved to Titan. (Week 14)
- MMS Digital: Quartus FPGA programming was assessed and the recommended path forward is to use digikey to copy a master configurator since no changes are planned for the fpga. The dependency on parallel port programming requires old PC hardware.

PIC18F programming can be done onboard, however, recommend using digikey to pre-program. (Week 14)

- MMS Digital PSoC design. Working with contractor Bill Keeler who took over from previous contractor. The state of the design is being assessed - there are issues in the ADC read timing. Duplicating Bills setup. (Week 14)
- Persistor CF2 code. Binary and source diffs are done. Production binaries obtained from UW / Dana Swift so we good to go on programming remaining 45 CF2 MSC1 builds. (Week 14)
- Evaluated state of Persistor CF2 replacement with STM32F413. First hardware revision was handed off to EE Techs however the software dev for STM32 had not yet been started. CubeIDE was installed and minor mods to an example were all that was found on 3 computers and 5 VMs. Recommended porting CF2 application to Tiva processor and using Carbon lab version of pH boards (MCAP). (Week 14)
- Dana Swift (UW) drafted an interface spec. Recommending minor modifications to the serial protocol. (Week 14)
- Irene delivered MpHOX revB wired to MSC2 for Tiva porting. Porting is in progress. (Week 14)
- MSC3 processor module design recommendations provided to Irene. (Week 14)
- Congrats to Yui who was married on Monday. (Week 16)
- Participated in the team lead by Irene that got the MMS MBARI Digital and MMS MBARI Analog boards built, fpga and pic programmed, pots adjusted, and tested with UV lamp and Zeiss spec - major milestone accomplished for being able to build ISUS for the float program. (Week 16)
- Relocated the dura board pH test setup from A113 (Luke's old office) to the Chem Sensors lab. Walked Peter and Jessica thru the high level procedure for dura board checkout. Will meet next week and run thru the test procedure along with MSC1 baseboard test procedure. (Week 16)
- Reviewed implementation and emails concerning PSoC implementation of for new MMS Digital for mini-ISUS. Bill Keeler, contractor, is out of hours on PO but still working. Planning to meet with Ken and Bill next week. Working an alternate implementation proposal. (Week 16)
- Cleaned out and vacated A113. Finishing the sort of what's needed and what should be tossed in B108. Moved needed computers to Chem sensors lab and worked with Josh on locating data ingest computer. (Week 16)
- Software porting has been on hold until we got the MMS ISUS build resolved, but that is now moving forward (Week 16)
- Met with Ken regarding plans for Mooring and Dorado ISUS. Plan is to work on these sensors after porting for new processor is complete. Jared's request for mooring is ISUS ready to go by June 12. (Week 17)
- Resumed porting after hitting milestone with Irene on MBARI produced ISUS MMS digital and analog boards. Mari reported a successful calibration of a sensor on Tuesday. Wahoo. (Week 17)

- Porting is moving forward using MpHOX revB and MSC2 base board. Pin mux for smaller pinout part given to Irene and working to verify the proposed MSC3 processor module and baseboard hardware design by end of week. (Week 17)
- Working thru organizing the boards and supplies in the boxes removed from Lukes office. This has been hampered by having a frauded credit card - now resolved. (Week 17)
- PSoC contractor meeting scheduled. Have proposed an alternate solution using an ARM processor to implement timing sequence generated by MMS Digital. (Week 17)
- Reviewed status and plans with Ken. Yui returned from vacation early and we met to discuss schedule and priorities. Worked on proposed hours adjustment. A PCO request will happen in the next week or so. Gave Kent a heads up. (Week 17)
- PCO adjustment of hours is pending. 901805 hours will be GoBGC and SOCCOM (Week 18)
- Proposed an alternative to PSoC using FPGA based design for mini-ISUS. Did a prelim layout chip floor plan in Kicad and presented options on Thursday. Worked with Jose on the layout and he was finished by Tuesday and sent the boards out for quote on Wednesday. (Week 18)
- Jose finished the layout on Tuesday for the MMS Digital 'round board' for mini-ISUS (Week 18)
- Review of Irene's MSC3 processor module and baseboard designs (Week 18)
- Reviewed progress on PSoC contractor project, met with contractor, met with Ken and Yui. Based on forward progress with mini-ISUS, terminated further work on PSoC. PO updated for final payment. PSoC task is now done. (Week 18)
- Working APF serial protocol per UW spec and protocol capture. Goal is m2m protocol implemented by end of May. (Week 18)
- Setup linux computer for protocol testing. (Week 18)
- GoBGC/SOCCOM. New board for mini-ISUS digital is out for fab/assembly (Week 19)
- Irene is on vacation, working with Jose on MSC3_baseboard and MSC3 Tiva module layout. (Week 19)
- BIg push to get ISUS running on Tiva processor using MSC2 setup. (Week 19)
- Finalizing with contractor Bill Keeler. Received hardware and latest PSoC software. Forwarded his invoice to accounting. (Week 19)
- Big push on getting ISUS Nitrate sensor running on Tiva processor. Its not realistic this week but should be running soon after return. Dev setup will go to Colorado. (Week 20)
- Functions are in place and compiling, though some of the CF2 based functions are stubbed. Working i2c drivers. Persistent data is moving from RTC SRAM to FRAM. (Week 20)
- (901217) Getting close to having the ISUS driver stack running in pHFET-SOS on Tiva. Working thru board proto hardware issues. (Week 23)
- Mini-Isus digital board works. New MMS Digital boards also work. (Week 23)
- Rebuild of Mooring ISUS instrument. (Week 23)
- 901217 - Chem Sensors / GoBGC / SOCCOM (Week 24)
- ISUS for M1 Mooring (Week 24)

- Corrosion on Spray Glider was minimal during last deployment - ‘ground’ strap between p-cases appears to be working. Hoping to get a plastic tank down at ESB to make some measurements and do root cause on the ground fault. (Week 24)
- (SOCCOM/GOBGC) (Week 25)
- Mooring ISUS nitrate sensor ran successfully over the weekend. We are hampered by lack of schematics and docs, and Jessica working with Josh figured out the connection error. Calibration is in progress. Mooring turn ship day is 27 Jun. Dark currents are out of spec. Suggesting a change of the spectrometer module and electronics board pair. (Week 25)
- Working thru wiring issues on MSC2 baseboard to MpHOX revB - getting close to running the nitrate driver and test. (Week 25)
- Received MSC3 processor and baseboard from Irene on June 26th. Will spend a few more hours debugging problems on MSC2 and will then start MSC3 board bringup (Week 26)
- Troubleshooting ISUS for M1. ISUS had stopped working with OASIS and had a ‘Wakeup Fail’ message. Power cycling fixed the wakeup problem. Mooring deployment is Jun 27. (Week 26)
- Meeting with Yui / Ken / Irene on 2025 proposal for the various carbon and nitrate efforts (Chem Sensors, Coastal biogeo, GoBGC, SOCCOM) (Week 27)

901904 - Deep-Sea Coral-Sponge Community Observatory

- Prelim planning, Steve is indicating Fall deployment. (Week 4)
- Proposal discussions (Week 28)
- Working deployment prep, see notes under Planktivore (Week 32)
- Planktivore V1 frame and brackets are ready. (Week 38)
- Denis is working to finish the battery pack. Looks like it’s about 83A-Hr. (Week 38)

902004 - Planktivore

- PCB checkout (Week 1)
- Board checkout for strobes, energy, and ltc4162 boards. (Week 4)
- Kickoff prep (Week 4)
- Board testing (Week 6)
- Prep and deploy Ahi + PtvrV2. (Week 6)
- Watch standing for Ahi. Weather affected some of the team availability for watchstanding. Very appreciative of new DMO team stepping up. (Week 6)
- Slides, planning, held Planktivore kickoff Feb 6. (Week 6)
- Ahi + Planktivore deployment with Galene on the 14th. We have addressed most issues found in previous deployment. Working to chase down a faint image ‘reflection’. (Week 7)
- LRAUV team is also using Ahi for testing a new ‘tail’ mission. (Week 7)
- Ahi+Planktivore v2 performed well on the sea trial, we’ll know better after plankton image processing how we did. LRAUV team was also working on a new ‘tail’ mission that will be useful for Plankton Proxies. (Week 8)

- Poster for OSM24 (Week 8)
- Planktivore weekly meeting. Planning for March, April and May (Week 10)
- Planktivore is a candidate for DOEST in June. (Week 10)
- Paul has processed the 27million mooring images from last spring. We are chasing an image aberration and its in those images as well though the effect is minor and the plan is to complete operations this spring before opening the housing. (Week 10)
- Weekly meeting to cover Ahi+Planktivore v2 shadowing I2MAP on Mar 20. (Week 11)
- LRAUV overview of watch standing for Jason and Sebastian. Many thanks to Quinn for the assist. (Week 11)
- First science mission. Ahi+Planktivore V2 shadowing I2MAP (Week 14)
- Synchro Windfarm study is in full swing. Multi-platform coordinated ops with Ahi + PlanktivoreV2 + Piscivore playing a key role. So far so good on Ahi reliability. Chris Wahl did a great job fixing and testing the vehicle. We followed his advice on providing notification to the ASO group and the response has been fantastic. We are also using the planning tab in the ODSS and will be providing feedback to Carlos and Kevin for future improvements. (Week 16)
- Ahi is making way to M2 and bucking some current. We are using more battery than is preferred but still within limits to return (20A-Hr predicted). We are working around a system integration problem that occurs outside of cell range when missions are changed and power is cycled to the payloads, there appears to be a race condition that causes Planktivore / LRAUV lcm based time sync to prevent image recording. The workaround is to avoid mission changes. Ahi due to arrive at C1 on Friday during a power outage. Brian is on top of this. (Week 16)
- Wrapped up Synchro Offshore Windfarm pilot study. Great job by Jason Adelaars organizing and handling the watchstanding for Ahi. (Week 17)
- Ahi ran great. We had more drag with Piscivore and Planktivore on the same vehicle, current consumption was up around 3.3amps at commanded speed. A couple days running C1 to M1, then it was off to M2 and back to C1 for recovery on power off friday. Brian Kieft was on call all week and was a great coach for new watch standers. In addition he worked with Carlos et al to have the Dash hosted at WHOI. Recovery went well. (Week 17)
- Met with Monique regarding plans for Plankton Proxies mission. Daphne with Piscivore goes on on Wed this week, Ahi + Planktivore V2 goes out on Monday. Chris Wahl, DMO ASO group is preparing Ahi for deployment. We'll have back to back with Durkin Lab deploying May 6. (Week 17)
- Working with Sebastian on watchstanding and deployment plans (Week 17)
- Paul Roberts is back and we discussed improvements in imaging he learned. (Week 17)
- Weekly meeting, deployment plan review for Plankton Proxies and Durkin Lab trap tracking. (Week 18)
- Ahi was deployed by ASO group on Monday morning and has been performing well after a software update pushed by the LRAUV team. Nitrate has been increasing and it looks like Monique might find the chlorophyll signal for sampling. Ahi is done on Thursday. (Week 18)
- Ahi is out with Durkin Lab Trap Tracking. (Week 19)

- Weekly meeting (Week 19)
- Wrapped up fourth science deployment. Durkin lab use of Ahi + Planktivore went well. (Week 20)
- Lessons learned meeting. Very good input from Sebastian on LRAUV and Planktivore. (Week 20)
- MIW2024 abstract submitted (Week 24)
- Proposal season (Week 25)
- Meeting with Piscivore team and Oclea and Rhonda software - vendors of lower power Ambarella based hardware. (Week 25)
- Proposal (Week 26)
- Aug/Sep/Oct deployment planning (Week 26)
- Working on proposal. Discussions and planning for 2025 and working 2024 September deployments (Week 27)
- (Week 28)
- Holding weekly meetings. Working on 2025 deployment consolidation but not finding reasonable overlaps. Met with Chris Wahl to discuss ASO group 2025 deployments. Met separately with Brett on same. (Week 32)
- MBARI open house. Club Plankton. (Week 32)
- Paul and Brent worked the deployment of intern Steven Patrick's real time plankton classification algorithm. Good results! Follow up meeting with Monique for comparison to Plankton Proxies model. (Week 32)
- Working the planktivore V1 deployment for the Barry lab. Aaron is using the deepconnect frame for the battery and microscope mounting. (Week 32)
- Working with Denis on getting the battery housing and cables finished and tested. (Week 32)
- Met with Denis re progress on battery for upcoming Barry lab deployment of Planktivore v1. Cables ordered and received, load testing and charging not done yet. Denis called Craig to get details and to understand 20amp charge current. (Week 34)
- I'm mostly out of the loop on upcoming Proxies deployment of Ahi, but all seems ready to go. (Week 34)
- Plankton Proxies deployment. Minimal involvement (Week 36)
- Working with Denis on Barry lab Planktivore v1 deployment. Date changed from Sep 16 to first week on Oct. (Week 36)
- Received phase 2 feedback. Meetings with DMO on 2025 capacity. (Week 37)
- Weekly meeting. Planning CANON, EcoHAB and Barry Lab deployments (Week 37)
- Denis is working the battery for Barry Lab deployment. (Week 37)
- Ahi was deployed to sniff diatoms for early EcoHAB. Thanks to Chris, Varsha and Cole for the prep and especially Paul for making it happen. (Week 37)
- DeepRip suffered a problem that turned out to be the primary SSD for the OS. Many thanks to Andrew McCann for the Parted Magic USB stick. Clonezilla didnt work for us, but DDrescue did. Paul moved the primary boot SSD to slots not underneath the GPU. Thinking that temperature may have been a factor. DeepRip should be back online Thursday. (Week 37)
- Helped with deployment prep of Ahi for CANON (Week 38)

- Planktivore weekly - Patrick Daniel presented progress on Planktivore image classification (Week 38)
- Ahi will be recovered Friday and then charged, prepd and deployed Monday for EcoHAB. (Week 38)
- Last week: Planktivore V1 prep for Barry Lab cruise, test tank for 24 hours. Plankitovre V2 on Ahi for EcoHAB. ASO group was booked so Planktivore engineering managed the deployment. Ahi did great an ASO recovered Ahi. (Week 40)
- Planktivore V1 housing will be opened for desiccant pack and RTC replacement. Counterfeit DS3231M is suspected due to 3day in a year clock drift. (Week 40)
- DeepRip has had 4 incidences or sudden reset including the one were we lost the SSD a couple weeks back. We may have a damaged motherboard or processor. Both are pricey ~7K. (Week 41)
- Planktivore V1 was mobd. Deployment interrupted due to a config error. Will deploy on Friday. (Week 41)
- MIW Poster and Lightning talk (Week 41)
- Weekly meeting (Week 42)
- Planning or Synchro deployment (Week 42)
- Ahi was deployed on Monday Oct 21 for the Synchro Windfarm study. So far so good on the mission though we are seeing battery stick errors that shouldn't be happening with the way we have Ahi's switches set. (Week 43)
- Weekly meeting (Week 43)
- Weekly meeting. (Week 47)
- Shadowgraph housing fabrication will be shifted to 2025. Purchasing cameras and Orin NXs is complete. (Week 47)
- Delegated camera controller hardware bringup to Brent. (Week 47)
- Provided a fully assembled camera controller to Brent Jones and progress is being made on software changes for i2c mux and adding the fourth serial port. (Week 48)
- Ahi was deployed Monday and recovered Tuesday with a successful targeted sampling experiment. (Week 49)

Out of Office

- Jan 9 - 12 CES
- Feb 9 - 14 Vacation Colorado
- Feb 18 - 23 OSM24
- Feb 8 - 12 Vacation Colorado
- Feb 18 - 23 OSM24
- Apr 5 - 10 Eclipse
- Feb 8 - 12 Vacation Colorado
- Apr 5 - 10 Eclipse
- Feb 15 - 16 Vacation
- Feb 15 - 16 Vacation
- Feb 18 - 23 OSM24
- Apr 4 - 10 Eclipse Mexico, Cuatro Cienegas and stromatalites
- July two to three weeks vacation Colorado. Working on intern plan.

- June one week. Date is tbd.
- July or Aug two to three weeks vacation Colorado. Working on intern plan.
- May 10 days. May 20 - 30 (or so). Colorado
- Aug two to three weeks vacation Colorado.
- June 20 - 26. Texas
- June 13 NASA Ames, eDNA
- July 4 - taking the week off.
- June 20 - 25. Texas
- July 3. Vacation (maybe)
- July 1-5 Vacation canceled, working on the 4th
- July 20 to July 23 Vacation maybe
- Aug 2nd half, maybe a week or so
- Oct two to three weeks vacation Colorado.
- July 20 to July 26 Vacation
- Aug 23 to 27
- Aug 16 to Aug 19 - b'ment
- Aug 26. Vacation. Tahoe Swim.
- Aug 30 Vacation day
- Oct/Nov two to three weeks vacation Colorado.
- Auto accident, sick day Aug 27.
- MIW2024 Presented a poster
- Oct 24 two weeks vacation Colorado.
- One to two weeks in the later part of December
- Dr appt on 11 Dec 2024

Overhead

- Covid exposure at staff council meeting. Tested negative (Week 4)
- Review (Week 4)
- Board bullets (Week 4)
- OSM2024 talks, posters and vendor discussions. Planktivore interest aplenty. Attending Argo and SOCCOM talks. (Week 8)
- Working on proposed hours adjustment (Week 17)
- Staff Council (Week 17)
- ODSS Abstract, draft submitted. (Week 20)
- Forrest Milner intern arrived on Monday. Getting him setup with all the agreements in place. Bidirectional satellite comms with Argos and Kineis. (Week 24)
- ODSS proposal (Week 26)
- Intern project meetings. Forrest is making great progress. License agreement signed! Hopefully the 3 week delay gives us enough time to work with a satellite. (Week 27)
- Planktivore project proposal (Week 28)
- ODSS Enhancements project proposal (Week 28)
- Intern Forrest Milner has made great progress. We had to pivot away from bidirectional satellite communications due to license and code access delays. New direction is to produce a custom radio board based on STM32WL55 that can run the Kineis software

stack if we ever get access. Board fab at PCBWay, EETechs did a great job assisting Forrest with the assembly. Forrest used the new pick and place machine and the reflow oven. The radio board loads code and Forrest is working thru debugging solder shorts on some tiny parts in the RF path. Outstanding progress (Week 32)

- Met with Kineis on Aug 7 and we received access to the documents. Time is too short to do much unfortunately. We also found that Kineis software stack does not support bidirectional on STM32WL55. Kinesis is working on the KIM2 module ($75) that does support bidirectional Also found that only 2 of the 9 Argos satellites support bidirectional New Kineis satellites are q'd for launch. Looks like we were in a bit early and their website a bit enthusiastic. Good results for the feasibility study this summer. 1Q25 is likely a better time to start the eval. (Week 32)
- Forrest Milner Intern. Presentation practice and review for bidirection Argos feasibility. On the last day, held electronics EDA 'bakeoff' between Kicad v8 and EasyEDA on Thursday. Contest: schematic capture, pcb layout, fab and assembly, rapid prototype style. Impressive results. Boards sent for Fab on Thurs 15 Aug 2024, assembled boards received on 20 Aug 2025 (minus switching reg), switching reg added by Chris B on Wed 21 Aug, tested and working. (Week 34)