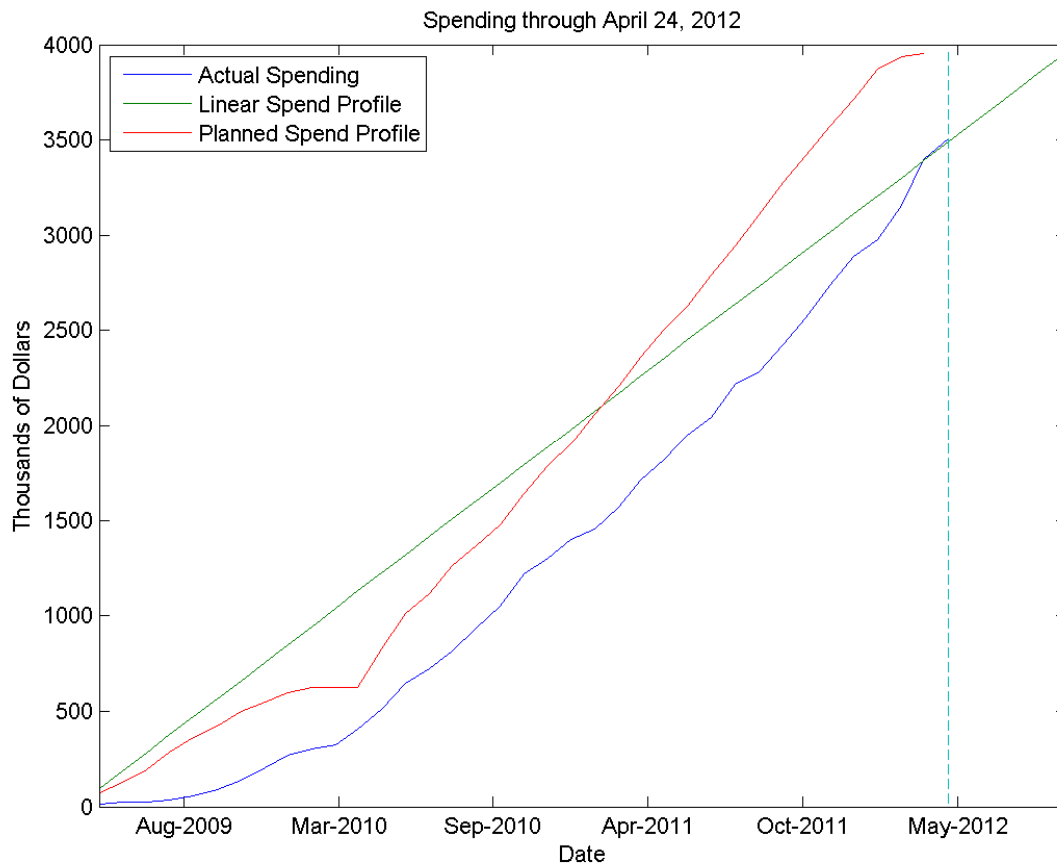


Financial Progress through April 24, 2012

The graph below shows the projects spend profile through April 24, 2012. The red line shows the original spending plan (from the original proposal), the green line shows the linear spend rate from the project inception to an end date that reflects a six month extension in the period of performance. The blue line shows the actual spend rate and shows the increased spending rate resulting from the build and test of equipment.



PowerBuoy

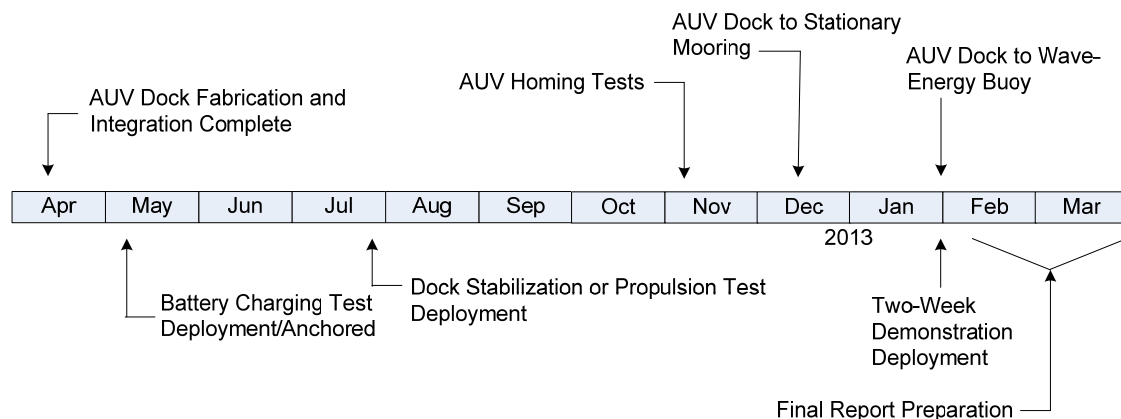
- The battery charging test deployment has been delayed until May due to a power electronics failure that occurred during final testing before the April deployment. The cause has been identified and the system is back in final test before deployment this week and next. Shana Rae is again operational. Target deployment date is May 14th.
- As previously discussed, it is still to be decided if the three planned deployments in the schedule can be consolidated to two and still collect the needed data. In particular, the aims of the “two-week demonstration deployment” are to demonstrate survivability and longevity of the concept. This may well be accomplished during the battery charging test deployment, which is also scheduled for two weeks.

Numerical Model

- After the March meeting, I asked Liquid Robotics to provide a “letter of interest” that expressed their desire to license the numerical model in order to get the process of establishing appropriate terms under way here at MBARI. They checked back with me last week and are working on this.

AUV Docking

- AUV still not operational after its unexpected recovery. Failure analysis has identified a leak in the Iridium antenna that led to its loss. A solution has been designed and is currently undergoing testing. The vehicle should be operational again by the end of May.
- The AUV dock and support buoy for testing is nearly complete. All components have been procured and/or fabricated and integration is nearly complete. On-shore testing will be completed by early-May at which point that system will be awaiting an AUV to perform testing and docking demonstration.
- The Benthos USBL system has been demonstrating strange calibration sensitivities that limited the homing performance in the spring tests. Although the unit works acceptably in free-space, when it is mounted in the vehicle there is a “multi-valued” issue in which a measured bearing to the sound source maps to more than one physical orientation. This sensitivity seems to be related to the addition/removal of other instrumentation inside the vehicle housing. Work is underway with Benthos to understand and resolve this issue.



Notes:

- Battery-charging test deployment delayed until May due to power electronics issues.
- AUV Docking activities still require six month program extension for two reasons:
 - o Failure analysis and re-commissioning of vehicle still on-going. Vehicle loss event incurred approximately 3 month delay in all AUV activities, pushing the docking schedule into conflict with other, previously scheduled, AUV commitments
 - o Benthos is going to require some time (and possibly money) to resolve USBL calibration issues.

Activity	Date	Labor (weeks)	Material Cost	Ship Costs	Total Cost (burdened)
At-Sea Test of Battery Charging	May 2012	2	\$0	\$8,000	\$23,632
AUV Dock Design and Fabrication	April 2012	2	\$4,000		\$17,592
AUV Dock Test to Stationary Mooring	Dec 2012	14	\$4,000	\$8,000	\$98,981
AUV Dock Test to Wave-Energy Buoy	Jan 2013	12	\$15,000	\$8,000	\$104,039
Propulsion Testing	July 2012	8	\$12,000	\$8,000	\$76,406
Two-week Demonstration Deployment	Jan 2013	8	\$8,000	\$8,000	\$70,366
Analysis and final report preparation	Mar 2013	6			\$43,318
10% Contingency					\$39,101
Total		52			\$473,434

Additional Funds Required

Activity	Date	Labor (weeks)	Material Cost	Ship Costs	Total Cost (Burdened)
USBL Calibration		2	\$10,000		\$23,850
Six month extension of funds to support Francois		24			\$105,000
Numerical Model Packaging for General Use		4			\$28,879
10% Contingency					\$12,885
					\$170,614