

901205 - ESP SURF Center

Week 50

1. Scott Jensen
 - a. Support lab tool development to aid in post deployment processing
2. Brent Roman
 - a. Calibrated 7 new 3G ESP heater boards' temperature sensors
 - i. Before discovering that none of the boards heating elements worked
 1. Returned them for rework.
 - ii. Finished calibrating reworked heater boards
 - b. Supporting Nadia at NOAA in Charleston by phone

Week 49

1. Enoch Nicholson
 - a. Creating calibration fixture test parts

Week 48

1. Enoch Nicholson
 - a. Calibration fixture design
2. Brent Roman
 - a. Step up tools to calibrate the new ESP 3G heater boards

Week 47

1. Scott Jensen
 - a. Lab straightening
 - b. Locating spare parts
2. Enoch Nicholson
 - a. Heater fixture design
3. Brent Roman
 - a. Helping to support Nadia in her efforts to build up 2G and 3G ESPs
 - b. Answered few support queries from WHOI

Week 45

1. Enoch Nicholson
 - a. G-10 retaining ring fabrication

Week 44

1. Enoch Nicholson
 - a. Reassembled single board calibration fixture & returned to Brent
2. Brent Roman
 - a. Supporting Nadia in her struggle to debug updated ESPkoa with modified parts

Week 43

1. Enoch Nicholson

- a. Cartridge heater calibration fixture testing.

Week 42

1. Enoch Nicholson
 - a. Connected and ran calibration fixture components. The PID controller is successfully driving heated beds.

Week 41

1. Enoch Nicholson
 - a. 3G Cartridge Heater calibration fixture
2. Brent Roman
 - a. Continuing to investigate ESP 3G pump pulsations

Week 40

1. Scott Jensen
 - a. Preparations for Omic meeting
2. Brent Roman
 - a. Identified that one of our 3G sampling pumps DOES NOT pulsate!
 - b. Older pumps seem to work better. What changed?
 - c. Automated 3G firmware update procedure.
 - d. Improved lysate recovery protocol so better detects and corrects a stuck plunger.

Week 39

1. Scott Jensen
 - a. Preparing for Sampling meeting on Oct 10-12
2. Brent Roman
 - a. Optimized PID gains for improved pressure control in the face of pump pulsations

Week 38

1. Scott Jensen
 - a. Preparations for Sampler demonstration
 - b. LysNGo elf build

Week 37

1. Brent Roman
 - a. Rewrote lowest-level byte oriented Ruby numeric conversions in 'C'
 - b. Rewrote lowest-level byte oriented serial port input parsing in 'C'
 - c. Removed Ruby support for extinct Dwarf firmware.
 - d. Ruby ESP app can (finally!) log servo motor status at their full 64hz sample rate!

Week 34

1. Scott Jensen
 - a. Support of 2 and 3g instruments
 - b. Filtration data processing

Week 33

1. Brent Roman
 - a. Improved PID pressure servo to better cope with 3G ESP's pump pulsations
 - b. Coding enhancements to support new Function 3G ESP cartridges

Week 32

1. Scott Jensen
 - a. Support of filtering tests

Week 31

1. Scott Jensen
 - a. Supported filtering experiment data collection

Week 30

1. Brent Roman
 - a. Support for WHOIs upcoming deployments
 - b. Added Integral and Derivative gain to ESP 3G's pressure control
 - i. This seems to be effective at reducing the amplitude of the pump's pressure spikes

Week 29

1. Scott Jensen
 - a. Preparing for filtering experiment
 - b. Developing filtering protocol
2. Brent Roman
 - a. Added shared, non-volatile command history to espclients
 - b. Measured 3G ESP pump control instabilities
 - i. Added derivative control to pressure pump motor servo in attempt to address them
 - ii. Began testing to measure effectiveness (or lack thereof :-)

Week 28

1. Scott Jensen
 - a. Build up of filtering test equipment
2. Brent Roman
 - a. Prepared laptop and WiFi hotspot for away team headed to GLERL
 - b. Provided lots of support to ESP intern Samarth so he could analyze filter rate data from old logs
 - c. Determined that much of the 3G's pump oscillation is self excited
 - i. Intend to improve control law in firmware
 - d. Added first cut a non-volatile command history storage
 - i. Complicated by fact that there are multiple simultaneous espclients on a given server

Week 26

1. Scott Jensen
 - a. General support of lab and upcoming deployments
2. Brent Roman
 - a. Working with Nadia to debug problems with Sampler Pump stalling
 - b. Working with Scott to ensure new cooling system for ASV does not destabilize puck heating

Week 20

1. Scott Jensen
 - a. Recovered Clifton Forebay installation of instrument Waldo

Week 18

1. Scott Jensen
 - a. Redeployment of ESP at Clifton Forebay

Week 17

1. Brent Roman
 - a. Wrote fireAll script to eventually replace processAll
 - i. with more flexible sampler parameter overrides
 - b. Helped Ussler work through post deployment SPR issues
 - c. Helped Nadia diagnose position sensor error on ESPmv1
 - d. Added support for “blank” cartridges at Preston’s request

Week 16

1. Brent Roman
 - a. Updated the last of GLERLS 3 ESP
 - b. Shipped GLERL a firmware programmer to update their ESP’s “sleepy” I2C gateways
 - c. Updated the “sleepy” boards in our spares inventory (3 of 5 worked)
 - d. Discovered that I need to move bafflehead from 32-bit to 64-bit linux

Week 15

1. Brent Roman
 - a. Supporting ESPs in ECOHAB
 - b. Configured 3G ESP for integration into SeaTrac
 - c. Working with GLERL to remotely access the SeaTrac Autonomous Surface Vessel
 - i. Battery failure on SeaTrac is complicating this
 - ii. Installed SeaTrac’s windows only GUI under WINE
 - d. Testing and remotely updating GLERL’s 3 x 2G ESPs to reconfigure for USB cell modems
 - e. Created a new variant of “daily” scheduler that supports time-limited sampling
 - i. Terminates sampling early if the next sampling time scheduled will otherwise be missed

Week 14

1. Brent Roman
 - a. Supporting Nadia, Ussler and Preston in their struggle to prep ESPs for ECOHAB
 - b. Iterated with Ussler on real-time reporting of toxin concentrations derived from SPR results

Week 13

1. Brent Roman
 - a. Got ESP’s SPR real-time analysis working with Bill Ussler’s help
 - b. Helped Nadia diagnose numerous ESP 3G pump problems
 - c. Configured and tested cell communications in GLERL’s ESP 3G autonomous boat
 - d. Debugged time limited sampling with help from Kevan Yamahara

Week 12

1. Brent Roman
 - a. Added ability to time limit ESP sampling so we could run rapid-fire EDNA archives
 - b. Coded Ussler's formulas to derive ng/L toxin from raw SPR data
 - i. Arranged for them to be uploaded acoustically
 - c. Updated software on at least 7 ESPs

Week 8

1. Brent Roman
 - a. Updated >5 ESPs
 - b. Created simplified framework for Kevan Yamahara's delta smelt 2G ESP deployments

Week 7

1. Brent Roman
 - a. Improved logic in ESP OS and kernel for detecting and reacting to Ethernet cable plug/unplug events.

Week 6

1. Brent Roman
 - a. Found and fixed very long-standing bug in ESP's low-power ARM CPU board's XR16L788 octal serial port driver
 - b. Shared edge-triggered interrupts are a royal PITA!
 - c. Working with NOAA GLERL to verify this fix in the field before pushing new kernel to all ESPs

Week 5

1. Scott Jensen
 - a. The SPR module is suffering from temperature woes. One inaccuracy has been traced to a wrong part installed. The temperature drift continues.
 - b.
2. Brent Roman
 - a. Working with Preston to develop a reliable protocol for extracting Lysate from Function 3G Cartridges
 - b. Managed to replicate ESP serial modem failure that plagues GLERL in my lab

Week 3

1. Brent Roman
 - a. Characterized ESP 3G stepper motors' power use
 - b. USB modem sent to GLERL fixed their comms issue
 - i. Original issue still a mystery. Recommending they ship problem modem to us.

Week 2

1. Brent Roman
 - a. Coded improvement to 3G Lysate Recovery procedure suggested by Preston
 - b. Helping Nadia characterize higher torque stepper motors
 - c. Found and fixed some file permissions issues in our ESP Linux "distro"

Week 1

1. Scott Jensen
 - a. Supporting build of the next portable.

2. Brent Roman

- a. Helping bring up new ESP portable for Docuette's lab "ESPmarin"
- b. Helping Preston improve ESP 3G Lysate recovery algorithm
- c. Working with Kyle Beadle@GLERL and John Mickett@APL to diagnose ESP cell comms failures