Standard Operating Procedures: Water Sampling Protocols for RV *Ocean Veritas*.

Purpose: Sample collections conducted from Niskin bottles fired at selected depths are stored and shipped to laboratory facility for chemistry analyses. Samples are collected for PABDVAP full suite analysis. Surface sampling of visible oil is also conducted for PAH, aPAH, and Biomarker analyses.

Materials:

1 4"x4" absorbent pad in 8oz. jar

1 bucket with rope or other surface collection method

1-Liter bottle, 1 per sample (2 additional bottles to be used for MS/MSD samples every 20 bottles sampled from)

40mL vial with 0.5ml HCl, 3 per sample

40mL vial without preservative, 3 per sample

DO sample jars (unpreserved 4oz. jars), 1 per sample

Procedures:

1. For surface collections
    a. Make sure bucket has been properly cleaned. Bucket cleaning procedure is as follows.
        i. Rinse bucket with tap water.
        ii. Add 1ml of liquid soap (Dawn) to bucket and fill with tap water.
        iii. Using a scrub brush, scrub the inside and outside of the bucket, as well as the rope.
        iv. Rinse with tap water until all soap is gone.
        v. Rewash if necessary
        vi. Add some distilled water to the bucket and swirl. Pour out water and repeat 2 times.
    b. Holding the end of the rope, toss the bucket over the side of the ship. Be sure to toss bucket in a location away from any place where input from ship can affect samples (i.e. go up-current of and ship water discharge).
    c. Pull bucket up and discard water. Repeat 2 times to rinse bucket with sample water.
    d. Collect a water sample as described.
    e. If oil is visible, place an absorbent pad on sample water surface to collect oil. Place pad back in jar and seal.
    f. Fill 1 1-liter bottle (to 1" from top), 3 40mL with HCl and 3 40mL without preservative (all these vials should be completely full and void of any air bubbles.
    g. Collect water samples for any other group that asks for them (i.e. DFO, NOAA, EM&A).
    h. Wash bucket has instructed above and store in a place away from contamination.

2. For bottle collections
    a. For each Niskin bottle sampled team will need 1 1-Liter, 3 40mL with HCl, and 3 40mL without preservative bottles.
    b. Before collecting samples, open the lid of each nisken bottle and examine the surface of the water collected. Note if any sheen is present. Record as light, medium, heavy or no sheen.
    c. For each Niskin bottle, fill the 1-Liter to 1" from the top, and each 40mL completely full with no air bubbles present. Additionally, collect 1 DO sample jar completely without any air bubbles. Collected water samples for any other group that asks for them.
    d. While filling bottles, hold the caps downward to prevent exhaust fumes from the vessel adhering to the inside of the lid. Also, be sure the tube on the nisken bottle does not touch the edge of the sample bottles/vials/jars.
    e. After samples are collected, tape up the caps of all samples except the DO with laboratory tape or Teflon tape. Place each in an individual bubble wrapped bag.
    f. Each sample should be labeled as follows: MatrixCode-Date(YYYYMMDD)-Vessel-SequenceNumber (ex: SW-20100620-OV-008).
    g. Be sure to fill in all addition information on the sample bottles.
    h. Place all samples in a 40 degree C fridge until shipped at port.
    i. Use DO jars for Dissolved Oxygen analysis. Follow instructions for DO meter to measure the DO for each sample.
    j. For every 20 samples (every 20 nisken bottles sampled), QA/QC samples must be collected.
    k. On that bottle, collect 2 additional 1-Liter samples. Label them the same as the other samples from that bottle, but as a Matrix Spike and Matrix Spike Duplicate samples (i.e. SW-20100620-OV-020MS, SW-20100620-OV-020MSD)
    l. At the same time, on the same bottle gather 1 pair of Trip Blanks (should be acquired from TestAmerica prior to boarding the vessel and stored in the 40C fridge) and label (i.e. SW-20100620-OV-TB1, etc.). There should be 2 trip blanks per 20 samples. Place back in fridge and store with samples.
    m. Additionally, once per day conduct **an equipment blank**. Pour DI water into one of the Niskin bottles (it is best to do the equipment blank when the MS/MSD, and trip blanks are conducted). Collect from that bottle, 1 1-Liter, 3 40mL with HCl and 3 40mL unpreserved samples. Label each sample as equipment blanks (i.e. SW-20100620-OV-EB1, etc.). Place in 40C fridge with other samples.
    n. Maintain all appropriate Chain of Custody forms and database spreadsheets for samples collected.
3. Upon completion of all sampling Niskin bottles should be washed as follows:
    a. Dump any remaining water from the bottles. Add 1 gallon of soap water (1 gallon water with 1ml of liquid soap (Dawn). Shake bottle to wash inside.
    b. Return bottle to the rosette and open the caps to drain all soap from the bottle.
    c. Using a hose, wash down the inside and outside of the bottles to remove any soap residue.
    d. Rinse out collecting tubes on the bottles as well.
    e. Store with caps closed to prevent contamination between sampling stations.