Standard Operating procedure - Chemistry Lab

Dec. 2003

I. PORT CALL—ON COMING

- Go to your lab and begin cross over with the off going technicians. Read the lab report from the previous leg and discuss any changes in equipment status or procedures.
- Attend introductory meeting or any other safety or training meeting.
- Assist with loading/unloading freight and other tasks as directed by the Lab Officer or Assistant Lab Officer.

II. SITE PREPARATION

The following is a list of actions that should be accomplished prior to arriving at the first site. On cruises with short transit times before reaching the first site it is advisable to perform as many of the preparations in port as possible.

A. CALIBRATE INSTRUMENTS

1. GC's

1.1. GC3

The GC3 is primarily used for gas monitoring for shipboard safety. It should always be calibrated prior to the start of a cruise. Calibration is done using the HP ChemStation by injecting standards of increasing concentrations into the GC. Usually, we use the following standards: A, B, C, D, 30%, 50%, and 70%. A description of how to perform a calibration using HP ChemStation is given in the HP ChemStation Binder.

1.2. NGA

The Natural Gas Analyzer (NGA) should also be calibrated prior to arriving at the first site. Whereas GC3 is used primarily for safety monitoring (C1-C3 Hydrocarbons) because of its quick run time, the NGA can be used for safety but is more commonly used for scientific analysis of higher hydrocarbons (C1-C7) and elemental gases. The NGA also serves as a back-up in case the GC3 should break down. As for CG3, the calibration is done using HP ChemStation.

2. Alkalinity and Ph

Standardization of Alkalinity and Ph is performed as described below:

2.1. Preparation of the Buffers

Two types of buffers can be used: NBS Buffers and Tris/Bis Buffers. NBS buffers are designed as low ionic strength solutions and the pH scale measured include pH 4.01, 7.41 and 10. These buffers are stable for a long time. The Tris/Bis buffers are designed for use in seawater and seawater-like solutions. As a result many scientists prefer the use of Tris/Bis buffers which are complicated in making. It is very likely that new Tris and Bis buffers have to be made up for calibrating the instrument at the beginning of each Leg as they are not very stable. See Technical Notes #15 for instructions on preparing the buffers.

2.2. Performing a Buffer Calibration

Start the Alkalinity program on the PC and from the main menu choose "Do Buffer Calibration" with the tab key and press enter. List the pH of at least two buffers. The program will then bring you to a buffer calibration screen. Place your first buffer in titration vessel along with the stirrer bar. Next put the pH electrode into the titration vessel making sure the electrode does not touch the bottom of the vessel. Make sure the stirrer is on and stir for 10 minutes. Make sure the pH meter is on measure mode and not standby. After 10 minutes stop stirrer and wait 5 minutes before hitting the "read" key on the screen. Repeat the previous step for all buffers. Then hit the calculate key. If a slope between -57 to -60 is not achieved redo your measurements with a different electrode. You may need to make up new buffers if you cannot obtain a good slope.

2.3. Calculate the Borax Ratio

Once you are happy with the slope you may choose "Determine Borax Ratio" from the main menu. Don't worry about the sample ID. Just fill in the correct Borax volume you will use and insure temperature is 25 degrees. Tab to "Begin Run" and press enter. Follow the instructions on screen and hit enter to proceed. After the pH has been read the computer will ask you to place the acid tip in the titration vessel. Do this and hit enter. The titration process will begin. Once the titration is finished, a printout of the uncorrected alkalinity is given. Enter the new Borax ratio in the Parameters menu. Make sure that you have the correct Borax ratio saved in the Basic program.

3. Calibrate the Balances

3.1. Calibrate the Scientech Balance

First, adjust the differential amplifier (by selecting the Tune Sensor Utility). With no weight on the pans, select Set Offset with the Labview Weighing Program (make sure you reset tare before). Adjust the zero differential button (i.e Correction Increment Knob) till the offset gets close to zero (the purple and grey arrow should coincide). Then, put equal weights of 20 gr on each pan, select Gain Offset and adjust the gain button (i.e Correction Increment Knob) till the offset gets close to zero (the purple and grey arrow should coincide). Repeat step 1 to step 2 till you are really close to zero.

Then, perform the calibration you find most appropriate for your application with Labview. It can be a calibration from 0 to 1gr in increments of 200 mg (0.2gr) or a calibration of 0 to 20 gr in increments of 2 to 5gr. Note that with the Scientech balance, in the Labview calibration mode, the weight reading is a voltage reading, not a gram reading.

3.2. Calibrate the Cahn Balance

Before calibrating the Cahn using Labview, clean the balance pans, reset the tare on the Cahn balance itself and place a 200mg weight on pan A and push the Cal button.

Open the Coulometer Weighing Station Program . Make sure that the Data path reads the following: -- MC67:Coulometrics --(i.e. MC67 has to be mounted on MC 71). Set the precision and confidence and then proceed with the calibration (select Calibration and follow instructions). Again you can choose to perform a calibration from 0 to 100 mg in increments of 20 mg (for Rocky analysis) or a calibration from 0 to 10 mg in increments of 2mg (for Coulometer analysis).Save the calibration files.

B. LAB PREPARATION

1. Wash filters

Take a couple boxes of 9.0cm #1 Whatman filters and soak them in a large beaker of de-ionized water for approximately one hour. Then oven dry filters at a low temperature. When filters are dry store them in plastic ziplock bags.

2. Cut and Wash Polytubes

Cut sections of polytube between 3 and 8 inches in length. Using the acetylene torch first heat and then crimp off one end of each section. Rinse tubes with de-ionized water and oven dry. Store these in plastic ziplock bags.

3. Ampules

Obtain from lower tween stores various sizes of ampules for IW samples. Ampules should be 2ml, 5ml and 10ml in size. At the scientist request they may need to be rinsed with de-ionized water or acid washed and dried.

4. Set Up Squeezers for IW

Obtain titanium squeezers from cabinet across from large gas cylinders. Set up squeezers by sink across from hydraulic presses. For each squeezer make sure there is a piston, cylinder, base plate, screen, rubber gaskets and teflon spacer. Also insure that piston and cylinder are matched according to the number on them (i.e. 1 with 1, 2 with 2, etc).

5. Supplies

The following items should be kept on hand next to the Carver presses. These will be needed when squeezing water;
10 and 50ml plastic syringes;
Disposable Whatman filters of 0.45 micron sizes;
5ml snap cap sample tubes for storing shipboard water;
Sample bags and/or Kapek bags for squeeze cakes;
Refractometer (for salinity measurement, make sure you calibrate the refractometer prior to the first site).

Also, supply lab with the following:

Paper towels: about 30 rolls can be stored underneath the sink/cabinet where the IW's are squeezed and another 30 under the sink/cabinet below the nanopure unit;
Chem wipes: a dozen or so boxes can be stored in the cabinet below the glassware cabinet in the back of the lab. Also scatter boxes around the lab so you can grab one whenever you need one;
Pipette tips: 5ml tips are needed over by the alkalinity station. All other size pipette tips should be stored in the appropriate pipette tip drawer or on the shelve next to the Hamilton diluter;
Paper: all the printers in the lab should have either a ream or roll of paper in their holders. That includes the CNS printer, Rock Eval printer, Alkalinity printer, laser printer above the desk, and the label printer.

6. Boxes

Place personal cardboard boxes (18"x12"x6) underneath cabinets so that samples can be stored in them. Foam ampule holders should be placed in box to safeguard ampules or vials. Write the appropriate Janus codes on the box.
Usually, the following boxes are needed: HS (to store Headspace vials), IWS (Interstitial Water Squeezecake), IWG (Interstitial Water - Glass for archive), IWP (Interstitial Water - Plastic for archive), IWPA (Interstitial Water - Plastic, acidified for Ph/Alkalinity residue). Other boxes will need to be set up for each scientists request (ex: IWGM -- Glass ampule for Rick Murray).

7. Prepare Acid Bath

Fill the 50 liter nalgene tub with approximately 18 liters of DI water. Place the tub in the fume hood and add about 2 liters of concentrated HCl. Add slowly. This will be used for an acid wash of labware when cleaning.

8. Freeze Dryer

Start the freeze dryer up. Just follow the instructions for start-up printed on the front lower left of the machine. Make sure clean vacuum oil is in the vacuum pump. The pump is located behind the instrument underneath the top vacuum chamber.

9. Vacutainers

On a gassy leg, the routine vacutainer gas sampling are accomplished with a 50ml syringe attached to a three way clear stopcock with male luer lock adapter. Make sure you have it ready before the first core comes on deck. Upon request of scientist, glass vacutainers may be used. Before the first core comes on deck, begin to evacuate the vacutainers two to three at a time. Do this by inserting one end of a two-way needle into one of the vacuum ports. Insert the other end into a vacutainer. Turn on the vacuum switch for that port. Evacuate for 10 minutes. Remove vacutainer and place another vacutainer on the needle.

C. MAKE UP REAGENTS

Put dates on all reagents made. This will help other techs know in the future whether the reagent is fresh or not. Prepare the following reagents according to the recipes given in the Technical Notes #15.

1. Chloride (only if the scientist will perform hand titration)

0.1M Silver Nitrate solution (make only if supply low);
Indicator solution.

2. Magnesium (only if the scientist will perform hand titration)

0.03M EDTA solution (make only if supply low);
Ammonia buffer solution;
Eriochrome-Black-T indicator solution (make fresh each site).

3. Calcium (only if the scientist will perform hand titration)

0.1M EGTA solution (make only if supply low);
Borax buffer solution;
GHA indicator solution (make fresh each site).

4. Silica

Molybdate reagent;
Metol sulfite solution (store in the fridge, do not store more than a month);
Oxalic acid solution;
Sulfuric acid solution;
Standards if necessary.

5. Ammonia

Alkaline solution;
Standards if necessary.

6. Phosphate

Ammonium molybdate solution;
Sulfuric acid solution;
Ascorbic acid solution (keep refrigerated);
Potassium antimonyl-tartrate solution;
Standards if necessary.

7. Nitrate and/or Nitrite (only if interest is shown by scientist)

Sulfanilamide solution;
N-(1-naphtyl)-ethylene diamine dihydrochloride solution (good for only a couple weeks);
Concentrated Ammonium chloride.

8. Surface Seawater

At the first site obtain surface seawater by lowering a bucket over the side. Avoid doing this next to any ship discharge pipes. A good place is Starboard of lab stack in front of stairs next to the hotel. Surface seawater should be obtained at each site.

9. IAPSO

Open a new bottle of IAPSO at the start of each leg. IAPSO will be used as a standard for calcium, magnesium, sodium, potassium, chloride and sulfate measurements. If IAPSO is not properly stored it may evaporate causing a corresponding increase in the salinity.

D. JANUS TEMPLATES

Before the first site (each site thereafter), prepare the appropriate Janus templates for that site. The template should include HS, IWs and IW splits codes, i.e. corelog ID, sample codes and quantity of water/sediment taken for each sample.

III. ON SITE

CATWALK SAMPLING PROCEDURE

A. Interstitial Water

Find out from the curator what the interstitial water sampling interval will be for the cruise. When a core comes on deck from which a sample is to be obtained - take it.

Initially 5cm whole rounds are taken and as the amount of water obtained from squeezing decreases we go to 10cm whole rounds. Larger whole rounds may be obtained only from curator approval.

Take the IW sample from the bottom of a section. Try to take it from the bottom of the same section every time. This keeps the sample interval consistent. Of course as the recovery decreases you will have to take the IW sample from where ever you can.

The geochemist should be on the catwalk to help you determine where to obtain the IW sample, but don't always count on it. Try never to take a sample that includes a change in lithology.

Note the core, section and interval that the sample was taken from. Write it on the liner. The interval will need to be entered in Janus.

B. Gas

1. Headspace

Take a 5ml headspace sample from every core at the top of one section.

From cores where an IW sample is obtained take the headspace sample from the top of section immediately below the IW sample whenever possible. Note the core, section and interval that the sample was taken from. Write it on the glass vial. The interval will need to be entered in Janus.

Make sure the other techs do not spray acetone on or near the headspace sample. This will contaminate the sample.

2. Voids/Vacutainer

If gas voids are present in the core liner a vacutainer sample (syringe or glass vacutainer) will need to be taken.

Get the gas sampling device to insert in the core liner. It should be kept in the little wooden box next to the MST.

First make sure the valve is off. Insert the device into the core liner where the void is located. Place the syringe/vacutainer on the valve and then switch the valve open. In case of syringe sampling, note that the stopcock handle is always over closed port. With glass vacutainer, place a needle on the valve and open the valve by turning the switch so that it is parallel with the needle. After 10 seconds turn the valve back off and remove the vacutainer.

Circle the hole that the sampling device made and after the techs have measured off sections note the core, section and interval that the sample was taken from. Write it on the vacutainer.

The interval will need to be entered in Janus.

SQUEEZING IW'S & RUNNING GAS

A. Gas

1. Headspace Sample

Record sample on HS worksheet (as HS). Record sample into Janus, including core ID, type and quantity. Seal sample by placing septum on headspace vial (teflon side down) and then placing aluminum cap over it and crimping shut using the crimper. Place headspace sample in oven, at approximately 65 degrees celsius, and heat for 30 minutes. Then inject the sample in the GC3 and/or NGA.

2. Vacutainer

Record sample on HS worksheet (as VAC) and then log sample into Janus. Run sample on GC3 and/or NGA immediately.

B. Prepare IW Sample for Squeezing

Record sample ID into interstitial water worksheet and then log sample into Janus, then proceed on trimming the sample as follows:

Remove sample from core liner;
Trim the outer surface of the core of any contamination due to drilling. If "cakes" are present, make sure you trim all the material surrounding the "cakes";
Trash trimmings;
Put the trimmed core sample into a squeezer;
Make sure pre-washed filter paper and screen are in place at the bottom of the squeezer;
Chop up the core if necessary to fit it into the squeezer;
After inserting the teflon plate, rubber gasket and then piston in the cylinder the sample is ready for squeezing.

C. Squeezing Sample on Hydraulic Press

Insure the hydraulic unit is on. Both toggle switches should be in the up position to the right. The hydraulic fluid valve should also be switched to the right. Set the pressure gauge around 5,000 psi. Simultaneously push both buttons at the base of the hydraulic unit to initiate the automatic press. After the first drops of water flow from the hole at the squeezer's base plate, insert a 10 or 50ml syringe in the hole (with a 045 um filter attached to it). Keep the buttons pressed until the needle on the gauge reaches the 5,000 psi mark. At this point the automatic

press should kick in and keep a constant pressure of 5,000 psi on the squeezer. Keep an eye on the syringe to make sure it does not fill with water so quickly as to push the syringe plunger out. Normally this should not be a problem except for the first few cores of a hole.

Best results are obtained from squeezing slowly. Monitor the water squeezing.
If a lot of water is coming out and the syringe is filling up replace the syringe with a new one. If the setting of the press is not forcing much water out of the sample increase the pressure 5,000 psi. Squeeze for a while and increase the pressure more if needed.

DO NOT EVER INCREASE THE PRESSURE ABOVE 40,000 PSI

When sufficient water has been squeezed and/or no more water is obtainable from the sample remove the syringe from the squeezer and start sample distribution. Then remove the squeezecake from squeezer. To do so, proceed as follows:

Turn the pressure gauge to 0 psi and switch the hydraulic fluid valve to the left position. This will cause the press to lower. Once the press is lowered, remove the squeezer. At the sink pry the base section off the squeezer. You may need to use a big spatula to assist you with this. If the water collector w/gasket and screen can be removed at this time - do so. Place the half-circular metal assembly in the hand operated press located behind the two main presses near the gas bottles. Place the squeezer cylinder (it still has squeezecake in it) on top of the assembly. Sample facing down, piston facing up. Make sure that when squeezecake is pushed out that it will clear the half-circular assembly edge. Turn the knob at the base of the press to the left to lower the press. Turn the knob to the right when you want to raise the press. A cheater bar is located in the cabinet beneath the press. Continue to press the piston down until the squeezecake has been pushed out. Stop the press and remove it. Once the squeezecake is removed continue to push the piston down as to clear the teflon spacer, gasket and piston from the cylinder.

Put all parts of the squeezer in the sink.

D. Clean Squeezer, syringe(s) and needle

Wash the squeezer with tap water. Rinse all sections of the squeezer separately with tap water and scrub off any mud that may be caked on the various sections. When these are clean, rinse them off with de-ionized water. Particularly the water collector and base plate should be flushed with de-ionized water through their holes. Rinse screen thoroughly with de-ionized water. Using the air hose from the nearby fume hood blow air through the holes in the base plate and water collector plate of the squeezer. Blow all water out of these holes. Also blow air across the screen and dry off or put it in the oven to dry. The rest of the squeezer assembly may be dried using paper towels.

Rinse syringe by pouring de-ionized water into syringe, place plunger in syringe and shake well. Push plunger down to purge water from syringe. Remove plunger from syringe and put both syringe and plunger in oven to dry. This should take about an hour. Also rinse the needle and dry it. Use the lab air to blow excess water out of needle.

Sample distribution

1. Water

Put a 0.45 uM disposable filter on the syringe. Put a small needle on the other end of the filter. Distribute water sample as follows:

Alkalinity & pH - If there is ample water place 6ml of sample into a 10ml beaker. 5ml of the water can be pipetted out and used for alkalinity. If water recovery is low use only 3ml of sample. The little bit of water left over in the 10ml beaker may be used for salinity measurement or poured into a 5ml snap cap tube for shipboard analysis.

Shipboard measurements - Distribute 5ml of sample into a 5ml snap cap tube for use on shipboard analysis. Generally shipboard analysis will include the following measurements and quantities of water for one analysis.
0.1ml for chloride (for hand titration);
0.5ml for magnesium (for hand titration);
0.5ml for calcium (for hand titration);
50ul for Dionex DX 120 analyses;
0.2ml for silica
0.1ml for ammonia
0.2ml to 1.0ml for phosphate
the remainder may be used for AA work. If the scientist(s) feel more water is necessary by all means take it.

Salinity - place a few drops on the refractometer and measure for salinity.

Scientific party - divide the remainder of water according to the sample distribution list the curatorial rep should have provided. These samples are usually put in glass ampules and then sealed using the acetylene torch.

Any remaining water is sent back to the GCR.

2. Squeezecake

Divide squeezecake up into equal sections according to the requests provided by the curatorial rep.

3. Labels for Samples

Enter into Janus the corelog ID, sample code and quantity of water/sediment taken for each sample. Print tracking sheet and labels. Put labels on each samples. Place all labeled samples in their correct boxes.

ROUTINE ANALYSIS

The following is a list of the typical analysis done shipboard by the techs and scientists. The scientist will be asked to do some analyses when the Leg is busy. It is a good idea to discuss with the scientist at the beginning of the leg who will be responsible for which analysis. Data entry in Janus is the techs responsibility.

1. Gas

After the headspace sample has been heated for 30 minutes it will be time to inject the gas sample onto the GC3 gas chromatograph or the NGA. On cruises where hydrocarbons are present in high level, one or two organic geochemists are on board and they will be asked to help in performing the gas monitoring as well as entering the gas data into Janus as explained below

2. Sulfate, Chloride, Calcium, Sodium, Potassium and Magnesium

The concentrations of these elements in the pore water can be determined on the Dionex 120 and it is the responsibility of the tech to run this equipment. It is best to wait until you have collected all the samples for the hole before running these analyses. See the Dionex cookbook for specifics on running the instrument. Chloride however is usually measured with hand titration which gives very good accuracy (0.2% or less).

3. Spectrophotometer Analyses

On a busy Leg, most spectrophotometric analyses will be done by the scientists. It's a good idea to wait until all the samples from a hole have been before doing any spectrophotometric work. Generally this instrument is the easiest to operate. Sample preparation is the trick here. Listed below are some tips for each measurement:

For Silica: Use the same disposable 5ml snap cap vials used for storage of shipboard water samples. These can be thrown away after use. Do not use glass containers since silica may be etched from the glass. If the metol sulfite solution has a great deal of crystal growth in it make up a new batch. Generally this solution is good for about a month.

For Phosphate: Use disposable 5ml snap containers. The ascorbic acid should be made up every two weeks.

For Ammonia: Use disposable 5ml snap containers used for storage of shipboard water samples.

4. ICP

It will be done upon request of the scientist and if possible by the scientist after the techs have

shown them how to use the instrument. Usually, it will be used to measure concentrations of Li, Sr, Mn, Fe and Ba.

Once again wait until you have collected all the samples from a hole before doing any analysis. A standard run is necessary for this as well. Samples need to be acidified at time of squeezing. See the cookbook or manual for instrument operation or sample pre

5. Coulometer

Crushing, weighing and running carbonate samples require a significant portion of a chem tech time. Occasionally you might get a scientist to help weigh or run samples but don't ever count on it. See carbonate cookbook for instructions on running the coulometer.

6. CNS and Rock Eval

Again weighing, and running the samples on the CNS, Rock Eval analyses as well as the post analysis calculations are usually the responsibility of the tech. See specific cookbooks for instructions on running these equipment.

7. GC-MS

Running the GC-MS is the responsibility of the technicians. The organic chemist will determine what analyses are to be done (alcohols, alkenones, etc..) and should help with samples extraction and GC methodology.

IV. LAB MAINTENANCE

A. During Leg

1. Daily to Weekly

1.1. Hydrogen Generators

Always make sure that the water reservoir in the active hydrogen generator's are full of de-ionized water. Do not let these run empty. You need to keep an eye on these daily.

1.2. Gas Rack

Daily keep an eye on the gas level of the helium gas cylinder currently in use. The pressure should not be allowed to drop below 300psi. When you put the other helium bottle on line replace the empty cylinder with a full cylinder. When changing the bottle supplying gas to the

GC-MS, make sure you do so quickly.

1.3. GC-MS Vacuum Check

Daily record the Foreline Pump and Diffusion Pump vacuums readings in the GC-MS blue book. Vacuum read at the gauge should be at a minimum of 5.0 x -5 Torr.

2. Weekly to Monthly to Quarterly

2.1. Desiccant and Filters

Many filters need to be changed on a weekly basis. Check frequently the color of desiccant or filters.

Change the desiccant out of the water trap in the hydrogen generators whenever it becomes pink. Turn instrument off first and bleed off hydrogen pressure. Also change out the desiccant on the alkalinity, chloride, calcium and magnesium titrant bottles whenever they become pink.

All the gas lines have water traps in line. These also need to be changed when desiccant becomes pink. The traps are located as follows:
Two traps are to the left of the gas rack. One is for helium and the other for oxygen;
Four traps are on the back wall behind the Packard Hydrogen Generator**.** Two are for the June Air, one for ship's air, the other for hydrogen. The black cylindrical container in line with the air supply needs changing when the front "window" is bright orange.
There are also traps behind the AA and the GC-MS. Change desiccant as needed.

The Ropure pre-filters need to be changed once a month or when rusty colored. The nanopure filter on the Barnstead needs to be changed once a month or at the end of a Leg depending on frequency of usage.

2.2. Vacuum oil

The oil for the freeze dryer vacuum pump needs to be changed once a month if the pump is used constantly or at the end of the Leg. Drain water from oil whenever defrosting.

The oil for the GC-MS vacuum pump need to be changed every three months without exceptions.

Make sure you vent the GC-MS and turn the instrument OFF before you turn the pump OFF for oil replacement.

2.3. Air Compressor

The air compressor water tank needs to be bled frequently, and at least once a week. Also, keep

a close eye on the oil level and fill it up when necessary

2.4. Hydrogen Generators

The reservoir on the Packards need to be emptied and cleaned as is the generating cell to flush out the HF that may build up.

2.5. Septums

Change septums on gas standard bottles when they appeared worn out.

V. END OF LEG ACTIVITIES

A. End of Leg Maintenance

1. GC Traps

Bake out or change GC (and GC-MS) traps if necessary.

2. Carver Presses

Fill oil reservoir in Carver presses and hydraulic unit.

3. Rock-Eval

Change mole sieve in carbon dioxide traps and change cupric oxide in instrument if needed.

4. Hydrogen Generators

Change DI bags in water reservoir. Vacuum back vent filter to get rid of dust.

5. Desiccant and Gas

Make sure all water traps have new desiccant in them. Make sure that there are not any empty gas bottles in the lab. Change out the empty gas bottles so that these can be sent back in the offgoing shipment to be refilled.

6. Freeze Dryer and Flask filters

Defrost the freeze dryer and clean it. Change the oil of the vacuum pump. The filters in the ports of the freeze dryer need to be replaced if the flasks have used during the leg.

7. Water System

Change the nanopure filter on the Barnstead.

8. Fridge

Clean the inside of the fridge and defrost when necessary. Discard outdated reagents and wash the containers.

B. Data Storage and Clean Up

Make sure all data are sent to Janus before the MCSs cut off database access. All non essential data should be erased from the hard disk of all the Lab MACs and PCs.

C. Lab Cleaning

At the end of the Leg, it is the responsibility of the chem techs to clean the Lab as follows:
vacuum all equipment and wash them with a clean sponge and just hot water, no detergent;
clean ALL the AA burners and the spray chamber;
clean the Rock Eval crucibles;
clean the inside of the two balances;
clean the presses of all mud, oil and rust;
clean the freeze dryer including the desiccators;
wash the inside of the ovens and the fridge;
wash the inside of the hoods and the glass panels (windex does marvels);
vacuum all the shelves and wash thoroughly counters tops and cabinets;
clean the desk and the stereo system;
clean all monitors, keyboards AND mouse pads;
clean the lights and vents;
vacuum the chair seats and wash their feet; and
scrub the floor to death!!!

VI. PORT CALL—OFF GOING

- Find the oncoming Marine Lab Specialist(s) for your lab and cross over. Make sure the technicians that are replacing you are aware of any changes made to the lab, procedures, current equipment status, and port purchases if necessary.
- Attend the port call meeting.
- Unload off going airfreight and frozen shipment, or any freight as required. Load on coming freight if time permits.