

# Paul McGill Sorted By Project

## 300070 - DMO Support - Ventana

- Helped DJ with time synchronization issues with WinFrog upgrade, and refinement of ground-fault system on Ventana. (Week 2)
- Working on a couple of Ventana problems with DJ. We'll tackle them next week during the maintenance period. (Week 7)
- Working with DJ and Duane T. on a power monitoring system for Ventana. They are having brownouts during dives and need to see where the power is going. (Week 8)
- Helped DJ with ROV power problem (Week 9)
- Continuing to help DJ sort out power issues on ROV. (Week 10)
- Helping DJ figure out why hydraulic valves are slow. Looking at valve drivers and made some measurements on the valves. (Week 10)
- Helping DJ with a load-cell problem on the ROV winch (Week 19)
- Tested new Hall sensor for prop RPM on vehicle (Week 20)
- Continuing to help DJ with load cell for tether management system (Week 20)
- Reviewed final design for current/voltage monitor board (Week 21)
- Reviewed final version of power monitor board so Duane T. can send to fabrication (Week 23)
- Helped pilots fix two broken ROV joysticks that would've prevented science dives this week (Week 30)
- Did more troubleshooting and adjustments on Ventana joystick (Week 31)
- Refining design of joystick range scaling circuit (Week 32)
- Built circuit to test joystick range scaling (Week 34)
- Attempted to repair potentiometer on old joystick without success. New pots on order. (Week 34)
- Helping DJ adapt a surplus potentiometer to fix broken joystick (Week 37)
- Helped Ethan with setting nulls on repaired joystick (Week 39)
- Worked with DJ on better way to control camera from pilot's joystick (Week 39)
- Working with Duane and DJ to add isolation to new power monitor board (Week 39)
- Researching miniature joystick options for Ventana camera (Week 41)
- Continuing to work with DJ to find suitable thumbsticks for ROV camera control (Week 44)

## 701147.99 - MARS IV Node Upgrade

- Had Zoom meeting with UW to get progress update and to discuss possible power supply upgrade (Week 1)
- Had serial splitter board fabbed and tested all ports at full speed—it works. Getting a second board built. (Week 2)
- Got second serial splitter assembled and tested. (Week 3)

- Working with UW on various issues that have come up in testing of the boards for the new node. (Week 8)
- Working on a new cable design to be the MARS standard for science instruments that need GigE Ethernet. (Week 8)
- Dealing with no-cost extension for UW (Week 9)
- Investigated bias resistors on floating power supply outputs, as what was done previously wasn't well-documented. (Week 10)
- Bi-weekly meeting with UW to update on progress. (Week 10)
- Working with UW to resolve issues with MARS power board overcurrent protection (Week 12)
- Had meeting with UW and we decided to respin the power supply boards due to multiple issues (Week 13)
- Dealing with another budget supplement request from UW (Week 16)
- Met with Knute to discuss design of MARS science cables, contacted Brock for a cable quote (Week 16)
- Working on annual NSF report submission—almost finished (Week 17)
- Reviewed and approved new PO for UW contract (Week 21)
- Reviewed new overcurrent protection circuit (Week 27)
- Reviewed and approved project budget status reports (Week 30)
- Reading docs for Meinberg precision clock so I can update firmware (Week 31)
- Reviewed new IPB board design with George S and UW engineers (Week 34)
- Dealing with fallout of another funding request from UW (Week 34)
- Helping Bryan with grounding and isolation in new MARS power and electronics housings (Week 39)
- Had monthly meeting with UW, progress is good (Week 42)
- Met with UW for progress report (Week 47)
- Reading Meinberg PTP clock manual so I can update the firmware—it's very confusing (Week 48)

## 901700 - Acoustical Ocean Ecology

- Working on replacing bad connector on MARS Echosounder. Also trying to improve sealing of adapter can, which will require a new plug to be designed and machined. (Week 18)
- Assembled end cap for MARS Echosounder interface can (Week 37)
- Got wiring for MARS interface can for MARS Echosounder modified so it will fit in the small space better (Week 47)

## 901902 - Unoccupied Aerial Vehicles for Science, Operations and Outreach

- Repaired broken telemetry antenna (Week 9)
- Ran ground station for two flights on Monday. (Week 10)
- Participated in UAV flight at MBARI to show NOAA visitors our operation (Week 13)
- Researched and identified a better 2.4 GHz antenna for telemetry (Week 16)
- Ordered new 2.4 GHz telemetry antenna (Week 17)

- Set up new antenna on UAV ground station telemetry receiver. (Week 18)
- Helped with two UAV missions on Wed at New Brighton and Seacliff beaches (Week 23)
- Met to discuss battery problems and upcoming flight ops (Week 30)
- Planning for two flights I'll assist with on Thursday (Week 32)
- Mapped out connector pinout of Trinity battery pack (Week 34)
- Met to discuss response to proposal phase 2 (Week 37)
- Ordered new cables for UAV telemetry receiver (Week 43)
- Working with Bill K on ground station wiring (Week 47)

## 901904 - Deep-Sea Coral-Sponge Community Observatory

- Repaired WABO Iridium beacon and will now test outdoors (Week 3)
- Locating camera tripod parts so they can be reassembled and deployed (Week 4)
- Reviewed some of the 20,000 images from the just-recovered Coral Macro Cam. (Week 7)
- Attended Irene's design review (Week 9)
- Ordered focus stepper motor drivers. Working out wiring and connectors to connect focus stepper motor to driver board (Week 20)
- Got Raspberry Pi set up with latest operating system for testing (Week 21)
- Got focus motor controller turning the motor with laptop app (Week 21)
- Did further testing of focus stepper motor driver, and can now operate it through VirtualHere running on the Raspberry Pi (Week 22)
- Helped Alana and Jim B. with their DOEST presentation (Week 23)
- Working with Alana and Aaron S on lens focussing (Week 25)
- Trying to incorporate limit switches into stepper motor driver (Week 25)
- Installed and tested focus motor system with Aaron S and Alana (Week 26)
- Got new laser housing schematic drawn for fab by techs (Week 26)
- Set up second laptop with disco account and all required apps (Week 26)
- Got laser cable tested, rebuilt, tested again, and fabricated (Week 27)
- Preparing (Week 27)

## 902101 - LRAUV Technology Development

- Sent design files off to have PIC24 AOS sensor PCBs fabbed (Week 4)
- Got Jose to build new AOS sensor boards, and will test them on Thu. (Week 7)
- Tested new BMA456 sensor board—it works! Now needs pressure test. (Week 8)
- Finished code to store AOS offsets in EEPROM to survive power cycles. Cleaned up code in general and am almost ready to archive. (Week 8)
- Got second AOS sensor wired for testing in pressure test tank. (Week 10)
- Ordered new power supplies for sonar payload (Week 26)
- Helping Vartha with LRAUV sonar payload (Week 27)
- Ordered and received second power supply for sonar payload (Week 30)
- Working with Brett to troubleshoot issues with RS-485 on LRAUV. Found an issue that may or may not be the problem but we'll fix it and do further testing at sea (Week 31)

- Finished pressure testing of AOS PIC24 attitude sensor, will now see about fabricating more parts (Week 32)

## 902304 - Piscivore Cam

- Added requested feature to camera software which will delay deployment for given number of days. Code is done but will take most of the week to test. (Week 1)
- Made some more mods to Piscivore controller code, now bench testing over multi-day operations. (Week 2)
- Commencing long-term testing of new controller software. (Week 3)
- Troubleshooting intermittent controller battery connection issue on rear-facing camera (Week 3)
- Getting parts together for building two more cameras (Week 4)
- Created documentation for build of PCam v2 I/O board (Week 7)
- Put together build kit and submitted parts to e-techs to build new controllers (Week 7)
- Getting new PCam 2.0 I/O boards built. Tested first article and gave the go-ahead to build two more. (Week 8)
- Investigating camera recording software (Week 9)
- Got three processors labeled, programmed, and attached to new I/O board to build new cameras. (Week 10)
- Helped Jared to troubleshoot problems with latest camera builds (Week 12)
- Troubleshooting issues with flakey camera controller (Week 16)
- Met to discuss development of next camera version (Week 16)
- Troubleshooting timing problem on v1.3.0 of camera controller code (Week 17)
- Continuing to troubleshoot software bug in controller software. (Week 18)
- Finally found the weird timing bug in the camera control firmware. Problem is caused by bug in Arduino real-time clock library and I'm programming around the issue. Now bench-testing the fix. (Week 19)
- Testing bug fixes for camera controller code—each test takes days, but so far, so good (Week 20)
- Trying to figure out how to increase resolution for video from Raspberry Pi cameras (Week 20)
- Testing on camera controller software v1.3.1 continues (Week 21)
- Found another timing bug in camera controller code, fixed it, and have been running verification tests (Week 22)
- Loaded correct firmware into two cameras for Monday's deployment on LRAUV (Week 22)
- Corrected wrong version of firmware on camera controller (Week 23)
- Helped with Piscivore camera deployment on Mon (Week 23)
- Attended two meetings with potential vendors for next-gen cameras (Week 25)
- Participated in 2025 proposal planning (Week 27)
- Had pre-meeting meeting to discuss requirements doc for Rhonda Software and will have Zoom with them in Kazakhstan tonight (Week 47)

## 902305 - Event Detection Using the Sedimentation Event Sensor

- Inspected new Gen3 controller just sent by McLane (Week 7)
- Opened battery sphere to configure for autonomous deployment. (Week 10)
- Removed MARS interface hardware from SES (Week 17)
- Working on converting SES battery sphere to autonomous operation (Week 17)
- Got SES battery sphere reconfigured for autonomous operation (Week 18)
- Reinstalled SES controller into its housing. (Week 18)
- Troubleshooting optical clarity issues with SES camera system. (Week 18)
- Inspected wiper on SES carousel and found it full of gritty sediment (Week 19)
- Cleaned camera viewport and what we thought were scratches are gone. Determined that other blemishes in image are caused by small bubbles that will disappear at depth. (Week 19)
- Trying to get quotes for Impulse connectors required for acoustic modem to talk to McLane controller (Week 20)
- Successfully tested modem triggering McLane controller on Trigger Trap (Week 21)
- Finished drawing for modem-to-controller cable, sent to manufacturing (Week 21)
- Rich and I got new acoustic modems covered with tape for scratch protection and mounted on both the SES and the Trigger Trap (Week 22)
- Sealed battery sphere on SES and installed new cable on Trigger Trap (Week 23)
- Preparing for Thu deployment (Week 25)
- Deployed SES and Trigger Trap near MARS last Thu—all went well (Week 26)
- Edited 2025 proposal (Week 27)
- Analyzed fluorescence data from last deployment and found some interesting signals (Week 42)
- Reviewing engineering data from last deployment to investigate battery anomaly (Week 42)
- Working with Giancarlo to set up SES as a mapping target for his group (Week 42)
- Presented results of latest fluorometry analysis to group (Week 43)
- Working on new analysis resulting from discussion (Week 43)
- Evaluating if we can get the SES and trigger trap back at sea for Dec 16 deployment (Week 44)
- Preparing for upcoming deployment on Dec 6, lots of work changing batts, fixing beacons, etc. (Week 47)
- Worked with new ME techs to get SES battery sphere sealed (Week 48)
- Did final checks and put SES in tank for testing over holiday (Week 48)

## 902306 - SINKER

- Found a cable we can use for connection to MARS (Week 4)
- Found a cable we can use for testing of wiper on Ventana dive (Week 4)
- Tracking down new cable for SINKER connection to MARS. The cable we chose previously will not support GigE. (Week 7)
- Searching for MARS cable that supports GigE Ethernet. Working on new cable design with MARS crew, but that will delay us a few months. (Week 8)

- Attempting to find a Gig-E cable for this experiment (Week 16)
- Continuing to investigate getting a 1 Gbit MARS cable with less than a year's lead time (Week 17)
- Working with Knute to figure out how to order ODI connectors for MARS connection (Week 34)

## 902401 - Geo-Sense

- Attended kick-off meeting for this year. (Week 2)
- Starting to draw system interconnect schematic. (Week 2)
- Working on system interconnects and connector selection with Alana (Week 3)
- Trying to figure out new connectors will fit into existing holes in Ti sphere (Week 4)
- Setting up travel for visit to Sintela in England (Week 4)
- Working on requirements doc (Week 7)
- Had telecon with Sintela people in England (Week 7)
- Searched in Castroville for both glass and Ti spheres. (Week 8)
- Designing Deep-Sea Connect for Geo-Sense (Week 9)
- Ordering connectors (Week 9)
- Re-laying out electrical connectors so we can use stock cables and connectors instead of long-lead-time custom assemblies. (Week 10)
- Getting vendor quotes for parts. (Week 10)
- Preparing for Loding trip next week. (Week 10)
- Working on deployment strategies and options for fiber-optic cable (Week 12)
- Ordered all of the SubConn connectors and cable assemblies (Week 13)
- Emailed Sintela about heat management of new DAS and they will simulate different orientations (Week 13)
- Inspected glass and Ti spheres with Aaron M and Aaron S to make sure that they'll work for us (Week 13)
- Inventoried latest shipment from SubConn and am dealing with their mistakes (Week 16)
- Got replacement connector to correct mis-shipment by SubConn (Week 17)
- Attended FO cable design review. (Week 18)
- Ordered and received parts for Deep Sea Connect. (Week 18)
- Preparing for design review on Thu morning (Week 19)
- Have drawn most of schematic for Deepsea Connect can (Week 19)
- Received power supplies for Deepsea Connect, working on wiring design (Week 20)
- Reviewed Winchester cable design and agreed to go ahead with order (Week 21)
- Tested fit of Deepsea Connect components into proposed housing (Week 25)
- Ordered more parts for Deepsea Connect build (Week 25)
- Ordered more parts for Deepsea Connect (Week 26)
- Edited 2025 proposal (Week 26)
- Met to discuss details of fiber-optic cables and connectors (Week 30)
- Working on battery sphere wiring (Week 32)
- Finished initial version of battery sphere schematic (Week 34)
- Started building battery spheres and ordered required parts (Week 37)
- Found that penetrators I ordered won't work, looking for alternatives (Week 37)

- Trying to fix error with battery sphere penetrators (Week 39)
- Working on DAS sphere schematic (Week 41)
- Made lots of progress on DAS sphere schematic (Week 42)
- Researching some system wiring changes to make system more usable and reliable (Week 42)
- Disassembled a spare Ti McLane controller housing to see if we can use it for Deepsea Connect (Week 42)
- Made changes to system interconnect diagram and am fleshing out the details (Week 43)
- Filling in for Alana at weekly meetings while she's at sea (Week 44)
- Got quotes for Seacon connectors but they're too expensive (Week 44)
- Got battery sphere penetrator cables wired so they're ready for molding this week (Week 47)
- Worked with Denis and Alana on low-voltage disconnect circuit (Week 47)
- Worked with Aaron S to fit the Deepsea Connect hardware in a small housing (Week 47)
- Got Seacon penetrators molded to SubConn connectors (Week 48)
- Installed penetrators into Benthos battery spheres (Week 48)

## 902402 - CSEM

- Did some reading on signal processing for CSEM to better understand what's important during operation at sea. (Week 18)
- Helping Aaron M with next year's proposal (Week 25)
- Edited 2025 proposal (Week 26)
- Met with Steve Constable to discuss our deployment of the SWAN CSEM system (Week 30)

## Out of Office

- Had medical appointment on Tue
- Took Monday as recovery day after international flight on Sunday
- On vacation March 27, returning to MBARI April 15
- On vacation last week, returned to MBARI April 15
- Was out sick with COVID last week
- Took vacation day Fri
- Medical appt Mon, sick day Wed
- Medical appts Mon, Wed; sick days Thu, Fri
- Sick days last Wed, Thu
- Medical appointment on Monday
- Another medical appointment on Monday

## Overhead

- Attended review of Jason A's mooring design. (Week 2)
- Mostly done with accomplishments doc for annual review. (Week 2)

- Wrote and presented a well-attended ground-fault tutorial. (Week 7)
- Helping Jason A with the ground-fault circuit for his mooring (Week 12)
- Participated in SeismoSands cruise on Tue to help Charlie Paull test deployment of seismometers (Week 13)
- Attended Director's Dialog (Week 13)
- Safety committee meeting on Wed (Week 16)
- Analyzing problem with VHF beacons causing interference on marine channel 16 (Week 17)
- Helping Kavi with a shore-power wiring issue with the Carson (Week 19)
- Replaced two computer monitors in my office with newer models, which required some office cleaning (Week 21)
- Went to Bay Photo in Scotts Valley to pick up our awesome new Monterey Bay panorama map on display outside the Pacific Forum (Week 22)
- Helping Justin T with LIDAR hot-water plume pumping system (Week 27)
- Working on upgrading OrCAD but my computer's hard disk is full so it's making the process much more difficult (Week 31)
- Working with IS to address multiple issues preventing me from running OrCAD (Week 32)
- Finally finished updating OS and antivirus software on desktop computer (Week 34)
- Troubleshooting failure of MARS hydrophone (Week 34)
- Finding parts for replacement hydrophone to be deployed Sep 19 (Week 34)
- Attending Marine Imaging Workshop in Monterey Tue–Thu (Week 41)
- Attended Marine Imaging Workshop last week (Week 42)
- Have been analyzing seismic data from 1998 to establish background noise levels in Monterey Bay so we can set the gains of the OBSs for the upcoming deployment (actually charged to Charlie's project which is not listed here) (Week 43)
- Spent a couple of days analyzing 23-year-old seismic data to establish background noise levels for upcoming SeismoSands deployment next week (time charged to Charlie's project) (Week 44)
- Worked with Knute and Bryan to get MARS Wet Node Simulator operational (time charged to MARS O&M) (Week 44)
- Moved rolling toolbox from Bldg. B Ex attic and emptied it so Paul C can give it to one of his new hires (Week 44)
- Have worked all week either preparing for SeismoSands or going to sea to deploy SeismoSands seismometers (charged to Charlie's project, which isn't listed here) (Week 45)
- I forgot to report our huge success last week in deploying 11 seismometers and 2 moorings in four days on the Carson (charged to Charlie's project) (Week 47)
- Worked with MARS team to get John R's hydrophone back on MARS, but alas it only worked for a day before its power failed. Will recover it Dec 6 on Crissy's cruise. (Week 47)
- Helped marine electrician to troubleshoot numerous wiring problems on R Carson (Week 48)