

Denis Klimov Sorted By Project

300083 - DMO Support - LRAUV

702106 - CeNCOOS

- Looking into purchasing spare parts for the IFCB. (Week 3)
- Setting up the IFCB instrument on the mobile station. Plan to make a station like this with bigger wheels, and move it for further maintenance running into the building G. (Week 9)
- IFCB technical conference this week; our IFCB has a rotary valve issue. (Week 15)
- As Power Buoy deployment is getting closer, we will need to have IFCB ready. I am looking at assembling an improved version of the mobile test stand and run IFCB in building G using such a stand so it can be moved around as needed. In the meantime, it is in the optics section of a lab B232 requiring some repairs and tuning. (Week 27)

901112 - Monterey Bay Time Series

- IFCB technical conference this week; our IFCB has a rotary valve issue. (Week 15)

901809 - Deep Sea Bioinspiration

- Looking at the Interface Can issues which leaks occasionally for no apparent reason. (Week 27)

902004 - Planktivore

- Working on the assembly notes for the Planktivore instrument optics. (Week 3)
- Working on assembly notes and checking out the instrument before closing. (Week 9)
- Assembly drawing for the low resolution optics side is completed; working on the harnesses into the central controller housing. (Week 15)
- We assembled the instrument and looking into leak testing. (Week 21)
- Need to order some parts as it turned out, some O-ring information in the assembly drawings was missing. (Week 21)

902101 - LRAUV Technology Development

902304 - Piscivore Cam

902305 - Event Detection Using the Sedimentation Event Sensor

- Looking how to use the upcoming deployment to have a repeatable fluorescence standard. (Week 3)
- We are starting regular meetings in the face of the upcoming deployments. (Week 9)
- Pre-deployment testing of SES instrument, to get familiar with its operation. (Week 9)
- Preparing for SES deployment; a number of runs in the Test Tank, to get some familiarity with how the instrument runs. (Week 15)
- Handling flooded LF modem and flooded/ corroded (DDR) battery pack; parts cleaned up and the board stack was washed and backed in the oven. (Week 15)
- Post-deployment discussions and looking at the previous design data for the imaging sensor. (Week 21)
- Assessing previous design of a fluorometer and camera system. We have a number of options going forward, especially regarding a second video channel. But the consensus so far is that we should keep the existing 2-channel fluorometer for fluorescence signal reference and method continuity. Besides, its housing is likely too small for camera integration. (Week 27)
- The other important point, we are looking at eliminating a legacy solution of using liquid interface between cans with optics, and carousel disks which would allow better illumination and simplified assembly and maintenance. (Week 27)
- Preparing materials for proposal (Week 27)

902401 - Geo-Sense

- DAS Jan 12th deployment was postponed to the Feb 3rd; so now we have more time for the Test Tank testing. In mean time, we have to move the Laser Lab A282a into A283, due to the upcoming facilities work, and in case if we would need to open the sphere and work with the laser before the upcoming deployment days. (Week 3)
- We are processing deployment data from the Feb 3, 4 DAS deployment. In conditions of poor visibility, we somehow strained the fiber during spool deployment. People at Sintela produced a good report based on the data identifying two strain events and pinning exact time when it happened, to 1 sec. precision. (Week 9)
- Subsequently, I made a report based on ROV video and dozens of framegrabs, identifying the first strain event due to the fiber coming to the tension and spool starting rotation. (Week 9)
- And Rebecca E. did an analysis based on the ROV coordinates, which pointed out that when the strain even happened, we likely pulled the optical fiber against

strain release, thus possibly stressing the fiber at the very end of the strain relief (aka "the noodle"). (Week 9)

- Those findings are going to influence the next design. (Week 9)
- Dealing with post-deployment action items; removing battery packs from glass spheres for recycling; ordering the fiber optic inspection tool. (Week 15)
- Testing DAS clock drift at 6C in OFF state in the environmental chamber in the building G which so far produces inconsistent results. (Week 15)
- Testing clock drift in the environmental chamber. (Week 21)
- Recycled old batteries after the deployment, looking into the way of storing/securing glass spheres in the lab. (Week 21)
- We had a successful 3rd deployment of the DAS system with the Elevator and 115 m. of the optical fiber unspooled with the ROV. Deployed/ recovered with Rachel Carson and stayed out for a week. An updated output of the optical fiber from the elevator was tested and we acquired good data. (Week 27)
- Sensitivity was proven to be sufficient to detect minor earthquakes. This test is informative for optimizing equipment for further deployments. (Week 27)

Out of Office

Overhead

- Studying the laser cutter from Boss Laser and working on creating laser safety TWA for this machine. Turned out, we did not have sufficient airflow for this machine, it is going to be moved to building B. Also, when working with oversized materials and during the alignment, we need to have SOPs in place in order to do it safely. (Week 9)
- LSO: LIDAR operation in the Test Tank this week. Laser cutter TWA is on hold; but data collected for the TWA seems to be sufficient. (Week 15)
- BSO: we are ordering a range of emergency supplies for batteries in a DDR or thermal run-away state; so far for a Test Tank area, and building A. Talking with Kaya about propagating some of those solutions to DMO. (Week 15)
- We are at the finish line with the Laser Cutter project. At the building G installation, we had 85 CFM of the exhaust with this machine which is below manufacturer-specified 300 CFM, so a Stop Order was issued by the Safety Office concerning fumes toxicity and possible laser beam hazard issues. (Week 27)
- With the new installation in B137, the new lab by the former Model Shop, we measured 210 CFM with improved ducting and building exhaust fan; which is still below manufacturer specifications. However, uncertainties in the requirements exist in the manual which Tech Support failed to clarify: is 300 CFM a specification of the fan itself, or is air flow measured after the fan and ducts are connected to the machine, and in such a case, where and how this is to be measured? (Week 27)

- Instead of optimistic interpretation on the uncertainty in air flow requirement, I am proposing de-rating laser power to 70% from installed 65W CO₂ laser utilizing conservative interpretation of such an uncertainty, while still adhering to the Safety Factor specified by the manufacturer. (Week 27)
- Based on the physics of cutting materials with lasers, reducing beam power to 70% would proportionally reduce exhaust air from 300 CFM to about 210 CFM which we achieved. This power reduction would make it effectively a 45W CO₂ laser. (Week 27)
- Since the machine is simple and does not have any system of detection if air flow is sufficient, responsibility for watching fumes/ smoke removal is on the operator. So, laser power above 45W and up to installed 65W might still be possible which can be decided by the operator, as soon as implications are understood. (Week 27)