

14 September 2009  
1:00 pm Tank View Conference Room

**MBARI Project 900907 Meeting**  
**High Resolution Near-Surface Seismic Refraction Tomography**

Attending: David Caress, Rich Henthorn, Mark Chaffey, Bill Kirkwood

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**2010 Proposal**

- We were rated 1 (“likely to be approved”)!!! – includes expedition to Santa Monica Basin

*General Comments:*

The team appears to be making good progress. This project is becoming very timely considering the research this could enable in the Brewer and Paull labs.

*For Phase 2 please address the following:*

- Because of the current budget situation, provide assessment of the impact on Charlie Paull’s science application in the Santa Monica Basin if fewer OBHs are procured and deployed (i.e., what is the progressive impact of deploying fewer OBHs?).
  - The Budget Entry system will reopen this week. Please be sure to enter Dave Caress’ time on the project, which Dave estimated to be 400 hours. Also change the time from Science – Software Engineer to Engineer – Software Engineer.
- We will address these comments this week – phase 2 responses are due Thursday
    - Housing and CRIO costs duplicated in 2009 & 2010 budgets – will buy stuff this year and reduce 2010 budget.
    - Phase 2 Response as sent to Keith (16 September):  
Keith,

We had two items requiring a response:

*1. Because of the current budget situation, provide assessment of the impact on Charlie Paull’s science application in the Santa Monica Basin if fewer OBHs are procured and deployed (i.e., what is the progressive impact of deploying fewer OBHs?).*

*Response:*

We have budgeted to replace the two existing OBHs with higher gain models, and to purchase three additional new units, giving us a total of five OBHs.

The first order science requirement is to image the difference in the 1-D (vertical) sound speed structure between the crest of the anticline and just to the north of the anticline. Deploying five OBHs along the profile should allow us to do better than required by imaging 2D lateral variations in the subsurface sound speed structure. Although in principle a reversed profile across a single instrument can provide adequate constraints to generate a 1D model, the use of two instruments is preferred because that allows the detection of a dipping

structure. We also want to have enough redundancy to insure success in the event of instrument problems. Thus, we think that three OBHs are required for the proposed experiment, four is better, and five is better still.

*2. The Budget Entry system will reopen this week. Please be sure to enter Dave Caress' time on the project, which Dave estimated to be 400 hours. Also change the time from Science – Software Engineer to Engineer – Software Engineer.*

Response:

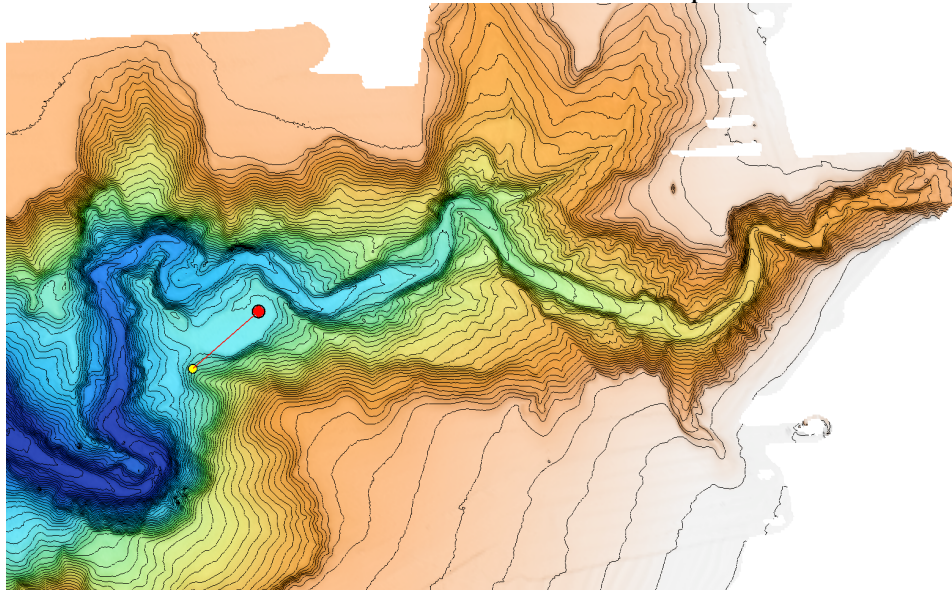
Done. We also added 80 hours of EE (McGill) that had been listed in the proposal but was missed in the budget entry.

We also made some adjustments to the expense budget. Part of this derives from hardware cost reductions as specific choices are made, but mostly we have more unspent funds in this year's budget than we realized in August (we got confused because a major capital item was mis-coded as non-capital, so the noncapital money appeared to be all spent). We have reduced next year's budget by about \$21K, and we will purchase the electronics housing, the GPS time source, and the source drive electronics this year.

- We now have to take care of the following this year:
  - Buy top of titanium ball housing
  - Buy source electronics
  - Buy GPS time source
  - Transfer titanium ball housing bottom from MOOS mooring to this project.

### **At-Sea Test September 22**

- Housing is rated to only 600 m – where do we go?
    - We will work in the canyon, but on a plateau above the axis rather than along the axis.
- We will deploy the receiver package at:  
Lon: 121 W 53.139 Lat: 36 N 47.513 Depth: -382.244 m
- We will run 1 km transects from the receiver to a point 1 km to the southwest at:  
Lon: 121 W 53.650 Lat: 36 N 47.164 Depth: -363.973 m



- Changes:
  - Physically couple the hydrophones into the bottom. Would like to stick the hydrophone into the mud. Paul will work on this.
    - Johnny is working on it.
  - It would be good to use chirps longer than 200 msec (Rich).
    - New set of pulse files created – chirps are 0.25 kHz to 6 kHz sweeps. Longest chirp is 300 msec in case Rich can make it work.
  - We will not try to do the underwater time marks because the sondes will still be covered with black tape to avoid IR flash resets.
  - Try to get NTP working.
  - The timing issues in the second test were because there was no PPS to the transmit electronics. The system pinged but was not actually disciplined to 2 second pulses. Have to check more thoroughly.
    - Will add testing protocol to check that the timing synch is working.
  - Increase the transmit power if possible.
    - Mark will try to increase driving voltage by 15%
  - We will run chirps with a lower start frequency. Caress will generate the new pulse files.

### **Building permanent equipment**

- Will use titanium ball housing of MOOS design – 4000 m rating