

## ROV Water-Column Survey Protocol

This provides some guidelines for conducting effective water-column surveys with your ROV. There are three different general opportunities for collecting video of organisms in the water-column: (1) chance encounters; (2) ascent surveys; and (3) dedicated (pilot training) surveys.

1. Chance Encounters: observation of marine life while conducting other work operations. For example: while conducting a riser inspection, you observe a jellyfish swimming near the riser. If time and operations permit, please record at least a minute of video of the organism including close-ups when practical. One easy way to accumulate these chance encounters is to note the observation on the ROV event log and make a duplicate copy of the DVD containing the event after the primary (BP) DVD has been burned. These duplicate DVD's and a copy of the event log can be sent directly to Terry Rooney at BP via inter-office mail<sup>1</sup>.
2. Ascent Surveys: surveys conducted when the ROV is available after work that has taken it to depth. An example of this would be after a riser inspection or inspection of the BOP. These surveys are designed to collect video of marine organisms between the bottom and surface. These surveys consist of a series of horizontal surveys at regular depths.
  - a. Beginning at the depth where you finished your work, lock the cage so that it is facing in the direction of the current (if no current is present, any direction is fine). Start recording video.
  - b. Set the thrusters to 25% power (use a higher level if you feel the current requires it).
  - c. Set the camera to full zoom out, focus on a point about 5' in front of the ROV, and turn all ROV lights on.
  - d. Fly the ROV forward at a slow speed and look for large organisms such as jellyfish, fish, and squids (the tiny particles and small shrimp <2" long are too difficult to image). The SIT camera can be very useful for detecting organisms at a greater distance than the color camera.
  - e. Whenever an organism is detected. Attempt to stay with it for several minutes and try to include close-ups. Adjust the light intensity down sufficiently to see color and detail on organisms. When you're finished videotaping, switch to the temperature overlay screen for a few seconds, then return to the normal navigation overlay. If your system has an acoustic current meter, please record the current speed and direction after the observation has concluded.
  - f. Continue the horizontal survey to the maximum safe extent of your tether (beginning of red warning wraps). When you reach the end of the tether, point the vehicle toward the cage and slowly fly back while looking for organisms. These horizontal surveys should normally take about 20 min.

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<sup>1</sup> Terry Rooney: Westlake 4, Room 741B, Houston, Texas (281) 366-5703. E-mail: rooneyt@bp.com

- g. Park the ROV in the cage and haul up 500'. You can move up to depths that are round numbers (e.g. if your working at the bottom at 6634 feet, you can move up to 6500 feet and do surveys at 6500', 6000', 5500', 5000' ...
  - h. Repeat the horizontal survey. This process can be continued for up to 3 h. Longer surveys may be conducted if they will not compromise operations, crew endurance, and have the authorization of the Well Site Leader.
3. Dedicated (Pilot-Training) Surveys: these are deployments of the ROV specifically to collect video data on organisms in the water-column. Such surveys can be conducted whenever the system is available but not otherwise tasked, and the ROV operators have time. Such surveys provide a great opportunity to give newer pilots additional stick time. During daytime, the best approach is to begin at 1000 feet and conduct horizontal transects at 500' intervals down to the bottom. At night they can begin at 100 feet and horizontal transects can be collected at 200' intervals down to about 1500 feet. At each depth interval, these surveys are the same as for the ascent surveys.
- a. Park the cage and lock in the heading so that the ROV is facing down-current (particles are traveling from behind the cage past the ROV).
  - b. Slowly move the ROV horizontally (25% thrust) to the maximum safe extent of the tether while looking for organisms then turn around and move slowly back to the cage continuing to look for organisms.
  - c. When an organism is observed try to collect at least 2min of video of it including as many close-ups as possible. Switch off the time/depth/heading overlay after the organisms is located. When complete, switch to the temperature overlay for a few seconds. Finally, switch on the time/depth/heading overlay back on.

Notes: i. Partial Surveys: While it would be ideal to collect data at 500' intervals between the bottom and surface, we realize that you may not always have time to complete an entire water column survey. If you feel you need to stop the survey and have only reached 2500', that's not a problem. When you start the next survey, you could begin at 3000' and work upwards. We're most interested in the organisms below 500'.

ii. Burning to DVD: Depending upon which DVD burner you have (e.g. Panasonic DMR T-3040 or T-6070), select the options that produce the highest quality output. Usually the high-speed recording option or the EP option will do this.

Once each week, send all DVDs from that week's surveys to:

Terry Rooney  
BP, 741B Westlake 4

If there are technical questions on this procedure contact:

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## Revision History

Revision 2 (6/30/06):   Included instructions to reduce light intensity if necessary when videotaping organisms.  
                                  Added request to switch off the time/depth/heading overlay after the organism has been located.  
                                  Included directions to send all DVDs to Terry Rooney at BP.