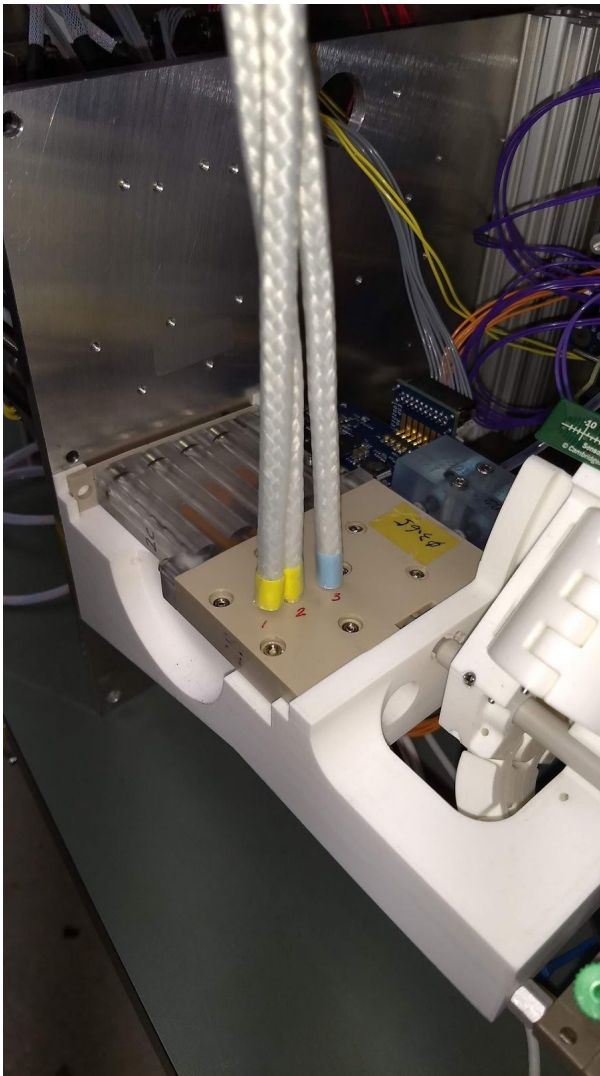


901205 - ESP SURF Center

Week 51

1. Scott Jensen
 - a. Slow testing of the terrestrial housing is continuing. The connectors seem to seal but now onto all the little imperfection in an oil drum:)
 - b. Most of the pressure sensors have been paired with a calibrated amplifier.
2. Doug Pargett
 - a. Reviewed the Function designs for the Alpha 2.2 cartridge, focusing on the seals at first.
 - b. Installed thermocouples into an old cartridge body to help map sample temperatures.

c.



- d.
- e. Installed pressure sensors and amp boards into ESP Tower, mostly so they don't get lost. Tower will need to be disassembled when we get the new stage components.
- 3. Brent Roman
 - a. Worked with Doug Pargett to test temperature probes in Function's "alpha1" prototype cartridge
 - b. Added code to support the "Frankentower" deep sampling ESP3G lab prototype

Week 50

- 1. Scott Jensen
 - a. Slow testing of the terrestrial housing is continuing. The connectors seem to seal but now onto all the little imperfection in an oil drum:)
 - b. Most of the pressure sensors have been paired with a calibrated amplifier.
- 2. Doug Pargett
 - a. More thermal FEA on new cartridges to test a couple possible design changes. FEA results predict the changes probably won't help much.
 - b. ESP Meetings and remote work to support shimmed cartridge test.
 - c. Started a new Solidworks model of Tower to include the changes and high pressure test pump and dome. Designing new support to have better roll and tilt testing capability.
- 3. Brent Roman
 - a. Helped Dack with en masse file name renaming on ESP share

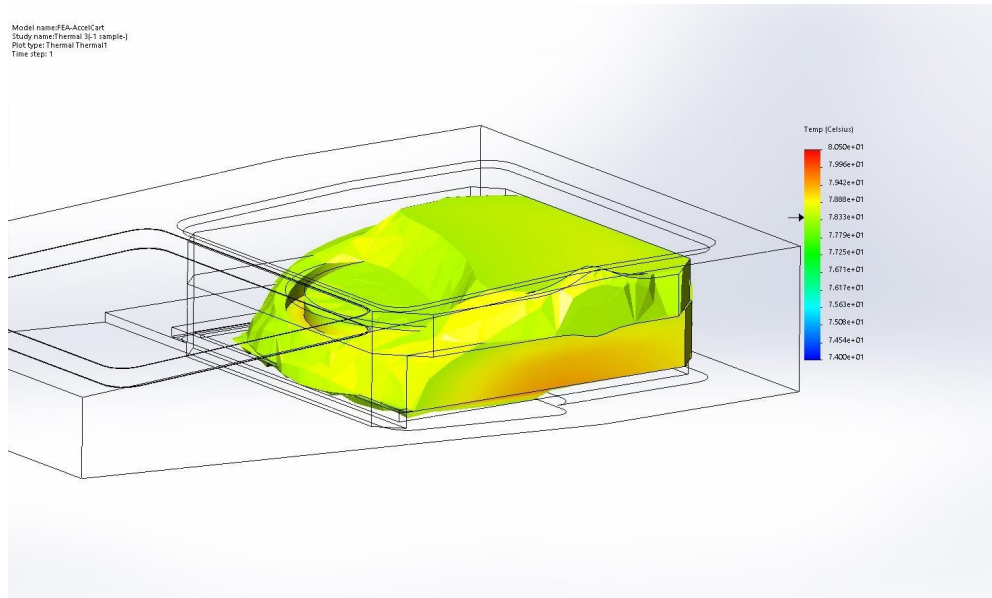
Week 49

- 1. Doug Pargett

- a. Meetings, phone calls, answering questions.
 - b. Solidworks, setting up models to FEA some ideas that might better manage heating of the new cartridges.
2. Brent Roman
 - a. Continuing support of WHOI

Week 48

1. Doug Pargett
 - a. Additional thermal FEA of the current cartridges to compare the new concept to.

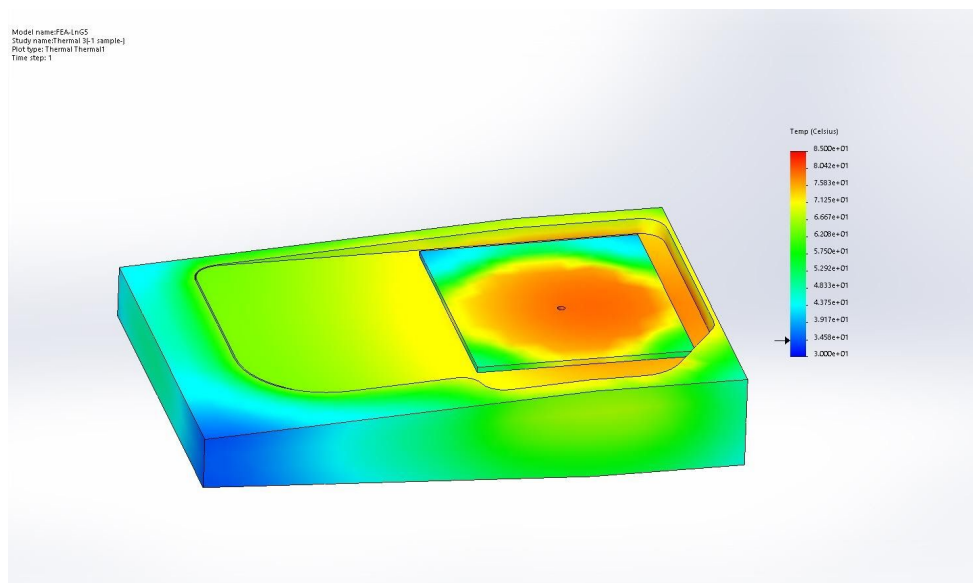


- b.
 - c. Cleaned and organized about half of my ESP workspace and tools.
2. Brent Roman
 - a. Found and fixed a bug in 3G syringe pressure servo (for Chris Preston)
 - b. Looking into a suspected problem with EEPROM data management on 3G Lysis Cartridges

Week 47

1. Doug Pargett
 - a. Added a holster for the bleach bottle to the front of the KOA-FLowerPot housing.

- b.
- c. Tested shims between cartridge for new Function Cartridge design.
- d. Adjusted thermal FEA models of the Function cartridges.



e.

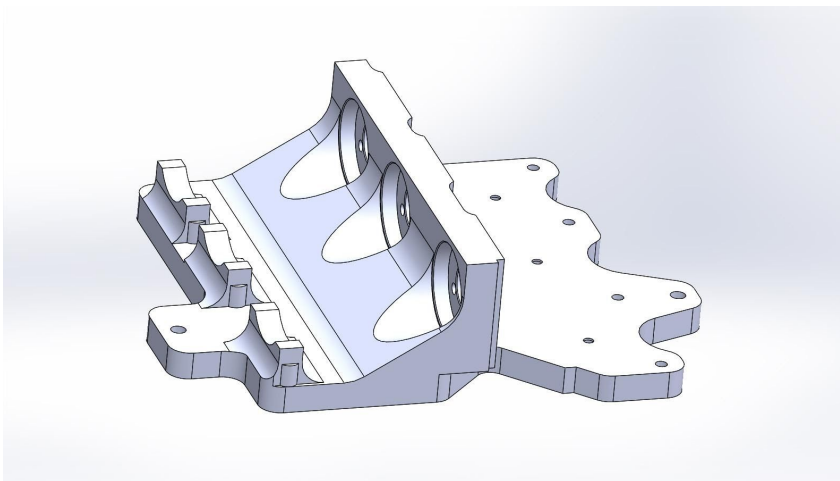
2. Brent Roman
 - a. TU Denmark's ESP deployment off Norway was successful. They are waiting to recover.
 - b. WHOI's ESP at Bowdoin College failed due to puck misalignment
 - i. Recovered by tweaking the alignment remotely. It's been working for the last 5 days.
 - c. Working with Chris Preston on optimizing 3G puck heating for lysis cartridges
 - i. Looks like we're going to need unique heat loss curves for each heater board :-(

Week 46

1. Kevin Gomes
 - a. Migrated services.mbari.org and cut over to esp-portal
2. Doug Pargett
 - a. FrankenTower, a high pressure capable bench ESP, is mostly complete. Some electrical upgrades and calibration are needed prior to pump installation and testing.
 - b. Zoom meeting to start phase 3 of cartridge redesign.
3. Brent Roman
 - a. Fixed bug Chris Preston identified in ESP 3G puck heating code.
 - b. Patched bug WHOI found with DA protocol
 - c. Investigating bug GLERL identified in microcontroller initialization sequence.
 - d. Used Kevan's old HP48GX calculator to reprogram memory cards for the ESP group's Saigene processors.

Week 45

1. Scott Jensen
 - a. Terrestrial housing lid has been machined and connectors potted. First pressure test showed a leak at the drum seam but a little grease seems to have sealed it. Next up is let it sit.
2. Doug Pargett
 - a. The G3 ESP on the WF seems to have performed well. Is there interest in having an ESP available on the WF more often?
 - b. Created solid models to 3d print some G3 ESP bulkhead valve components rather than assemble from several machined metal parts. (Lighter and can print-as-needed rather than stockpile lots of spare parts.)



3. Brent Roman
 - a. ESPmer in Denmark, ESPdennis near WHOI and ESPkoa on the Flyer all sampling well.
 - i. Jinxed it!
 - b. Working with Preston to revamp protocols for updated cartridges from Function.

Week 44

1. Doug Pargett
 - a. Helped get the Koa instrument set up for going out on the WF.
 - b. Started rebuilding the damaged LRAUV dome for use with the FrankenTower instrument.
 - c. Ordered lots of ESP parts from the shop.
 - d. Modifying frame components of the bulkhead valve assembly to be 3d printed rather than several machined components.
2. Brent Roman
 - a. Installed ESP 3G on the Flyer with SSH reverse tunnel for comms
 - b. Wrote mission scripting capability for ESP 3G as Unix command interpreter
 - i. Testing this now on the Flyer's Smith Cruise
 - ii. The same scripting capability will be used for upcoming Saildrone deployments
 - c. Working with Brian Kieft to figure improve SBD comms to ESP
 - i. Most of the trouble seems to be with quoting Ruby command arguments in shell scripts.

Week 43

1. Scott Jensen
 - a. Supporting upcoming WF and SailDrone deployments
2. Doug Pargett
 - a. We recanned the Koa instrument a few extra times as we inspected and fixed stuff.
 - b. I built up some over-instrument shelving and surge chamber to get Koa set-up for a possible deployment on the WF next week.
 - c. I've ordered several parts for the shop that are needed for MV2, MV3 and FrankenTower.
3. Brent Roman
 - a. Fall CANON exposed minor bugs in toroid leak detection/retry logic
 - i. Not decrementing spare cartridge count on toroid leaks
 - b. Help prepare ESPkoa for deployment on the Ken Smith Flyer cruise to M1

Week 42

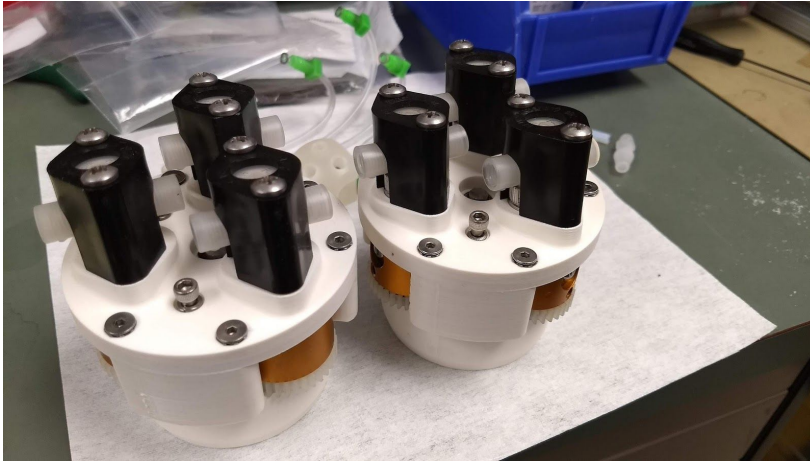
1. Scott Jensen
 - a. Unpacking and putting away gear from Gulf of Mexico along with assisting with forensics.

Week 41

1. Kevin Gomes
 - a. Some small support for WHOI deployments
2. Doug Pargett
 - a. Made some quick repair and troubleshooting of the MV1 instrument for the coming deployment.
 - b. Built up more bleach-backwash check valve assemblies.
 - c. Disassembled the previous MV1 dome and cleaned up the parts. There was some sediment in the oil chamber. (This was originally on MV3, but swapped after MV1 got hit.) Some components are needed for the FrankenTower™ system. Additional parts from the shop are also needed to rebuild. This dome will be needed if we want to move Koa back to LRAUV operations.
 - d. Making the revisions to the Solidworks models of the Flowerpot housing parts to match what was needed/missed in the first build.
3. Brent Roman
 - a. Helped diagnose grounding issue with analog pressure sensor on ESPmv1 for fall CANON
 - b. Diagnosed and fixed Forearm calibration issues on GLERL ESPs
 - c. Worked with WHOI and Gomes to add WHOI's ESPs to MBARI's ESPshore and ESP portal

Week 40

1. Kevin Gomes
 - a. Setup and configuration for helping with WHOI ESP deployments and the ESP portal
2. Scott Jensen
 - a. Uncovered a cold solder joint in one of the Elf boards for G3. This means all Elf are going to need to be inspected.
3. Doug Pargett
 - a. Additional progress on upgrading the Tower portable to use the function cartridges. The new cartridge deck is built and handoff +valves setup. Not tested yet. No pump or pressure dome yet.
 - b. Cleaned and rebuilt 2 G3 ESP pumps with new 3d printed bodies and new bearings. Needs tubing and flow testing, + alignment checks still. These are slated for MV2 and MV3.



- c.
4. Brent Roman
 - a. Delivered 50+ calibrated heater boards to Preston
 - b. Ongoing support of DTU in Denmark
 - c. Organized call with WHOI to discuss future of their 7 ESPs
 - i. Moved 2 of them to our ESPshore server, more to follow

Week 39

1. Scott Jensen
 - a. Continuing to work on Elf failure.
2. Doug Pargett
 - a. The MV-1 instrument had cartridge issues after re-build, but looks to be an old part problem. I've added shim material to better line up the cartridges. Testing looks good so far.
 - b. Parts are coming in to rebuild 2 of the G3 ESP pumps.
 - c. Starting conversion of the Franken-Tower bench instrument to work with the Function cartridges at high pressure. The old damaged MV-1 LRAUV dome will be used for this.
3. Brent Roman
 - a. Working with NOAA to set up conference call this Friday to understand their ESP deployment and networking plans
 - b. Finished calibrating Lyse-N-Go heater boards
 - c. Verifying calibrated cartridges in ESPhonu

Week 38

1. Scott Jensen
 - a. Supporting Saildone effort
2. Doug Pargett
 - a. Ordering parts from the shop for MV2, MV3, and Franken-Tower builds.
3. Brent Roman

- a. Helping to calibrate/debug ESPmv1 for use on Fall CANON
- b. Prepped electronics and software to APL comms test mooring off La Push, WA
 - i. Deployed 9/10. Lost contact with it after 3 days :-(
- c. Ongoing thermal calibration of ESP3G smart cartridges

Week 37

- 1. Scott Jensen
 - a. Traveled to move our recovery gear and then decommission ESP instrument and package everything to be shipped back to MBARI.
- 2. Doug Pargett
 - a. I rebuilt all the cartridge seals on the toroid ring of the MV-1 G3ESP.
- 3. Brent Roman
 - a. Helped test and calibrate ESPkoa and ESPmv1
 - b. Working with NOAA to gain reaccess to their ESPs after networking “upgrades” on their end
 - c. Investigating intermittent carousel encoder failures on mv1

Week 36

- 1. Kevin Gomes
 - a. Helping with some requests for the ESP portal
- 2. Doug Pargett
 - a. The MV1 instrument has been wrestled around a few times, but now has a drilled pressure sensor and a rebuilt pump. Initial high pressure tests show the drilled sensor is compensating to ambient.
 - b. MV1 is showing some cartridge seal leaks and those will need to be dealt with prior to deployment.
- 3. Brent Roman
 - a. Testing Linux 3.18 Kernel with all our modem variants.

Week 35

- 1. Kevin Gomes
 - a. Troubleshooting some portal issues
- 2. Doug Pargett
 - a. We’re trying to rebuild the MV-1 instrument for the coming canon cruise. MV-1 had many issues with pressure sensors in the last deployment, and we are digging deeper and deeper into the instrument. We will be testing a drill modified pressure sensor tomorrow.
- 3. Brent Roman
 - a. Heater board calibration in LRAUV chassis ESPhonu
 - b. Helping with bring up of first flower pot ESP
 - c. Working with APL on integration of new Telit ME910 modem for comms test deployment
 - d. Updated ESPrush and ESPniagara at GLERL
 - e. Discovered and Documented ESP2 manipulator wiring working connector out of its socket

Week 34

- 1. Kevin Gomes
 - a. More migrations of data and pretty much done. The MARS 2013 data set is giving some issues, but that is the last one.
- 2. Scott Jensen
 - a. Checked out power supply for SailDrone
 - b. Completed drawings of cables for SailDrone
 - c. Gathered material to send to SailDrone
- 3. Doug Pargett

- a. Working out solution for the pressure sensor problems.
- b. Designed new stage and TV actuator for bench ESP. Made drawings and solid files for 3d printing.
- 4. Brent Roman
 - a. Found that one of the older 2G ESPs can pull out its Forearm wiring connector
 - i. Working with McLane on a mechanical fix
 - b. Added code to automatically choose between InStage and InCarousel heating profiles
 - c. Testing InCarousel heating on Honu in TTL "EasyBake" oven at ambient temperature

Week 33

- 1. Kevin Gomes
 - a. More migration from services to esp-portal in an effort to migrate off CentOS 6
- 2. Scott Jensen
 - a. Put together test of power supply to be used on the SailDrone deployment
 - b. Created drawings of the bulkhead connector pinouts that will be used with the Flower Pot instrument housing that will be deployed on SailDrone.
- 3. Doug Pargett
 - a. Replaced 3 toroid valves in the Honu instrument.
 - b. Found a major issue with the new pressure sensors that is due to a manufacturing change. Working on a fix, but trying to get mfg's to talk to us about the options.
 - c. Requested parts from the machine shop.
 - d. Zoom Meetings
- 4. Brent Roman
 - a. Set up thermal calibration with heating stage extracted from ESPtower
 - b. Compared thermal calibration from that stage with ESPhonu's
 - c. Tested new logic to retry leak checks when very slight leaks are indicated
 - i. Should eliminate false leaks reported due to plastic creeping
 - d. Found and fixed a couple minor, but long-standing bugs causing unneeded reinitialization

Week 31

- 1. Brent Roman
 - a. Calibrating dozens of ESP3G heater controller boards (tedious)
 - b. CANON support

Week 30

- 1. Brent Roman
 - a. Helping Chris Preston support CANON
 - b. Supporting TU Denmark in debugging PCR issues
 - c. Determined that air currents have a very significant impact on heating accuracy
 - d. Replaced temperature calibration oven with much quieter fan
 - e. Refined temperature calibration procedure

Week 29

- 1. Doug Pargett
 - a. FlowerPot housing: The test article with brass inserts didn't go well. (Threads don't match nor are they uniform.) Switching to another style, stainless steel insert.
 - b. Modifying the FlowerPot housing dome for the stainless inserts. (adding true threads to the model) for 3d printing.
- 2. Brent Roman
 - a. Set up test SPR test fixture for Bill Ussler using Linux laptop rather than an ESP motherboard

- b. Doing so uncovered a race condition in the SPR serial driver (now fixed)
- c. Prepped software for CANON

Week 28

1. Kevin Gomes
 - a. Migrating more data from services to esp-portal, getting close to being done
2. Scott Jensen
 - a. Getting Scott Creek power station put away
3. Doug Pargett
 - a. Repaired the MV1 instrument
 - b. New parts to test the next Function Cartridge testing...
 - c. Flowerpot housing: Thread insert test article being printed.
4. Brent Roman
 - a. Updated ESP Linux kernel from 2.6.33 to 3.18.140
 - b. Incorporated WireGuard VPN patch into the kernel (needs testing)
 - i. Submitted upstream patches for ARMv5 and GCC 4.1.2
 - c. New kernel now properly handles I2C bus and LED drivers on it.
 - i. Needed for Embedded Artists dev boards.

Week 26

1. Kevin Gomes
 - a. More data migration from old to new server
2. Scott Jensen
 - a. One instrument suffered a sensor failure. The new sensor was calibrated and ready for installation.
 - b. Scott Creek power station has been recovered, ran for just over a year supply power to a locally deployed ESP instrument
 - c. Last minute Gulf of Mexico recovery scrub due to weather. Currently waiting for weather to improve
3. Doug Pargett
 - a. Replaced the pump and oil dome on MV1. It's ready for testing.
 - b. Redesigning the TV array for the new cartridges.
 - c. Flower pot housing needs mods before 3d Printing. Some more issues found with our in-house printer.
4. Brent Roman
 - a. While setting up Scott Jensen's new env chamber for ESP 3G heater board calibration, we discovered the board bracket was holding it upside down. Paul Coenen fabricated a new bracket.
 - b. While updating ESP linux from 2.6.33 → 3.14.30, found and fixed an old bug in NXP's SPI driver that was causing all devices to run at the slowest's rate.
 - i. Linux used to take 15sec to load from SPI flash. Reduced this to 2.5sec!

Week 25

1. Kevin Gomes
 - a. Still migrating data from old portal to new
2. Doug Pargett
 - a. We found a ground fault in MV1 during the test deployment. Scott Jensen found it to be associated with the pump pressure sensor. I inspected and found the oil to be fouled. (At some point in time there was a water leak into the oil.) The penetrator contacts detected this as a ground fault. As it's open, we decided to make the jump and replace the pressure sensor to a 20bar one at this time. It's just waiting for the electrical surgeon to do the transplant.
 - b. I'm getting direct port adapters from the shop so we can test the next version of the Function cartridge, but these do not have toroid valves.

- c. I've started a major redesign of the 3G ESP toroid valve array to accommodate the new cartridge port spacing and angled ports. Since just elongating the current TV valve would interfere with the electronics boards on the cartridge, the TV valve hard stops, throws, and all the flow paths need to be redesigned as well.
- 3. Brent Roman
 - a. Porting the Linux kernel for our ESP controller boards from 2.6.33 to 3.14 to get access to WireGuard VPN (<https://www.wireguard.com/>)
 - i. Quite the adventure. New kernel compiles but does not boot. JTAG debug time!
 - b. Picked up new heater board calibration oven from Scott.
 - i. Connector soldered backwards. Returning part to Jose Rosal for repair.
 - c. Worked a couple late nights supporting ESP deployment off Denmark's coast
 - i. Lost comms a week ago. Visited with ship, but could not reestablish a link to ESP. We need a way to reset the mooring controller from the float!

Week 24

- 1. Kevin Gomes
 - a. With Pat and Joe's help, moved the ESP web portal to shiny new CentOS 8 server that is dedicated to ESP web portal stuff and has a much better URL: <https://esp-portal.mbari.org/web/>
 - b. Will be spending a little bit of time each day to port data from the old system to the new re-running the imports so log parsing catches any missed data from previous bugs.
 - c. Fixing some bugs found during data migration
- 2. Doug Pargett
 - a. I have been talking with an autonomous surface vehicle company to see if the FlowerPot ESP housing (currently in design) would fit their vehicle. A few simple changes now, and it will fit fine.
 - b. I've started designing new cartridge port fittings and toroid valve components that can be fit on the portable G3 ESPs to test the Alpha2 cartridge from function.
- 3. Brent Roman
 - a. Calibrating 4 Lyse-n-Go cartridges for Chris Preston
 - i. Delivered
 - b. Lots of testing and debugging of the new cartridge NVRAM handling code
 - i. Installed on ESPhonu and ESPstumpy for science testing
 - c. Investigating use of Bench-top thermal control system for ESP cartridge thermal calibration
 - i. See <https://mechanical-devices.com/portfolio-posts/flextc-temperature-forcing-system/>
 - ii. Could our EE lab use one of these?

Week 23

- 1. Kevin Gomes
 - a. Overhauled build process to move ESP web portal to Docker image
 - b. Configuring ESP services to run on esp-portal.mbari.org as replacement for services.mbari.org
 - c. Starting data migration for ESP missions from services to esp-portal
- 2. Scott Jensen
 - a. Beginning preparations for GoMex recovery.
 - b. Set date for Scott Creek Power station retrieval
- 3. Doug Pargett
 - a. Working on the Function Cartridge reviews
 - b. Starting to design the modifications necessary to the Bench instruments and the 60 cartridge instruments.
 - c. Worked on some cartridge test and instrument development plans for the coming year.

Week 22

1. Kevin Gomes
 - a. Moving the ESP web portal to containers
 - b. In order to upgrade services.mbari.org, need to migrate the ESP portal to CentOS 8 which is running on esp-portal.mbari.org
2. Doug Pargett
 - a. Attended usual zoom meetings
 - b. Making minor tweaks to the solid models of the FlowerPot dome caps.
 - c. Reviewing the new cartridge testing and development.
 - d. Putting together ideas for the proposal cycle (upgrading G3 ESPs, etc)
3. Brent Roman
 - a. Added ability to defer exceptions using pure Ruby
 - i. Needed this for atomic database updates
 - ii. Might be a good talk topic for RubyConf 2020
 - b. Merged "function" protocol mods into the master branch
 - c. Developed and documented install procedure for MacOS "Catalina"

Week 21

1. Kevin Gomes
 - a. Moving ESP code to containers to support CI/CD
 - b. Porting ESP portal to the esp-portal.mbari.org machine with new container structure
2. Brent Roman
 - a. ESP 2G successfully deployed by DTU Denmark
 - i. (running lots of PCRs looking for fish pathogens)
 - b. Took a deep dive into debugging the vi-clone texteditor included in busybox
 - i. Lots of bug fixes, added features like window resizing via serial link, etc.

Week 20

1. Kevin Gomes
 - a. Working on migrating the ESP web portal to the esp-portal.mbari.org machine to facilitate the upgrade of services.mbari.org to CentOS 8
2. Doug Pargett
 - a. Completing the "FlowerPot" housing design.

Week 19

1. Brent Roman
 - a. Reading long (>10Kbyte) data streams from microcontrollers was causing time-out errors
 - b. Finally tracked this to throttling by the Linux host system.
 - i. Ruby on the slow ARM processes at a rate of <7kBytes/s!
 - ii. Lowered baud rate and increased timeout delays to allow for this
 - iii. Investigated rewriting the byte-level processing in 'C' to remove this bottleneck
 - c. Ongoing support of DTU Denmark and Function mechanical engineering consulting

Week 18

1. Scott Jensen
 - a. Mostly a meeting
2. Brent Roman
 - a. Got ESP Linux to function as a WiFi "hotspot"

Week 17

1. Doug Pargett
 - a. This last week (or was it the last two weeks?) I rebuilt the Stumpy bench ESP to operate the new cartridges being designed by Function. Brought it home, helped Brent get the remote network going, and has since been picked up by Function. Thanks to Greg and all for helping make this happen.
 - b. Function got the new cartridge parts today and can soon start testing them. Note, this is the alpha test article.
 - c. I have run some thermal simulations of the new Function cartridges (mostly for SW practice and a bit for predicting where we might have problems heating these.) So far, the features we thought might be problematic, will be problematic, but not as bad as we thought. I think they will be easily solved.
2. Brent Roman
 - a. Wrote a 15 page "cheatsheet" to help new users of the ESP3G
 - b. Incorporated Linux "backports" into ESPlinux
 - i. Gives our 2.6.31 kernel access to networking drivers from 3.14.30
 - ii. We finally have 5Ghz WiFi support
 - iii. Working on added hostapd so ESP can act as WiFi access point

Week 16

1. Brent Roman
 - a. Supported recovery of ESPgordon from Scotts Creek
 - b. Finally managed to tame the Sara-R410M LTE-M1 USB modem
 - i. Lots of low-level shell scripting to recover from firmware crashes
 - ii. Confirmed that Raspberry Pi users see the same lockups I do
 - c. Swapped ESPtower for ESPstumpy in my home office
 - i. Fun times reassembling the internal plumbing :-)

Week 15

1. Doug Pargett
 - a. Getting part and mods ready to turn a bench G3 into a test rig for Function.
 - b. Parts are ordered, I will schedule w/ Norm and Greg for an onsite mod-day once they come in.
 - c. Testing some thermal simulations of the Function alpha cartridge model.
 - d. Modeling more of the printed housing for the Saildrone platform
2. Brent Roman
 - a. Finished with in-situ flash programming of cartridge elf microcontrollers via I2C bus
 - i. Separated firmware app into bootloader and "booted" flash partitions
 - b. Working on backporting driver for Huawei USB modems to support ESPs in Europe
 - c. Designing involatile key->value storage in EEprom or cartridge configuration data

Week 14

1. Brent Roman
 - a. Supporting Chris Preston in her efforts to get GLERL's ESP's up and running again
 - b. Working with DTU Denmark to find a new cell modem for their ESP.
 - i. 3G service appears is apparently being sunsetted in Denmark!
 - c. Debugging in-situ reprogramming of ESP3G cartridge elves.

Week 13

1. Kevin Gomes
 - a. Some small support of ESP portal

2. Doug Pargett
 - a. Attended online meeting with Function on the cartridge redesign.
 - b. Designed the modifications needed to make our bench machines compatible with the new cartridge for testing. One part needs to be 3d printed, two others need light machining.
3. Brent Roman
 - a. Smuggled an ESP 3G out of MBARI. Set it up in my home office/lab.
 - b. Developed a procedure to “tare” the heaters in absence of store configuration data
 - i. Gets us within 1C of target temps, which is within the +/-2C error allowed.
 - c. Supporting Chris in her efforts to figure out why GLERL’s ESP’s are all failing assays
 - d. Supporting Technical University of Denmark in the effort to get a modem working with their ESP (again, sigh).

Week 12

1. Kevin Gomes
 - a. Code changes to do both bug fixes and enhancements for GOM deployment support
2. Scott Jensen
 - a. Looking like the Harting connector is not going to be that wonderful, looking at a similar solution
3. Brent Roman
 - a. Supporting ESP 2G users in Denmark and Great Lakes
 - b. Characterized ESP 3G temperature sensors
 - c. Implemented Piecewise-Linear control of 3G puck water temperature
 - i. Repeatable and accurate to +/- 0.05C for reference test puck!

Week 11

1. Scott Jensen
 - a. Continued work on terrestrial housing as parts come available
 - b. Attended a couple collaborator meetings
2. Doug Pargett
 - a. Met with Function on cartridge redesign.
 - b. Have a list of items MBARI needs to get ready by March 20. This is my top priority.
3. Brent Roman
 - a. Continuing to investigate heating accuracy on the 3G ESPs
 - i. Delays for temperature to stabilize makes this a slow process
 - b. Updated software and calibration on the 3G ESPs slated for CANON

Week 10

1. Kevin Gomes
 - a. Working on code to work with native CNV files that come from the CTDs
 - b. Supporting ESP deployment in Gulf of Mexico
2. Scott Jensen
 - a. Work with a Mechanical technician to identify the required elements for the ESP 2g terrestrial housing.
3. Brent Roman
 - a. Working with Doug Pargett to bring up 2 3G ESPs
 - b. Working with Chris Preston to improve accuracy of 3G puck heating
 - c. Participating in meeting with Function (mech design consulting firm)

Week 9

1. Scott Jensen
 - a. Working on plans for an alternate light duty, terrain based instrument housing

2. Doug Pargett
 - a. Helping McLane rebuild 2G ESPs.
3. Brent Roman
 - a. Supporting McLane Labs visit
 - b. Converted a few more ESPs to new, more compact configuration file format
 - c. Characterizing 3G cartridge heater boards (this will be a slow process)

Week 8

1. Kevin Gomes
 - a. Deployed portal code updates to work with data from Gulf Of Mexico ESP deployment
 - b. Fixed bug from said changes :(.
2. Brent Roman
 - a. Working with Preston on calibrating ESP3G cartridge heater boards.
 - b. Replaced sampling pump at Scott Creek with Dack.
 - c. New pump still exhibits occasional sampling failures. Probably do to gas in water.
 - i. Discussing how to eliminate air bubbles by reorienting pump head in stream.

Week 7

1. Kevin Gomes
 - a. Making quite a few changes to the log and out file parsing for the Gulf of Mexico ESP deployment
2. Doug Pargett
 - a. Built the G3 instruments MV-2 and MV-3 as far as is reasonable until we can do some system testing.
 - b. Scott Jensen looked over MV-2. On start-up, it seems to be mostly ok, but running 2 year old software and firmware. MV-2 woke up from a 2-year nap and now has left and right mixed up.



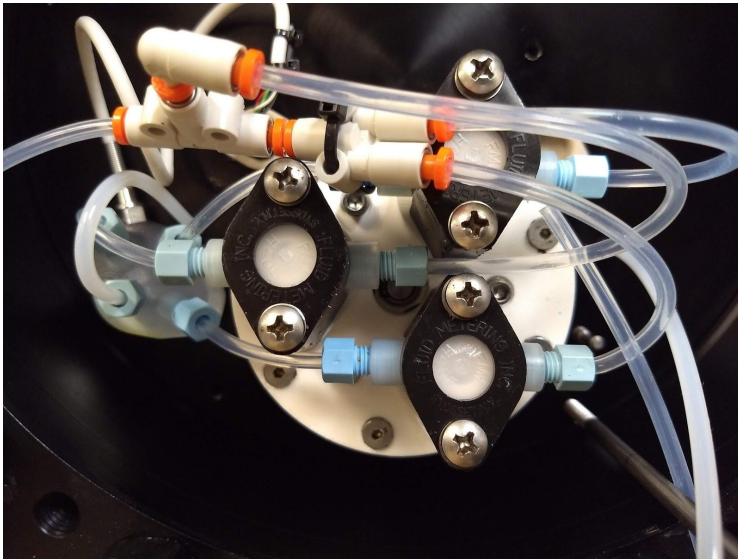
- c.
- d. MV-3 is about 90% built. Some long lead parts are coming in April. It got a yellow card from the referee and will be sitting on the bench for a bit.

e.

- f. Continued major clean-up of the Tech Lab with Dack.
- 3. Brent Roman
 - a. Worked with Scott and Chris Preston to plan 3G heater tests
 - b. Helped Bill Ussler get ESPBruce working (fixed carousel binding issue)
 - c. Found and fixed faulty I2C cable that had been plaguing ESPgordon for months!
 - d. Identified binding in ESPwaldo's gripper mechanism (another months old problem)
 - e. Wrote up procedure for replacing RTC batteries, as requested by ESP users in Denmark.

Week 6

- 1. Kevin Gomes
 - a. Working on code to parse .out files in addition to .log files for Gulf of Mexico deployment. This is more work than I thought it would be because of some choices I made based on the idea the .log file was the sole source of information.
 - b. Enabled Waldo in the ESP portal
 - c. Disabled Gordon parsing in the portal
- 2. Scott Jensen
 - a. Preparation and packing for Gulf of Mexico deployment
- 3. Doug Pargett
 - a. MV-2 now needs starting up prior to installing the oil dome and high pressure testing.
 - b. MV-3 A-dome assembly is almost complete. Center plate, pump, pump pressure sensor, penetrators and bulkhead valve assembly all installed.



- c. Still haven't found everything I'm looking for. 35 bar pressure sensor (more ordered, but long lead time)
- d. Still cleaning lab and organizing tools and parts. Will get more help with this next week.
- 4. Brent Roman
 - a.

Week 5

- 1. Kevin Gomes
 - a. Working on new log parsing to include parsing or real.out file to support GOM deployment coming up
- 2. Scott Jensen
 - a. Preparations for Gulf of Mexico deployment
- 3. Doug Pargett
 - a. Made a disassembly tool to take apart the G3 ESP A domes, and it works! Saving that thing.
 - b. The 20-bar pressure sensor for MV-3 is made and ready to install. MV-2's has been replaced with a 20-bar.
 - c. Need to find the 35bar pressure sensors for MV-3's leak detection.

- d. Plugged the ambient pressure ports on MV-2 and MV-3 parts with Ti Pins and EPDM seals.
- e. Organized G3 circuit boards in the lab into bins.
- f. Starting cleaning up prior to external review. 🧹