

## GEN 2 Deployment Procedure from RV Zephyr

## PREPERATIONS ON SHORE

- 1) Equipment
  - a. Lowering line 70m  $\frac{3}{4}$ " double braid white dacron
  - b. Anchor line –  $\frac{3}{4}$ " double braid dacron - need equation for length
  - c. Adjustable strap –  $\frac{5}{8}$ " double braid dacron - nominally 9-2m range
  - d. Anchor – 500 lb
  - e. Anchor chain – 1meter what size
  - f. Elastic band assembly (EBA)
  - g. Master link
  - h. SeaCatch TR7LM (What is that?)
  - i. Two 6' 3000lb straps 1" wide
  - j. Instrument mooring assemble with buoy float through EM cable
  - k. 2, 1ft. diameter fisherman floats
  - l. Chute and bracket for launching surface buoy
- 2) Load Winch
  - a. Stage winch with deployment lines in the following order: Lowering Line, Master Link and Anchor Line
- 3) Attach adjusting strap and EBA to instrument

## ON STATION TO DEPLOY

- 4) Stage surface float and EM cable for deployment
- 5) Plug batteries in and confirm connectivity and functionality
- 6) Locate Deployment point and place boat facing down stream, upstream of deployment point
- 7) Prepare for Anchor deployment
  - a. Attach Anchor line to Anchor Chain
  - b. Attach Quick release to Anchor and Crane
  - c. Anchor Line must be under EM cable
- 8) Anchor Deployment
  - a. Raise Anchor and lower over stern of boat until it is in the water  
This should be done in a smooth motion to get the weight into the water as quickly and as safely possible.
  - b. Place Anchor Line onto stern roller and transfer load to Anchor line
  - c. Release the QR
  - d. Lower Anchor till Master link is mid-deck
- 9) Prepare Instrument for deployment
  - a. Stage two tags around instrument battery base legs. These should be on the opposite side of the CTD and staged to hold the instrument with CTD pointed away from stern
  - b. Rig bail with two straps and QR as showing in figure (need that)
  - c. Take up strap slack with crane above instrument

- d. Remove intake and exhaust port covers
- e. Attach bottom EBA collar to Master Link

#### 10) Instrument Deployment

- a. Prepare surface buoy for deployment and tend EM cable.
- b. With Crane lift the instrument and use and tags to stabilize and position Instrument beyond the end of the stern (CTD pointed away from boat). Using tag lines pull bottom of instrument towards the boat and secure instrument. (IMPORTANT: EBA should be tended and not allowed in water yet.)
- c. Final positioning of boat may be done now (IMPORTANT: never back over anchor line)

IMPORTANT: During the following steps the boat cannot be maneuvered or damage to elastic bands EM cable or mooring lines may result. Deployment must proceed as quickly and seamlessly as safety will allow.

- d. Begin by lowering anchor line and tend elastic bands over stern until the bands begin to have tension on them.
- e. With moderate tension on the EBA, lower instrument and Anchor at the same rate until the instrument is fully in water and crane line slackens. Release and recover tag lines. (IMPORTANT: care must be taken to not overstretch the EBA. The crane and winch operators need to coordinate their moves to prevent damage to the EBA)
- f. Prepare to release Buoy
- g. When the instrument is fully submerged and the anchor is holding the instrument submerged release QR from instrument
- h. Continue lowering away on Anchor
- i. Release the surface buoy and tend and release EM cable
- j. Continue to pay out lowering line until it nearly reaches its end.
- k. Cleat off lowering line and finish paying out line entirely from winch
- l. Attach floats to the end of the lowering line and tend floats off the stern
- m. Instrument is deployed and ready for divers to remove bail pins, recover lowering line, check deployment depth and set as necessary.

#### 11) Divers

- a. Prepare for dive
- b. Check can top depth
  - i. No shallower than 4m at low tide
  - ii. No deeper than 8m at high tide
  - iii. Adjust Depth to match range using Adjustable strap under instrument (we should have an equation for this)
- c. Pull Bail pins
- d. Release lowering line
- e. Return to boat

#### 12) Completion

- a. Recover Lowering line
- b. Start mission macro

