

Noise Experiment #2

Marine Physical Laboratory
Scripps Institution of Oceanography
La Jolla, CA 92093-0701

16 February – 22 February 2010

1. Objective

The objective of the noise experiment is to observe surface-generated ocean ambient noise in the mid/low frequency region (200 Hz – 10 kHz).

2. Location

The experiment will be conducted approximately 1 km offshore and 3 km North of the Scripps Institution of Oceanography, La Jolla, CA (See Fig. 1). Indicated are the locations of the 2 dual horizontal acoustic arrays (HLA1, HLA2) and the steel float used as a passive acoustic noise reflector (TARGET).

3. Acoustic Array and Target Deployments

Two dual horizontal acoustic arrays (HLA1, HLA2) and one passive acoustic noise reflector (TARGET) will be deployed at the locations indicated in Fig. 1. The specific coordinates are as follows:

Mooring	Latitude	Longitude
HLA1	32° 54.000' N	117° 15.900' W
TARGET	32° 54.075' N	117° 15.900' W
HLA2	32° 54.150' N	117° 15.900' W

Prior to the array deployments, CTD casts will be performed near each deployment location. The acoustic arrays will be deployed from New Horizon in a free-fall fashion similar to the February 2009 experiment on the Coronado Bank. The arrays will be deployed approximately 300 m apart, in a North/South configuration, in approximately 20 meters of water depth. Each deployment package (see Fig. 2) will have two 16-hydrophone horizontal arrays coiled and attached to the sides of the recording package. Once each package is deployed, 2 divers will uncoil the horizontal arrays and attach them to the seafloor using sand screws. The divers will be Jeremy Roswell and Shane Walker, who are both SIO certified divers. All diving operations are to be conducted from the Scripps pier. Each of the two array deployment packages will have a surface float to provide a surface target for the divers. These surface floats will also have a radar reflector, flasher, radio beacon and a bright flag. Once the acoustic array deployments are completed, R/V New Horizon will be used as a surface acoustic source and will carry out circular tracks around the arrays.

Once the above are completed, New Horizon will move to a deeper location to perform initial setup and testing of towed source hardware for use on the experiment currently scheduled for September 7-22, 2010 (also on New Horizon). The towed source testing is of secondary importance to the acoustic array deployments and can be modified to allow for contingencies in the array deployments. The towed source hardware consists of a hydrographic winch, an electromechanical cable, a J15 acoustic source in a tow body, and associated instrumentation (monitor hydrophone, pressure/depth sensor, etc.). The winch is manufacturer certified to 46CFR 189.35 for use on UNOLS ships. The winch is specified for a 15,000 lb line pull and the cable has a 6500 lb nominal breaking strength. All required documentation related to the winch and cable will be provided to the Captain. The tow hardware testing will consist of (in this approximate order) respooling the cable under tension (~250 m line out with ~900 lb weight), attachment of the acoustic source and test towing at different depths, and the attachment and testing of the associated instrumentation.

Approximately halfway through the experiment, the passive acoustic reflector (TARGET) will be deployed midway between the two hydrophone array deployments (HLA1, HLA2) as shown in Fig. 3. The reflector will be deployed from New Horizon in a free-fall fashion similar to the array deployments. The deployed reflector will be approximately 10 m below the surface, and a surface expression can be added if necessary. Once the reflector deployment is completed, New Horizon will return to a deeper location to continue the towed source testing as described previously.

For recovery, each mooring is released from the anchor using the acoustic release and the entire mooring assembly will float on the surface. Each mooring is then recovered onto New Horizon.

A notional schedule for the experiment is provided below (times are local):

Date/Time	Event
16 February	
0800	Depart MARFAC
1000	Arrive at deployment location North of SIO
1030	CTD at HLA1 site
1100	Deploy HLA1
1300	CTD at HLA2 site
1330	Deploy HLA2
1500	Time permitting, begin diving ops
17 February	
0800	Complete diving ops at HLA1/HLA2 locations
1300	Begin series of circular tracks around HLA1/HLA2.
1800	Transit to deeper location (TBD by Captain) for source testing

18 February	
0800	Begin towed source testing
1900	End operations
19 February	
0800	Deploy TARGET
1100	Return to deeper location for towed source testing
1300	Continue towed source testing
1900	End operations
20 February	
	Contingency day for mooring recovery if weather requires
0800	Continue towed source testing
1800	Transit to HLA1/HLA2 site, perform circular tracks around arrays
21 February	
0800	CTD at HLA1 location
0900	CTD at HLA2 location
1000	Recovery diving ops at HLA2 location
1300	Recovery diving ops at HLA1 location
22 February	
0800	Recover HLA1
0900	Recover HLA2
1000	Recover TARGET
1100	Return to MARFAC

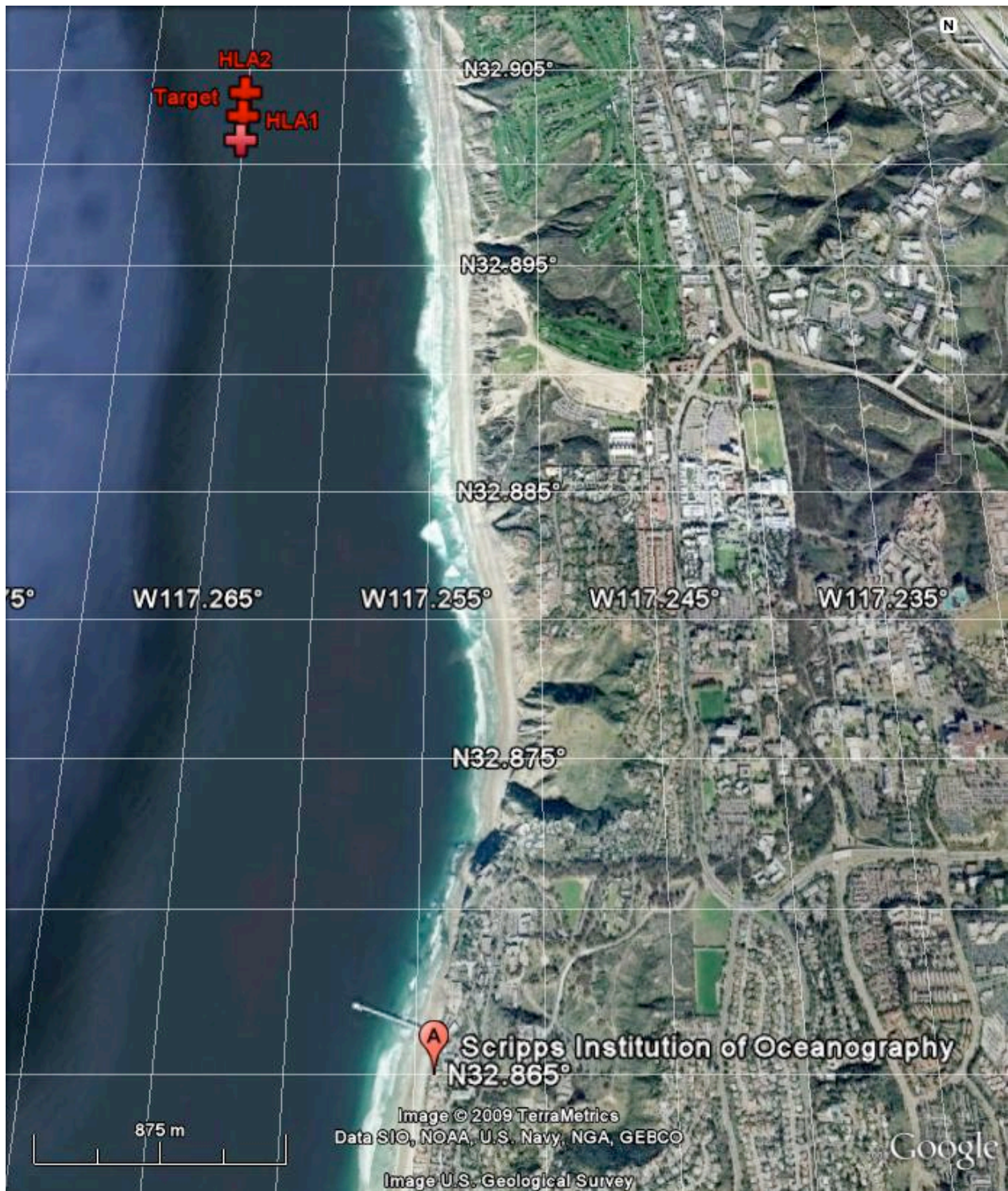


Figure 1. Deployment locations near the Scripps Institution of Oceanography, La Jolla, CA.

RAVA Deployment For NOISE#2 2010

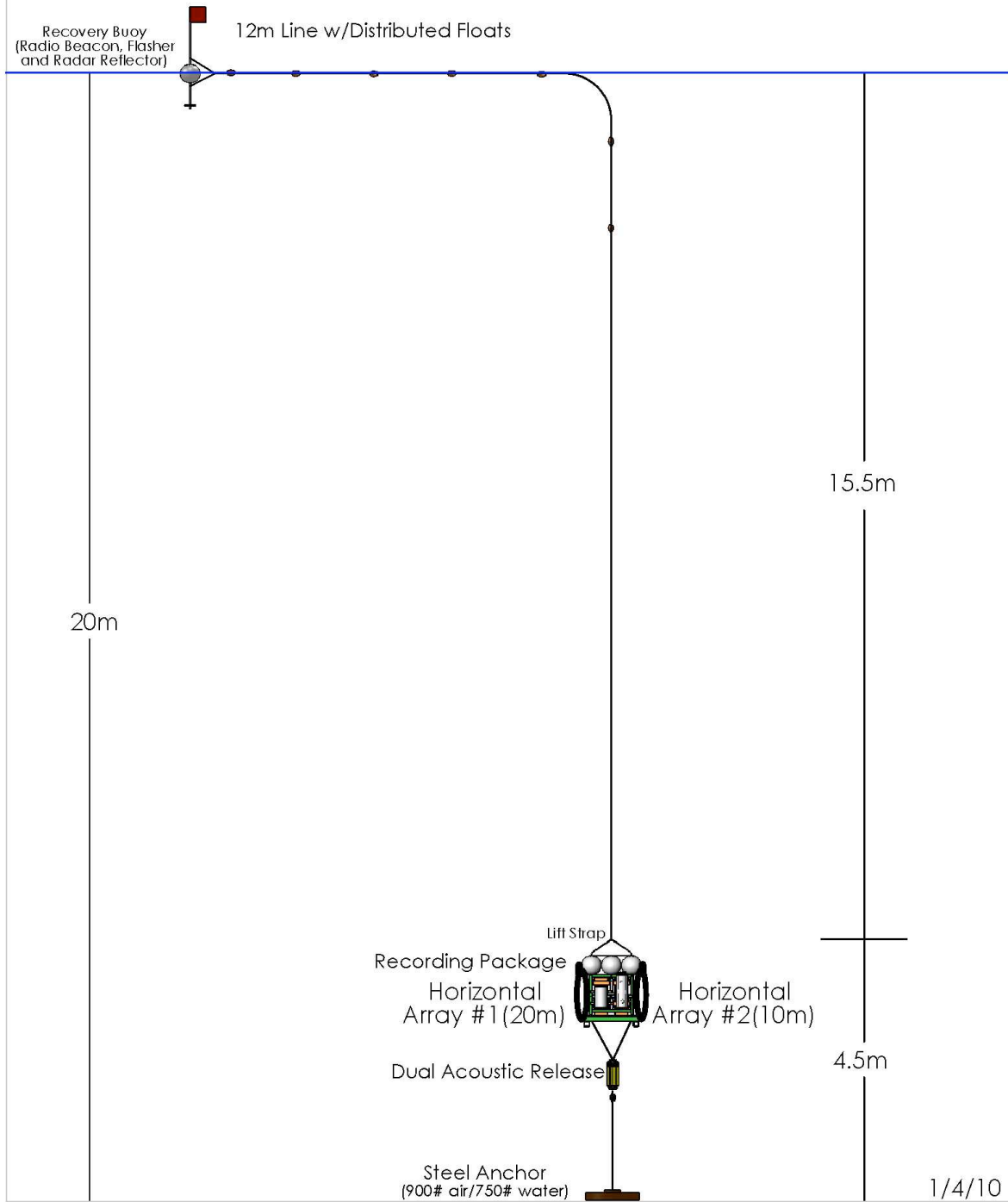


Figure 2. Acoustic array configuration for second ambient noise experiment.

Target Deployment For NOISE#2 2010

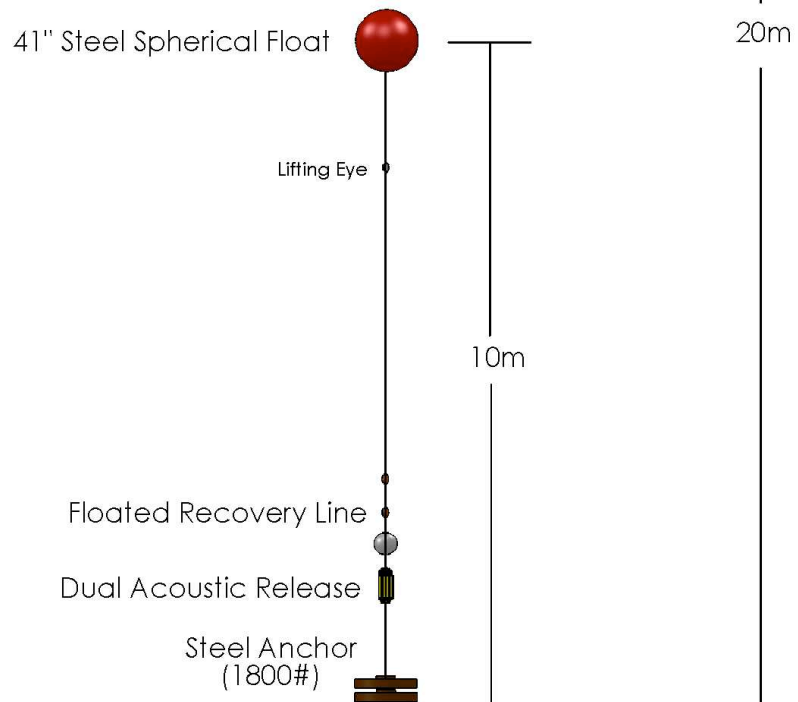


Figure 3. Acoustic reflector configuration for second ambient noise experiment.