

**Power producing buoy for strategic applications:
Prototype and Testing
No-Cost Extension Request**

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Project Period: 3/26/2009-3/25/2012

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Request for Extension

This project is requesting a six-month extension to the period of performance, at no additional cost to DARPA. If granted, the new project end date will be September 25, 2012. The project continues to make steady progress but the main demonstration deployment will not occur before the current end date of March 25, 2012. The reason for the delay goes back to the failure of a vendor (Levant Power Corporation) to provide a key component they were under contract to deliver at the end of 2010. This required that the design and build of the power take-off element be undertaken by the project team at MBARI. This effort was started in February, 2011 and was tested in the lab in September, 2011, and successfully tested at sea in November, 2011. With that complete the project team has been able to move on with the system refinements, AUV docking efforts, and test deployments that were in the original project plan. Because the payments to Levant were limited, there remain sufficient funds left in the project to complete the testing activities by September 25, 2012.

The remainder of this document outlines the specific tasks that will be delayed beyond March 25, 2012, and provides a current expenditure report and projection that shows sufficient funding will be available to complete these tasks by September 25, 2012.

Schedules

Original Schedule

Figure 1 shows the schedule from the original project proposal for the final phase of the project. The final six months of the original plan included field demonstration of the prototype system, performance analysis, and final report writing. These are the tasks that will not be completed without an extension to the period of performance.

ID	Phase 3 Activities	Start	Finish	2011												2012		
				Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
1	Demonstration Platform Design	4/4/2011	6/3/2011															
2	Design work prior to fabrication	5/2/2011	6/27/2011															
3	Prototype Fabrication	6/9/2011	8/1/2011															
4	Assembly, Integration and Test of prototype	6/28/2011	9/1/2011															
5	Field testing of Prototype	9/1/2011	1/2/2012															
6	Final performance assessment.	12/1/2011	1/31/2012															
7	Write final project report.	2/3/2012	3/23/2012															

Figure 1: Original schedule for final phase of the project, from original proposal.

Proposed Schedule

Figure 2 shows the original schedule re-cast to the extended period of performance

ID	Phase 3 Activities	Start	Finish	2011				2012											
				Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
1	Demonstration Platform Design	10/4/2011	12/5/2011																
2	Design work prior to fabrication	11/2/2011	12/28/2011																
3	Prototype Fabrication	12/9/2011	1/31/2012																
4	Assembly, Integration and Test of prototype	12/28/2011	3/2/2012																
5	Field testing of Prototype	3/1/2012	7/2/2012																
6	Final performance assessment.	6/1/2012	8/1/2012																
7	Write final project report.	8/3/2012	9/21/2012																

Figure 2: Tasks from original plan re-scheduled to the extended period of performance.

Naturally the project plans have become more definite since the original proposal, so it is now possible to lay out a more detailed schedule of activities for end of the project. The main tasks that will be delayed to the extended time period remain the three main items from Figure 1 and 2, "Field Testing of Prototype", "Final Performance Assessment", and the writing of the final project report. The specific activities that make up these tasks and the proposed time-line are shown in Figure 3.

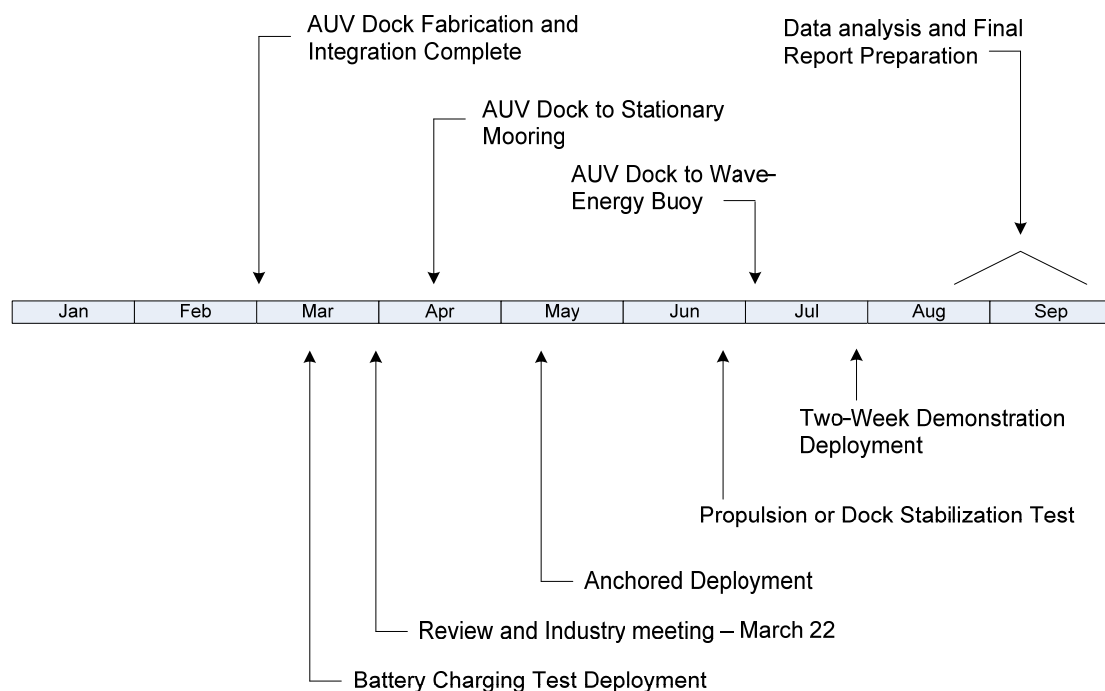


Figure 3: Time-line for activities remaining in project.

The activities originally planned that will not occur without an extension to the period of performance are:

Activity	Date
AUV Dock Test to Stationary Mooring	April 2012
Anchored Deployment	May 2012
Dock Stabilization or Propulsion Test	June 2012
AUV Dock Test to Wave-Energy Buoy	July 2012
Two-week Demonstration Deployment	August 2012
Numerical Model Packaging for General Use	TBD
Analysis and final report preparation	Sept 2012

Current Expenditure Report

The current project expenditures as of Jan 13th, 2012 are as follows: Out of \$3,958,967 originally budgeted; \$2,851,743 has been spent and invoiced to DARPA. An additional \$69,646 has been committed to equipment and services ordered but not yet delivered to MBARI, this amount has therefore not been invoiced to DARPA. There is currently \$1,037,578 remaining unspent in the project budget.

The following plot shows the actual project spending throughout the project (up to Dec 31, 2011) and the projection to March 25, 2012 based on current plans and recent spending history. Also shown are the original planned spend profile and a straight line spend profile between the project start and the extended end date of September 26, 2012. The current spend rates are similar to those originally planned for six months ago, reflecting the six month delay in progress described above.

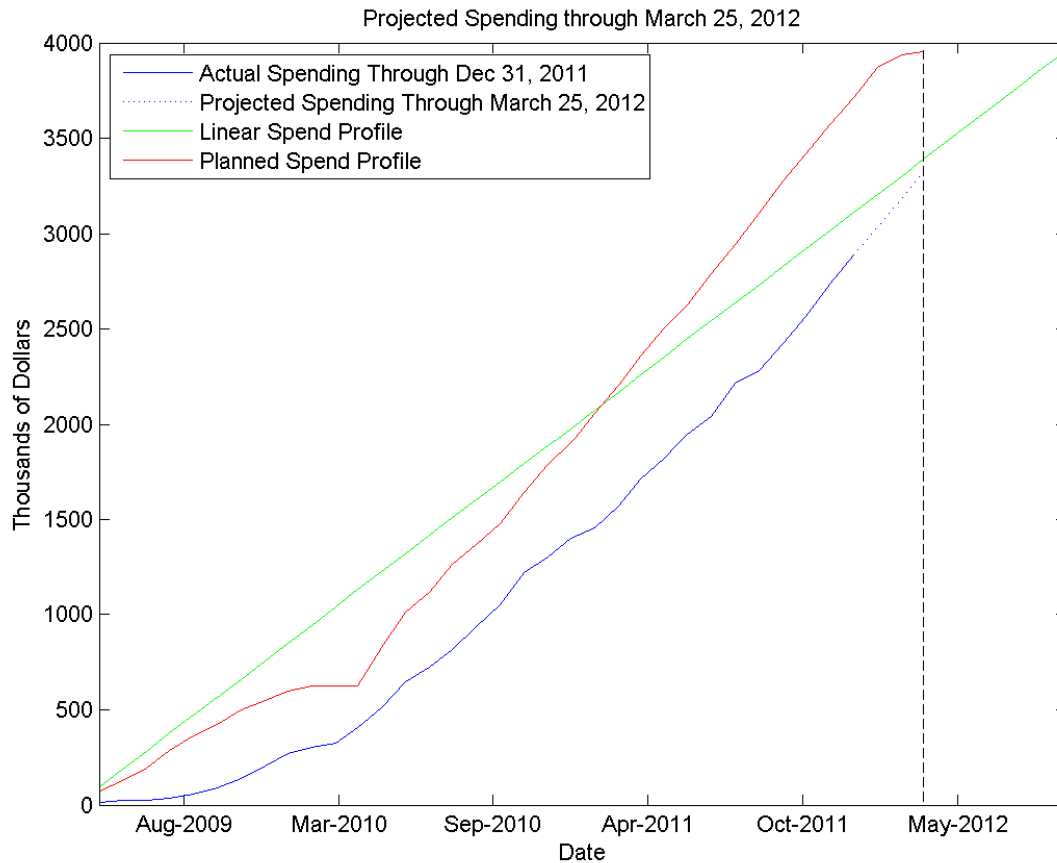


Figure 4: Actual spending, near term projected spending, and original planned spend profile.

Extension Period Spend Plan

At the current spend rate (expected to be fairly constant over the next few months), there will be approximately \$640,000 remaining in the project budget to perform the tasks outlined above during the period of 3/26/2011-9/25/2011. Estimates of remaining effort and cost for each task are included below.

Activity	Date	Labor (weeks)	Material Cost	Ship Costs	Total Cost (Burdened)
AUV Dock Test to Stationary Mooring	April 2012	12	\$10,000	\$4,000	\$97,380
Anchored Deployment	May 2012	4	\$10,000	\$8,000	\$52,593
Dock Stabilization or Propulsion Test	June 2012	6	\$10,000	\$8,000	\$65,300
AUV Dock Test to Wave-Energy Buoy	July 2012	16	\$15,000	\$8,000	\$136,383

Two-week Demonstration Deployment	August 2012	16	\$12,000	\$10,000	\$134,873
Numerical Model Packaging	TBD	10			\$72,197
Analysis and final report preparation	Sept 2012	4			\$28,879
10% Contingency		6			\$55,873
Total		74			\$643,478