

MBARI High Resolution Chirp Refraction Project 900907

22 September 2009

R/V Point Lobos

Science Party:

David Caress PI

Rich Henthorn Lead Engineer

Mark Chaffey

Paul McGill

Ventana Pilots

DJ Osborne

Knute Brekke

Purpose:

Third at-sea test of high resolution chirp refraction

Equipment:

Source:

Edgetech 1-6 kHz transducer

Edgetech amplifier

National Instruments CRIO embedded processor

Topside laptop running Labview to interface with CRIO

Run at full gain, expect something like 205 dB

Receivers:

Two Acousondes

- broadband hydrophone

- serial numbers 7 and 8

- records data sampled at 27329 Hz

- run with 6-pole elliptical antialiasing filter (9kHz

corner)

- gain full up at 20 dB

Plan:

Third test of a chirp sonar seismic refraction system. We will be working in Monterey Canyon on a bench above the axis where ship and AUV subbottom profiles have shown good penetration of stratified sediments.

The primary platform will be ROV Ventana. We will mount a large acoustic source transducer on Ventana, as well as an electronics housing. The housing will tie into Ventana power and networking. Ventana will also carry an acoustic receiver rig consisting of two acoustic sensors (Acousonde whale tags) mounted into an anchor with an attached homerpro float. The receiver rig will be 1 to 1.5 m tall, and will be both deployed and recovered using Ventana. One

or two laptops will be set up in the control room.

We will be working at a single site in the canyon. We will first perform a midwater acoustic test. We will first deploy the ROV and have it hover at 150 m depth a hundred or so meters away from the ship. We will then lower the receiver package on a line to a depth of 150 m. We will then have the ROV approach to 50 m distance, and start pinging. The receivers will get a direct arrival not contaminated by surface or seafloor bounces. While pinging, we will have the ROV shut hydraulics down and float upward to 100 m depth. At that point, we will terminate the midwater test by recovering the receivers, and then redeploying them over the side to the seafloor. We will then proceed with the on-bottom transects in the canyon.

#### PlannedTrackDesc:

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

#### Event Log:

1400Z 0700L Leave dock, heading to site.

1403Z 0703L Start preparing Sondes 7 and 8

Paul will do 8, I will do 7

1. Both Sondes have no data

2. Synced times with GPS - put three time marks in log

files

3. Set recording parameters - using antialiasing filter

1440Z 0740L Lobos on site, preparing to launch Ventana while simultaneously preparing Sondes for deployment. Will be doing dangle test first.

1447Z 0747L Start Sonde 8 recording

1451Z 0751L Sonde 7 recording

1456Z 0756L Ventana in the water dive 3421

Sound source working.

Good with 18 bricks ballast

1520Z 0820L Hydrophone package in water at end of rope - 108 m depth

Start pinging 200 msec chirp

1524Z 0824L Vehicle 30 m from package, 10 m below

1525Z 0825L Shut off Ventana hydraulics

1526Z 0826L Switch to 100 msec chirp

1527Z 0827L Pinging 100 msec chirp

1528Z 0828L Taking vehicle deeper again - came up to 75 m depth  
 1532Z 0832L Vehicle at 121 m, hydraulics off again, still doing 100 msec chirp  
 1533Z 0833L Switching to 50 msec pulse  
 1535Z 0835L Start pinging 50 msec pulse at 90 m depth 50 m range, start 1535:30  
 1537Z 0837L Switch to 25 msec pulse, take Ventana deeper again  
 1538Z 0838L Start pinging 25 msec chirp  
 1542Z 0842L Ventana hydraulics off, 115 m, 25 m range  
 1544Z 0844L Stop pinging, vehicle at 90 m depth  
                     Will recover hydrophones and Ventana, get data, reset hydrophones  
                     before redeploying.  
 1553Z 0853L Hydrophones on deck  
 1558Z 0858L Sonde 7 is flashing (alive), 8 is not.  
 1559Z 0859L Stop Sonde 7 recording  
 1604Z 0904L Sonde 8 is not responding at all  
 1605Z 0905L Ventana on deck  
 1607Z 0907L Sonde 8 does have some data files  
 1634Z 0934L Sonde 7 time sync  
 1637Z 0937L Start recording Sonde 8  
 1639Z 0939L Start recording Sonde 7  
 1658Z 0958L Ventana in water dive V3422  
 1715Z 1015L Ventana on bottom, deployment waypoint. Flat mud bottom as expected  
 1724Z 1024L Deployed hydrophone package on seafloor  
                     Start pinging 200 msec chirp at 3 second interval 1724:30  
                     36 47.5212 N 121 53.1502 W  
 1727Z 1027L Start running line to SW, 1 km long, at about a 1 m altitude  
 1808Z 1108L Ventana at end of line 1 km from hydrophones  
                     Turn hydraulics off, float up to 330 m depth, turn around and run  
                     back to the hydrophones at a depth of 330 m, about a 50 altitude.  
 1811Z 1111L Vehicle at 330 m depth, has been set to NE,  
 1812Z 1112L Start heading back towards the hydrophone  
 1831Z 1131L Back at hydrophone, depth 330 m, stop pinging 200 msec chirp, dropping down to seafloor  
 1834Z 1134L Back at hydrophone on bottom, hydrophone in view  
                     Start pinging 25 msec chirp 1833:00 3 second interval  
 1836Z 1136L Start running line along the bottom, about 1 m altitude  
 1907Z 1207L Ventana is 760 m downline, and running into a big current. Unable to make progress.  
                     Coming up 50 m or so to try to get to end of line. Will then run on bottom  
                     with the current.

1931Z 1231L Ventana at end of line, on bottom, running toward hydrophones  
Still pinging 25 msec chirp

1953Z 1253L Ventana at hydrophone - stop pinging 25 msec chirp  
Going to get up into the water column 50 m or so and try to  
get quickly to the  
end of line. Don't want to waste time fighting the current  
on bottom.

1955Z 1255L Start pinging 100 msec chirp 3 second interval at 1955:00

2036Z 1336L At end of line, will drop to seafloor and ping back towards  
hydrophones using  
the 100 msec pulse.

2038Z 1338L Starting towards hydrophone.

2057Z 1357L At hydrophone, end pinging 100 msec, go up 50 m off bottom and  
head back down  
line. We will go for 30 minutes and then turn around to  
meet a 1500L pull  
time.

2058Z 1358L Start pinging 50 msec chirp 3 second interval 2058:00

2137Z 1437L At end of line, dropping to seafloor, turning back towards the  
hydrophone

2200Z 1500L Passed hydrophone, stop pinging.

2205Z 1505L Looking for hydrophone

2208Z 1508L Have hydrophone

2213Z 1513L Hydrophone stowed in drawer, Ventana off bottom.

2135Z 1535L Ventana on deck

2142Z 1542L Both sondes are still on.

2149Z 1549L Can't communicate with Sondes from Palm Pilot even though  
yellow lights are  
still flashing. Palm gives error message

2206Z 1606L Got Bill Burgess on the cell phone, and suddenly the stop  
recording IR command  
worked.