

Document in progress. Contact [dsalazar@icess.ucsb.edu](mailto:dsalazar@icess.ucsb.edu) with questions.

## LTER Cruise CTD Operations

Pt Sur Marine Tech: Directs personnel in launch/recovery of the CTD and performs the actual operation of the CTD software for data collection and processing.

SBC LTER personnel: Assist the Pt Sur Marine Tech with CTD launch, recovery and file and station naming to ensure appropriate data is being collected.

When it is time to begin the CTD survey of the SBC LTER cruise, the following items should be made available:

- Bottles for water samples
- Carboys
- Slop buckets
- Bottle carriers
- Binder to keep hard copies of the CTD casts sheets and cast profile plots.
- File naming protocol for CTD data files and Stations.
- Data Sheets from the White LTER Cruise Binder:
  - CTD Profile Water Processing
  - Event Log
  - Carboy Filling Cards

### **Physical Set Up During Loading related to water collected from CTD casts:**

In the wet lab:

**Slop buckets:** There should be 3-5 slop buckets and they should be stacked and placed under the sink area in the wet lab until needed.

**Bungee board:** This is the board that secures the carboys in place during transit. Lay the board across the sink area making sure that the existing holes are on top before securing the board into place with two C-clamps. Once the board is secured with the C-clamps, screw in the eye screws and associated bungee cords such that each carboy has only one bungee cord through each handle. Do this by making sure the first hole nearest the engine room should be filled by a lone screw eye, then alternate between double-corded and lone screw eyes ending with the one screw eye that has only one bungee cord attached to it.

**Carboys:** The carboys need to be assembled. Each carboy consists of a spigot, body, and lid with Tygon tubing. There should be 7 carboys. They should be numbered 1-7. Screw the spigot into the body. Pinch and pass the Tygon tubing through the hole in the lid until you have about an inch of tubing on the inside of the lid. Screw the lid onto the body. Wrap/weave the Tygon tubing such that it bundles nicely without pinching or binding and is not touching the bungee board or counter top. The carboys should be strapped in such that one bungee cord passes through each handle. When not in use, the carboys, including Tygon tubing and spigots should be covered by either Zip-loc bags or trash bags to reduce the amount of diesel exhaust build up on the carboys.

## **Physical Set Up for CTD casts during the cruise:**

### **In the wet lab:**

**Slop buckets:** Have 3 to 4 slop buckets set up so that ideally one bucket can be used by two carboys simultaneously. The yellow bucket is for radioactive slop waste only and should not be used by any one else except for the person filling the productivity bottles. These buckets should be emptied as necessary. Typically this is done during the transit time between stations and should be done well before arriving on station for the next CTD cast.

**Carboys:** When not in use, the carboys, including Tygon tubing and spigots should be covered by either Zip-loc bags or trash bags to reduce the amount of diesel exhaust build up on the carboys. Also, the carboys should be strapped in using the bungee cord system if the seas are rough, especially on the west end of the Santa Barbara Channel. Typically during rough weather, you will only secure the back set of bungee cords while you are filling bottles and after that is taken care of, you will secure the carboys using both sets of bungee cords.

### **Starting a CTD Cast**

We arrive on station and the marine tech says that he's ready to put the ctd in the water. He'll need help from two people typically, not counting the deckhand running the winch and the boat driver. One person will operate the J-frame. The other will help handle the CTD.

**J-Frame:** The person operating the J-frame will take their cues from the marine tech. Always wear your work vest. When told to by the marine tech, climb the J-frame and release the locking mechanism. Never put your fingers inside the locking mechanism. Go to the J-frame control and stand at attention. When instructed by the marine tech, carefully put the CTD in the water. Always pay attention to the marine tech and do as he instructs during the operation of the J-frame.

**CTD Handling:** You are trying to steady and guide the CTD as it is lifted up and over the side of the boat. You don't want it to hit anything.

Once the CTD is in the water, everyone goes back inside to begin the cast. The marine tech will fill out a CTD Cast Sheet. We will fill out our Event Log and Profile Water Processing sheets with information from the marine tech's CTD Cast Sheet. You will need to tell the marine tech: the station name, the data file name and what depths we are collecting water from for each cast.

### **Station Names for CTD Profiles**

**The CTD GRID:** There are 25 standard Grid stations named Grid 1 to Grid 25. Each one has a fixed nominal GPS way point that gives its location and which has been maintained

across all cruises. You can see a map at [<LINK HERE TO MAP OF 25 GRID STATIONS>](#).

The PLUMES AND BLOOMS LINE: There are 7 Plumes and Blooms stations named PnB1 to PnB7. Each one has a fixed nominal GPS way point that gives its location and which has been maintained across all cruises. You can see a map at [<LINK HERE TO MAP OF 7 Plumes and Blooms STATIONS>](#).

Any other casts done should be given a station name that reflects the name of the person who wants the data or the reason for wanting the data collected. Keep in mind how the data will be collected and allow for flexibility. EXAMPLES: DA1 to DA7 are the station names given to seven CTD casts done to investigate Domoic Acid in the Santa Barbara Channel during one cruise. During another cruise, casts were done for Craig Carlson and so those stations were named CC1 to CC10 and CC1-2 because CC1 was revisited after station CC10.

### **Data File Names for CTD Profiles**

Use the following format: LTR####.\*

Example: LTR1601.\*

The format is based on the following convention:

LTR = LTER cruise

## = LTER cruise number expressed as two digits (from 01 to 16)

## = Consecutive ctd cast number for a given LTER cruise expressed as two digits.

### **Standard Depths for Water Collection during CTD Profiles**

75 m

50 m

30 m

20 m

10 m

5 m

1 m (a.k.a. Surface)

The marine tech will start the CTD data acquisition and start filling out the CTD Cast Sheet.

CTD Profile Water Processing Sheet: From the CTD cast sheet we will get the CTD filename and the “Start of Cast” latitude, longitude, time and bottom depth.

EVENT LOG: We will fill out our Event Log entry based upon the “Start of Cast” time, latitude, longitude, and bottom depth.