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# Beaufort Gyre Exploration Project: Dispatch 7: CTD Nightwatch

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It's 2 AM and the sun is setting as we reach station CB28a (70.5 °N, 140 °W) for the nightwatch's first rosette cast of the cruise. The rosette is a cylindrical frame that holds twenty-four 10 L Niskin bottles, which are used to collect water at specified depths. Since I, Jennifer Jackson, am the CTD operator, responsible for triggering the bottles as the rosette is hauled back up to the surface, and since I will also be sampling the bottles, I have spent the last three hours preparing for this cast. Hugh MacLean and Mike Dempsey, highly experienced technicians from IOS, will be working outside with the winch operator, Bill May, assisted by Ken Baker. When I came on watch at midnight, bright daylight was still shining through the windows of my cabin and the lab, and after sleeping from 3 PM to 11 PM, I had plenty of energy to set up my sampling materials and to inspect the Niskin bottles on the rosette.

Mike Dempsey signals the winch operator to lower a CTD/Rosette package over the side. *Photo by Rick Krishfield, WHOI.*

Although I took careful notes during the three daytime rosette casts, I'm still very nervous. With a gracious smile, Sarah Zimmerman, the chief scientist, has just stepped into the CTD lab to supervise the cast. The bridge, CTD deck and CTD lab communicate by radio and soon the rosette is lowered into the water. Hugh and Mike wait on the CTD deck, where it's warmer than usual, over an ice-free sea. They chat about the equipment and about past oceanographic escapades.

While the rosette is in the water, at about 3 AM, the moon rises, shimmering pink and yellow over the black waves. Yesterday it was full; we will see one more full moon, on Thursday, September 7th, before this leg of the cruise is over. This is a shallow cast, down to 300 meters, since the water will be used only for particulate organic carbon, chlorophyll, total suspended solids and phytoplankton analyses. As the rosette descends, the CTD acquires measurements fifteen times a second of the salinity, temperature, dissolved oxygen, fluorescence and transmissivity, and these data are displayed graphically on the computer in the CTD lab. Sarah and I decide to trigger bottles at 9 different depths where the transmissometer and fluorometer show high levels of particles and chlorophyll in the water. Right at the surface, we observe a layer of fresh, warm water that is probably related to the MacKenzie River outflow, about 250 km to the south of our station.

In the CTD lab, Jennifer Jackson stands ready to notify the winch operator when to stop lowering and begin hauling the system back. *Photo by Rick Krishfield, WHOI.*

After the rosette comes back up to the surface and is rolled into the rosette shack, Mike and I, and Abby Spieler, another graduate student, check the Niskin bottles for integrity and proceed with the sampling. Meanwhile, our colleagues Jiuxin Shi and Yutian Jiao (Ocean University, China) are deploying a profiling reflectance radiometer on the forward deck. Soon it's time for a second rosette cast, which will go all the way to the bottom at 650 m, and I rush back to the CTD lab. By 4 am, the sun is rising again. When the rosette is safely back on deck, I leave the rosette shack to Hugh, Mike, Kristina Brown, Nes Sutherland and Abby as I hurry downstairs to pour 60L of newly sampled water though 0.7 micron filters. What a relief--both casts have gone smoothly!

*Last updated: October 9, 2015*

After the package is safely back in its container, Abby Spieler draws water from the rosette bottles into special copper tubes for Tritium and Helium analysis. *Photo by Rick Krishfield, WHOI.*

Moon rising off of the starboard side of *Louis*. *Photo by Jennifer Jackson.*

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